C.M.C.E.P. I.
(ENGLISH)

COMBINED CONTINUING EDUCATION PROGRAM (CMCEP)

PHC & MCH.

COMMON DISEASES & NURSING

SKILLS

HEALTH SYSTEM MANAGEMENT, FIRST AID, ANATOMY & PHYSIOLOGY, MIDLEVEL HEALTH WORKER SKILLS KNOWLEDGE

DEVELOPED BY:

WHO, IPH(MOPH), IMC, MCI, MSH & SCA

BEST AVAILABLE COPY

FUNDED BY: U.S.A.I.D.

USAID

PN ABS925 0077
50297
006525S

DIMENSIONS OF THE HEALTH CARE PROBLEMS IN AFGHANISTAN: A FOCUS ON WOMEN'S AND CHILDREN'S HEALTH

INTRODUCTION

Trainers Notes

---

* Hand out session guidelines
* Discuss how sessions are divided and scheduled

During the early years of the invasion of Afghanistan, there was a critical need to rapidly get medical supplies and trained health workers inside Afghanistan. The emphasis was on first aid, emergency care, and evacuation of war victims.

The focus and critical need now is to plan a sustainable health system for future Afghanistan. This means it is necessary to choose between selected interventions which will have the greatest impact with limited resources. In other words, a good health system will put priority on services that prevent the largest number of deaths in an efficient way. Is it better to spend money on a peachy of hospital equipment that will prolong the life of 15 adults, or to allocate these funds to train and supply 100 dais who will deliver 2000-4000 infants?

What percentage of the Afghan population is women and children? (Answer-65%) What percentage of children die before they reach age 5?
(Answer-about 1/3).
This would be the future generation, those that will rebuild Afghanistan. The priorities selected now will determine how many children will live beyond their 1st birthday, and how many beyond their 5th.

MATERNAL AND CHILD HEALTH

MCH SESSION 1: DIMENSIONS OF THE PROBLEM - THE EPIDEMIOLOGY OF MATERNAL AND CHILD HEALTH IN AFGHANISTAN

OBJECTIVE: The objectives of this session are to

1. Understand the mortality and morbidity rates of Afghanistan and compare them to other countries in the South Asia region

2. Identify the main medical causes of death among women and children.

3. Review the Child Survival technologies and Safe Motherhood interventions as approaches to improving Maternal and Child Health

SESSION 1: DIMENSIONS OF THE PROBLEM

Safe Motherhood:

To understand the dimensions of the health situation in Afghanistan. It is helpful to review available statistics and make comparisons with other developing countries, especially those in South Asia. Let's start with the Maternal side of MCH.

A. Maternal Mortality Rate: can anyone define "maternal mortality rate"? It is a measure of how many women die each year as a result of becoming pregnant. MMR is written as-

$$\frac{\text{\# of deaths of women of reproductive age}}{\text{100,000 live births}}$$

It is an indicator of a population a health status, of women's status in the society, and an indicator of development. Did anyone read in this morning's paper that 400 women died last night in South Asia while you were sleeping. In the last 12 hours 400 women (300,000/year) in S.Asia died in what is supposed to be a passage in life of joy and celebration, the birth of a child.

Transparency 1 (# live births in the world, # maternal deaths: Why was nothing written about these victims, or the 800 who died in the 24 hours previous? Because they are poor, powerless, and voiceless (not represented). In rural areas of South Asia, of every 2 women that die. I will have died because she became pregnant. The important concept here is that high maternal mortality in poor countries is the result of 2 reasons: (1) high fertility and (2) the high risk of dying each time a woman becomes pregnant. In fact, Afghan refugee camps report the highest Total Marital Fertility rate recorded at 13.6 live births (compared to 9.3 pre-war, MSH 1977 Survey). In the last several years, the tragedy of maternal death has begun to be acknowledged as "the silent epidemic". Led by WHO, UNICEF, UNFPA, UNDP, the issue is important not only in humanitarian terms, i.e. for the value of a life saved, but for the causal relationship it has with the survival of the offspring, as well as social and economic development. (In a study in Bangladesh of live children born to mothers who died, 95% also died within the first year.

Transparency 2 (% of LBW): South Asia also has the highest % of Low Birthweight Babies. When you compare this transparency with the last transparency, you can see a simple relationship between maternal health and child health. Birth weight is a result of many factors, but maternal nutrition prior to and during pregnancy is a major one.

The Maternal Mortality rate for Afghanistan is probably among the highest in the world. In 1977, a survey done in Afghanistan estimated that the maternal mortality rate was 640/100,000 live births. No one has done a recent survey, but there are factors which have probably caused this rate to increase. What do your think are some factors which caused an increase?

What are the major causes of maternal death? There is no current information on the direct causes of death among women in Afghanistan, but it is likely the same as in countries surrounding Afghanistan. These are:

Pre-eclampsia and Eclampsia
Obstructed labor and Rupture of the Uterus
Hemorrhage
Puerperal Sepsis (Infection)
Self-Induced or Illegal Abortion.

There are also indirect causes, like anemia, heart disease or diabetes, which are present before pregnancy, but which are made worse during the pregnancy and contribute to the death.

Mortality figures do not tell the full extent of the suffering (morbidity) caused by untreated complications in pregnancy and labor. For every woman who dies, about 16 women suffer damage to health which affect the rest of their lives. Examples include puerperal hypertension. Puerperal cardiac arrest, acute prolapse of cervix, infertility, exacerbated anemia, and pelvic inflammatory disease.

The five main direct causes of maternal mortality along with anemia cause 80% of maternal deaths. Many of these causes are preventable at the MCH clinic level and if they are not preventable at least they can be detected maternal deaths.

Maternal Health Strategies: There is an excellent article by Dr. Brann of W.H.O. on "Perinatal Determinants of Maternal Health and Child Survival. Please read it, for it outlines clearly 6 key strategies for program planners and implementers.

1. Health Information System
2. Tetanus toxoid for Women
3. TBA Training
4. Child Spacing
5. Define and strengthen the referral system
6. Promote public health education and epidemiological information

B. Child Survival: Let us now turn to the "CH" part of MCH. The causes of death among children under 5 are different from the causes of death for mothers and neonates. Likewise, the strategies for improving child survival are somewhat different.

Who can define Infant Mortality Rate? It is:

$$\frac{\text{the \# of infant deaths (under age 1)}}{\text{1000 live births}}$$

In 1975, a National Demographic Survey was carried out in Afghanistan which showed the Infant Mortality Rate to be 185/1000.

Who can define Child Mortality Rate? It is:

$$\frac{\text{the \# of deaths among children under age 5}}{\text{1000 live births}}$$

The 1975 National Demographic Survey showed this rate to be 329.1000 or approximately 1/3 of all children dying before age 5. According to UNICEF's 1990 "State of the World's Children" Afghanistan has the highest Under-5 mortality Rate in the World. Do you think that the # of deaths among children in Afghanistan has increased in the last 15 years? Why?

There have been no Morbidity/Mortality surveys done in Afghanistan since the war began. However, the Project is now initiating surveys in 3 provinces - Wardak, Takhar, and Kandahar.

Law of Halves: From statistics gathered throughout the developing world, an interesting pattern has come to view. It has been termed the "Law of halves". The Law of Halves states that, of all the children who die before reaching age 5, approximately half of them die before reaching age 1. Of the children who die before reaching age 1, approximately half die before reaching 1 month of age. It is expected that of the children who die within the first month of life, half of them die within the first week of life. One can only guess whether the law continues down to the first day of life. If you look at the Under-5 rate for Afghanistan and compare it with the IMR, you see this law holds true.

What does this importance of this law for you, as planners/implementers of health services? This relationship is key or targeting your interventions. Is it better to focus on under-15, under 5, or earlier?

Main Causes of Death: What are the main causes of child deaths in Afghanistan?

MSH 1977 Survey in 3 Provinces:

Jinns	21%
Diarrhea	19%
Respiratory	14%
Fever	9%
Swelling	9%
Measles	5%

CDC 1985 Survey in Refugee Camps:

Diarrhea	39%
Measles	24%
Unknown	21%
Malaria/fever	21%
Neonatal tetanus	9%

Main Causes of Morbidity:

Greenbook data 1987:

Diarrhea	32%
Worms	11%
Conjunctivities	8%
Cold	4%

Afghanistan has the same pattern of child deaths as most developing countries. The benefit for planners/implementers is that thousands of scientific studies and medical publications have been written on these same health problems. Directors of health services inside Afghanistan can use the lessons learned from other countries experiences.

As mentioned earlier, many governments around the world have undertaken a "Child Survival Revolution" to reduce child mortality. The Child Survival Revolution tries to reduce child mortality by concentrating of 4 selected disease categories which comprise the vast majority of deaths:

Diarrhea
Acute Respiratory Infections
Infectious Diseases
Malnutrition (which underlies and contributes to illness as well as causing death)

I'd like to discuss with you the documented effectiveness of the relatively simple technologies that exist for these 4 major child killers. We will raise questions about how you might implement MCH programs for Afghanistan using these technologies.

I. <u>Diarrhea</u> leading to <u>dehydration</u> is the major killer of children in Afghanistan, as in most developing countries.

Slide-dhml: In developing countries, especially tropical countries, a child will have an average of 2 attacks of diarrhea each year, or nearly attacks of diarrhea before age 5. Some children have 10 attacks in 1 year.

Slide-Dhm2: Probably, every day somewhere in the world, between 14,000, and 5,000 families bury a child who has died of diarrhea. Most of these lives could have been saved if health workers had taught the parents how to manage this condition. How do you think we can give families in Afghanistan information on how to prevent a death from diarrhoea? Who is the target audience for giving information or prevention of diarrhoea or treatment?

Slide-Dhm3: What is the cause of death when a child dies from diarrhoea? (dehydration-infection may cause the diarrhea but the infection does not cause death). Most diarrhea is self-limi... and medicines do not help. ORT is expected to be effective in 80-90% of episodes of watery diarrhea.

Slide-Dhm24: ORT means electrolyte and water replacement with sugar-salt solution and continued feeding.

Slide-Dhm9: This is a packet of full WHO formula. For Afghanistan, do you think it is better to promote packaged solution or salt and sugar? What are the pros and cons?

Slide-Dhm21: Malnourished children tend to have longer duration of diarrhea. However, ORT (fluid plus food) actually shortens the duration and volume of stool loss even for a malnourished child. health workers try to stop the diarrhea with drugs that actually prolong the illness.

As long as diarrhea lasts 2 things happen:

1. Food is malabsorbed.
2. Bacteria in the lower intestine invade the upper intestine causing further secretion and intestinal damage.

So, it is better to give ORS and feeding than just ORS alone because ORS and feeding have a longer term effect on survival.

Slide-SSII: Except for a few nations with small, easily reachable populations, ORT has not been implemented anywhere in sufficient depth or duration to have a major measured impact. Egypt is the 1st nation with a sizable population (50 million) to build an ongoing national program. This slide is taken in a rehydratin centre, which were set up in hospitals to teach mothers how to care for the sick child. This series of slides simply demonstrate the powerful effect of ORS.

Slide 9:00 a.m.: Mother at 9 am, with dehydrated child. Child shows sunken fontanelle, sunken eyes, lethargy.

Slide 9:15 a.m.: Spoon by spoon.

Slide 10:00: Remarkable improvement in 1 hr. Doctor demonstrates technique.

Slide 1:15: Ready to breastfeed.

What can be the actual effect of ORT on overall child mortality and nutrition of Afghan children? Under ideal conditions how many lives do you think could be saved in Afghanistan if all mothers knew about ORT and if packets were available? How would the under-5 mortality rate change? For various reasons related to study methodologies, it is difficult to measure diarrheal deaths and illness and their relation to therapy. Even if positive changes are measured, we cannot rule out the possibility that ORT only postponed a diarrhea-related death. For example, a study in Honduras showed that deaths caused by diarrhea did drop during an ORT campaign, but no change in overall child mortality could be found.

Of the few studies that exist show, there are several facts that stand out:

a. the largest impact will in children under 1 year of age: the next largest impact will be in children under 2 year of age;

b. a reasonable goal to aim for is a 50% reduction in death rates due to diarrhea.

Therefore, we can expect in Afghanistan, that ORT alone could lower overall mortality only up to 17%. We must take other measures simultaneously to save children's lives so a child's death is not simply postponed until the next illness.

II. Immunization

The next major child health problem is Infectious Diseases, which can be prevented by Immunization.

The target diseases are for Immunization are:

Slide MS 14 - Measles
slide PCi 8 - Polio
Slide PCi11 - T.B
Slide PCh 5 - Diptheria
Slide COTD 23 - Tetanus
Slide COTD 8 - Whooping cough

Slide PCb. More detailed information will be presented about immunization later in the course under the topic of "Disease Control". It is introduced now because EPI is one of the 4 key child survival technologies.

In terms of planning on EPI Program, the following points should be emphasised:

* Immunization will definately prevent the disease if the vaccine is potent and if it is correctly administered.
* The effect of immunization programs has been less than expected, to the difficulties of implementation -

  For example trying to get families to bring susceptible children for vaccination at the appropriate age.

  b) Providing potent vaccines in the right quantity when there is a poor logistics/distribution system for keeping vaccines cold.

Slide MS24. * The third point is that in most countries, when you compare the cost of EPI program with the # of lives saved or illnesses prevented vaccination is remarkably low cost. 100-300 Rs. /child

This slide shows the incredible advantages of EPI and the money that a Vaccination Program (EPI) actually saves. In the USA from 1963-1972, EPI prevented almost 24 million acute cases-709,000 yrs of life of measles. Prevented 1.3 million hospital days = 1.3 million dollars.
WHO estimate cost $ 5-15/or 100 Rs-300 to fully immunize a child. In Afghanistan, we estimate we could save another 17% of deaths through immunization.

III. The 3rd major child survival problem (along with diarrhoea, infectious diseases) is <u>ARI</u>.

Slide ARIe1. These mothers have brought children to clinic for symptoms like cough, fever, diarrhoea.
Most coughs are not serious, but sometimes this cough is a signal of a more serious illness which will need antibiotics.

Slid ARIe2. This woman took her child to a BHW because of his coughing. What kind of medicine did the nealth worker give the mother for the child (?) antibiotic. Was this necessary

No, not every child with cough should have antibiotic. It is not only a waste of drug supply, but it can be harmful. Most coughs are due to virus infections. As you know antibiotics do not kill viruses. So antibiotics do not help most coughs. Often a cough is accompanied by fever. but a fever does not mean a child needs an antibiotic.

slide ARIe3. This is a chest X-ray of a seriously ill child who might die. The arrow shows white shadows in the one of lungs. What dies this white shadow mean? That child has Pneumonia. Since Pneumonia is caused by bacteria, antibiotics can cure pneumonia. If your clinic in Afghanistan does not have X-ray how can your staff tell if the child has pneumonia(?)

Slide ARIe4: Watch his breathing. A child with pneumonia has difficulty breathing. you can assess the child by asking the family questions and examining the child.

Slide ARIe14: The health worker discovers, the child has a cough, but no wheezing, no chest indrawing, no fast breathing. What should you do in this case? She will need home care. Since most health workers feel they must give some medicine, and almost more so, patients expect medicine, it's to give cough mixture as long as there is no difficulty in breathing. If temprature is high, you can give paracetamol to reduce fever. But there are 3 rules of home care more important than paracetamol or cough mixture:

a) Health staff need to communicate with the mother to patiently feed child.
b) Give child plenty fluide
c) Family should be told to watch breathing, bring back if fast breathing.

ARIe23: What if a child has cough, fast breathing 60 x/ 1 minute, no chest indrawing? This child can go home - antibiotics plus instructions to family.

ARI22: Cough + fever chest indrawing? What can you do? Normaly refer for admission.

In terms of your own planning as an MCH Director, what can the medical system and community do to prevent deaths from ARI? case management, including training and supply at each level of the system.

Health Education in community - BHW's, dais, FBHW's should be trained to bring a child with severe infection to clinic (dais , BHW's).

Train health workers in accordance with their skill level- diagnose, treat, refer as needed. Each level should know how to manage a case of cough-

In community - if fast breathing-refer

In clinic - if chest indrawing-refer to hospital

All to communicate home care.

IV. <u>Malnutrition</u>: The fourth major child survival health problem, which often underlies of enhances death from previously mentioned disease, is malnutrition.

Slide PCc4: What kind of malnutrition does this child have? Gross marasmus-Muscle wasted no fat. What probably caused has marasmus? Difficulty in breastfeeding because bottlefeeding in the first year is a common cause. What could have prevented this?

Slide PCc8: What signs do these 2 malnourished children have? What causes kwashiorkor? (lack of protein + energy food) (Protein Energy Malnutrition Both caused by deficiency in protein + calories, sometimes both. From view of MCH Director, would handing out supplements from a clinic help in case of these 2 slides of marasmus + kwashiorkor.

SICip M17- Would health education program in your district stressing high-protein foods such as fish, meat, eggs be appropriate? Why not?

MIG- In addition to health education, growth monitoring has been the most important tool for diagnosis of malnourished children. Growth monitoring is regular measuring of weight (sometimes height) as child grows older. As major use has been to screen for health conditions which may otherwise go unnoticed. The advantage is that it is objective, and if performed properly, very accurate. The care shows a dangerous drop to show link between need for weaning food + proper development. how successful have growth charts been in improving health status? It is not as effective as originally anticipated, because of these conditions:

1- Mothers must understand that the relationship between the graph and the actual weight is a result of her attention to diet.
2- Health worker must be able to explain it
3- Adequate resources for problem-Followup with the growth monitoring is necessary for it to be of use. There must be sufficient quantity of food and medicines. There are very few places in world where regular growth monitoring functions a national scale. Indonesia is one or the few places where information is collected and used. it is successful because they involve the mother in data analysis + community effort.

TARGET INTERVENTIONS

Maternal Health:

- -Anemia Prevention/Treatment
- -Tetanus toxoid
- -Child spacing
- -Prenatal Care: Screening for high risk
- -Delivery by trained birth attendant
- -Referral centre for obstetric care

Infectious Diseases:

- Immunization Program (campaign based, facility based)
- -Community health education

Control of Diarrheal Diseases

-ORT by all health workers
-Sanitation/Water supply
-Community health education

Nutrition:

Acute Respiratory Infections

-immunization for measles and pertussis
-Proper diagnoses and treatment by all health workers

C. Dimensions of the Problem: MCH Summary

Technologies Exist: Technologies exist, the question is how to best implement and manage these technologies using scarce resources and within the constraints imposed by war, social patterns, and lack of skilled personnel.

For women and neonates, strategies include-

a. Health Information System
b. Dais training
c. Referral system (Dais, MCH Clinics with pre/postnatal care services, Obstetrical First Aid, Tertiary hospital Services)
d. Tetanus Toxoid
e. Family Planning
f. Continuing education in epidemiology and public health

For children under 5, strategies are-

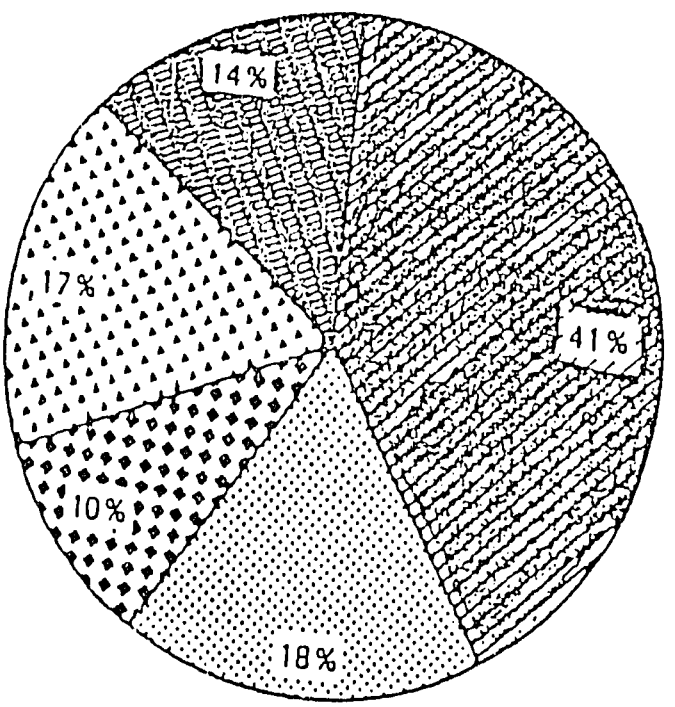
a. ORT
b. EPI
c. Case management of ARI
d. Growth monitoring and health education

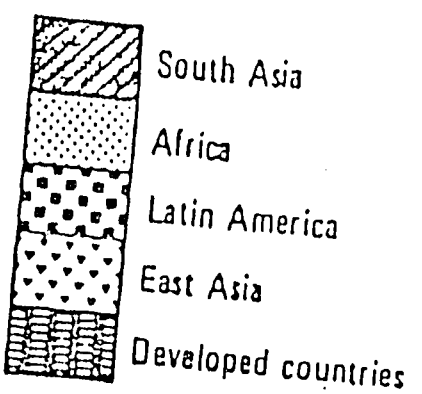
Death Road: The Road to Death demonstrates where and how to focus these interventions. The Road to Death highlights the relationship between maternal health and child survival. MCH must include interventions for women and children and these interventions have a synergistic effect.

Integrated Approach: MCH programs should ideally assume an integrated approach to health, although some parts like EPI may start as vertical programs. No single intervention will significantly lower death rates on a national scale, several measures are needed simultaneously.

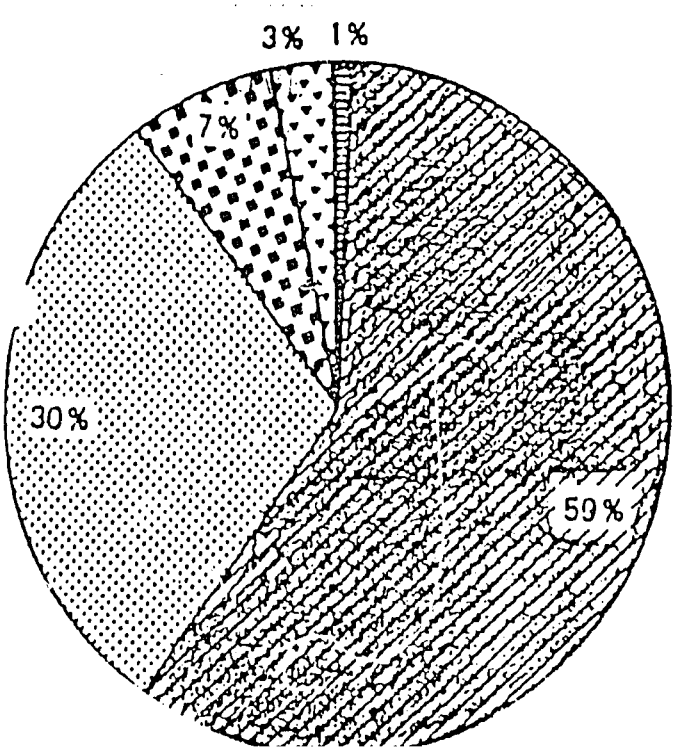
MOST BIRTHS AND MATERNAL DEATHS ARE OCCURRING

LIVE BIRTHS





MATERNAL DEATHS



WHO 861663

BEST AVAILABLE COPY

Primary Health Care What Does it Mean?

The village had changed during the past 10 year-and a major reason for the change was the Primary Health Care Programme. The heart of the Primary Health Care programme was the village. A village health committee had chosen their own village health worker who had been trained for 6 months. She had learnt something about diseases, how they could be treated and how they could be prevented. She had also learnt how to teach in the community, so now there was a 'family health worker' in every family.

She also learnt that health is not something isolated, but closely related to other types of development. She had learnt about grain storage so that more of the food harvested was protected from the various pests and was available for the villagers to eat or sell.

She had learnt about protection of water supplies and methods of sanitation, which had been implemented by the village. She had learnt about starting micro-businesses and about making ointments and medicines from the locally available plants. So now the village people made and sold their own soap and medicines.

She had learnt about team building and organisational skills. So now the village were making their own decisions about the kind of health care they wanted and were able to identify some of the resources and people which would be useful to them.

All this activity and development had led to a reduced infant mortality rate and much lower incidence of the communicable diseases. It has also led to a community which was much more in control of its own future.

This village does exist. It is a real place where many of the ideas of Primary Health Care (PHC) have been put into practice. so it illustrates some of the things which PHC workers can do and illustrates in practical terms what 'Primary Health Care' means.

However, in other places a policy o 'Primary Health Care' has led to rather different results. So this chapter will explain how the meaning of PHC has changed over the years and what it now means.

The development of a variety of ideas, which are now part of the PHC concept, has taken place rapidly during the past thirty years. Because ideas and programmes have changed so fast, there is widespread confusion concerning many aspects of this approach to health. This confusion affects the goals and planning undertaken by national governments and voluntary agencies. The same confusion spreads into the teaching and training of health workers and affects those who supervise and implement the programmes.

Teaching Health-Care Workers

Teachers who are training health workers need to understand clearly what is meant by the PHC approach and also to see their work as part of a broad international development.

This chapter explains briefly the many elements which are now an accepted part of the PCH approach and outlines why teaching PCH has a different emphasis from teaching hospital care workers and requires special skills.

1.1 ORIGINS

Primary Health Care originally meant the first care given to a patient in need. In this sense every traditional 'medicine man' gives PHC and so does every doctor working in general practice in Europe and elsewhere.

Until the 1950s and beyond, and even now in some places, PHC was understood in this sense. It was an extension of basic medical curative services into rural or under doctorated, areas.

To extend some curative services into under privileged areas where there were few doctors or hospitals, various types of 'auxiliary health worker' were trained and placed in outlying dispensaries or treatment centres.

The idea of training auxiliary health workers has a long history. Feldshers were trained in Russia at the end of the 19th century. Auxiliary workers existed during the colonial epoch, for example, 'tribal dressers' in the British colones in Africa and 'sub-assistant surgeons' of India.

But in the 1950s and 1960s there was a rapid expansion of these cadres and many types of worker were trained and variously named, for example, dressers, dispensers, orderlies and rural aides. These workers usually had a few years of primary schooling before a period of training. They were provided with a few simple drugs in their outposts and treated patients who came to see them.

At the same time, a more elaborate training of secondary school leavers created another class of auxiliary health worker- usually called medical assistants or clinical assistants. These auxiliaries were originally trained to work strictly under the supervision of doctors in hospitals, outpatients and urban clinics. Later, in the 1960s when the health centre idea became popular, these health workers were seen as 'team leaders' and placed in charge of health centres. At this period some preventive functions were added to their mainly curative work.

Many countries, unable to train special auxiliary workers, posted hospital trained nurse into health centres and outlying dispensaries. In this situation they necessarily assumed the function of prescribing as well as administering treatment, a new role and responsibility for which they often received no additional training.

An unspoken assumption during this period of PHC was the idea of 'substitution' or 'second best'. The ideal was seen as treatment by a doctor or in a hospital, but where this ideal was unobtainable, the common conditions could be treated by an auxiliary. This assumption and the resulting accusation of 'second class medicine' cannot be accepted now because the curative medical model itself has been challenged and the whole meaning of PHC has changed. As will be seen, the auxiliary is no longer seen as a substitute for a doctor but as an essential, indispensable agent of health promotion.

In the new concept of PHC the auxiliary is the key person. He does not substitute nd there is no substitute for him'

1.2 THE CHANGED MEANING OF PRIMARY HEALTH CARE

The concept of PHC now (1984) is very different indeed from the original idea of treating the sick. What is the change? and what has brought it about?

It is now recognised that 'medical care is different from 'health care'.

The medical care model of doctors and hospitals, auxiliaries and dispensaries helps individuals who reach them after they have become ill. One the other hand, the health care model finds ways and means to prevent disease and promote health in families and communities and attempts to reduce the total amount of sickness. To give a simple example, a dispenser could live in a village for ten years and treat all the cases of hookworm which came to him but there would still remain the same level of hookworm infection because the source of the infection had not been removed and even his treated patients would be liable to reinfection. A PHC worker, on the other hand, would not be content with only treating hookworm but would actively promote sanitary changes within the community to reduce the level of transmission.

Some of this new understanding-that 'health promotion' is different from 'disease-treating' - came through studies of the history of disease in Europe.

The pattern of disease in Europe in Past centuries was very similar to that in many developing countries today. Europe had epidemics of cholera and plague which killed large numbers of people, typhoid was endemic, tuberculosis rampant and there was a high infant mortality from measles, malnutrition, diarrhoea and whooping cough.

All of these conditions are no longer common in Europe. But this improvement was not brought about by medical treatment with drugs.

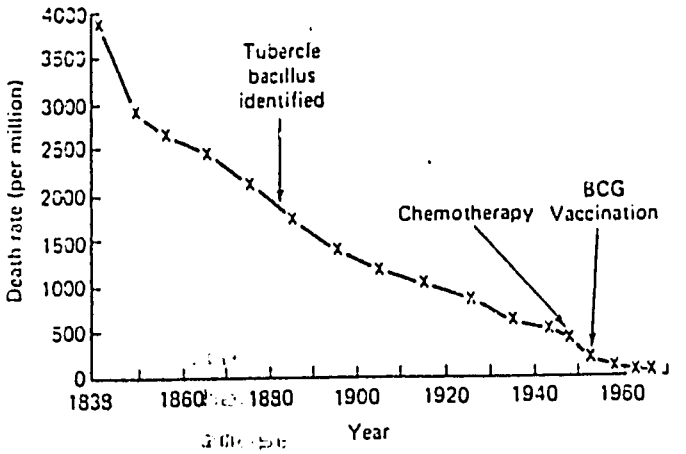


Figure 1.1 Respiratory Tuberculosis: means annual death-rates (standardised to 1901 population): England and Wales. (Reproduced from McKeown, T. (1979) The Role of Medicine, Blackwell, Oxford.)

Teaching Health-Care Workers

Health statistics show that reduced incidence of infectious diseases and lowered infant mortality rates occurred before the discovery of chemotherapy, antibiotics and most vaccines.

This is shown in figure 1.1 for tuberculosis. Mortality from respiratory tuberculosis fell sharply from the time when it was first recorded, even though the first effective treatment was only introduced in 1947 and BCG vaccination started in 1953.

The dramatic improvement of health status in Europe followed the introduction of clean water supplies, sanitation, and education (which brought the practice of hygiene into family life).

A good clean environment brings health to people

1.3 THE LIMITATIONS OF 'MEDICAL CARE'

There were many other reasons for dissatisfaction with the 'medical model' of care and the development of the PHC concept. The first was economic. The training of doctors and the provision of hospital facilities began to drain the budgets of developing nations. It was recognised to be economically impossible to provide sufficient doctors and hospitals for all the population-even if this were desirable. Also, many highly proficient indigenous doctors became increasingly dissatisfied with inadequate facilities and migrated to the developed world. This phenomenon, now called the 'brain drain', increased the shortage of doctors in developing countries.

A further cause of dissatisfaction was that the more medical science developed, the less appropriate it became to the basic needs of people in the developing world. The increasingly specialised and sophisticated technologies practised in urban teaching hospitals were recognised by many as irrelevant to the health needs of most of the population. For example, only a few people need kidney dialysis or neurosurgery but millions of children need measles immunisation.

Another change in thought followed the development of drug resistance in some bacteria and parasites. Many drugs which were active against the malarial parasite, for example, chloroquin and pyremethamine, are now ineffective in certain parts of the world. Many common bacteria are now resistant to penicillin. This has brought the realisation that drugs may be only a short term solution. These serious developments, together with the inflation of drug prices in the Western world, have compelled health planners to search for other solutions-that is, solutions which place less dependence on short term curative effects and emphasise the preventive aspects of health care.

For all these reasons, and many others, it became clear that the 'medical care model' was not only uneconomic but was also inappropriate to the major health problems of the Third World. Some of the differences between medical care and PHC are summarised in section 1.5 of this chapter.

Persons concerned with the health of people started looking for a alternative ways of care. In this search the World Health Organization played a leading role. And it was during this search that many ideas were formulated and tried out. Many of these new ways to improve health became included in the idea of PHC-and in this way, the words changed their meaning.

Some of these ideas which now form the PHC approach are explained below.

Primary Health Care is more than medical care

1.4 THE WORLD HEALTH ORGANIZATION AND PRIMARY HEALTH CARE

A new interest in health followed the end of the colonial empires, the rise of independent governments and the awakening of people to their 'rights' and 'needs'.

The World Health Organization both reflected and channelled this growing demand for improved health. This culmirated in the idea initiated by the Director General of WHO, Dr H.Mahler in 1975 which was expressed later in the now famous slogan.

Health for all by the year 2000

The resolution in which the nations of the world voted to work for this goal was passed by the 30th World Health Assembly in May 1977.

This resolution was rapidly followed by an international conference at Alma Ata (January 1978) which discussed PHC as one of the ways to bring about this goal of Health for All. This conference brought together many of the ideas and experience of the past thirty years and explained in a clear document the principles, strategies and elements of the PHC approach. at present, this approach is regarded by the World Health Organization as the most suitable road to follow towards the goal of universal health.

The PHC complex of ideas is by no means completed. further strategies are even now developing-in particular, ideas of using community evaluation as a motivator to action and methods by which health care can be partially self-financing.

Primary Health Care is not a package. it is not a finished, complete, defined methodology. Rather, it is a process or an approach which grows as our understanding of human development increases.

Primary Health Care is an approach to achieve health for all

1.5 PRIMARY HEALTH CARE-DEFINITION, PRINCIPLES, STRATEGIES AND ELEMENTS

Definition

The following is the definition of PHC which emerged from the Alma Ata Conference.

> 'Primary Health Care is essential health care based on practical, scientifically sound and socially acceptable methods and technology, made universally accessible to individuals and families in the community through their full participation and at a cost the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination.

As will be seen many of the basic principles of PHC are included in this definition.

Principles

Health care is part of total human development, social, educational and economic.

Essential health care means providing those things needed for a healthy life, water, food, sanitation, and so on.

Health care should be available and accessible to all people.

Health care should be acceptable to the community.

Health care should be appropriate-that is, relevant to the main health problems of an area.

Health care should be available, accessible, acceptable, appropriate.

Some Strategies of Primary Health Care

Below are listed some of the ways and means used in implementing PHC and achieving the goal of health for all.

Intersectoral co-operation. Primary health Care programmes should be set in a context of integrated development-housing, transport, agriculture, communications, education and other.

The prevention of disease and the promotion of health are essential activities in PCH.

Basic infrastructure. Some basic health facility should be established within reach of every family. This distance will depend on terrain, roads and available transport, but an acceptable average walking distance is usually taken to be 5 kilometres.

Referral system. The health facilities need to be connected through a referral mechanism to the hospital service.

Auxiliary health workers need to be trained to work in the health facilities.

Village health workers need to be trained to work in the community.

Traditional medical systems. Research is needed into the effectiveness of some traditional remedies. Training of traditional birth attendants is proving successful. Co-operation with and training of other traditional medical workers should be encouraged.

Health education is fundamental to PHC. Only through understanding the basis of a healthy life, can people make rational decisions concerning their needs and life style.

Community participation. Each community should be involved in the PHC service through the functioning of an active responsible health committee.

Health care should be relevant to the main health problems of each community.

Essential drugs for treating common conditions should be provided.

Cost effective and self-reliant. As a country and community develops, the provision of health care should grow. That is, the level of health care should reflect the total development and be within the means of the community.

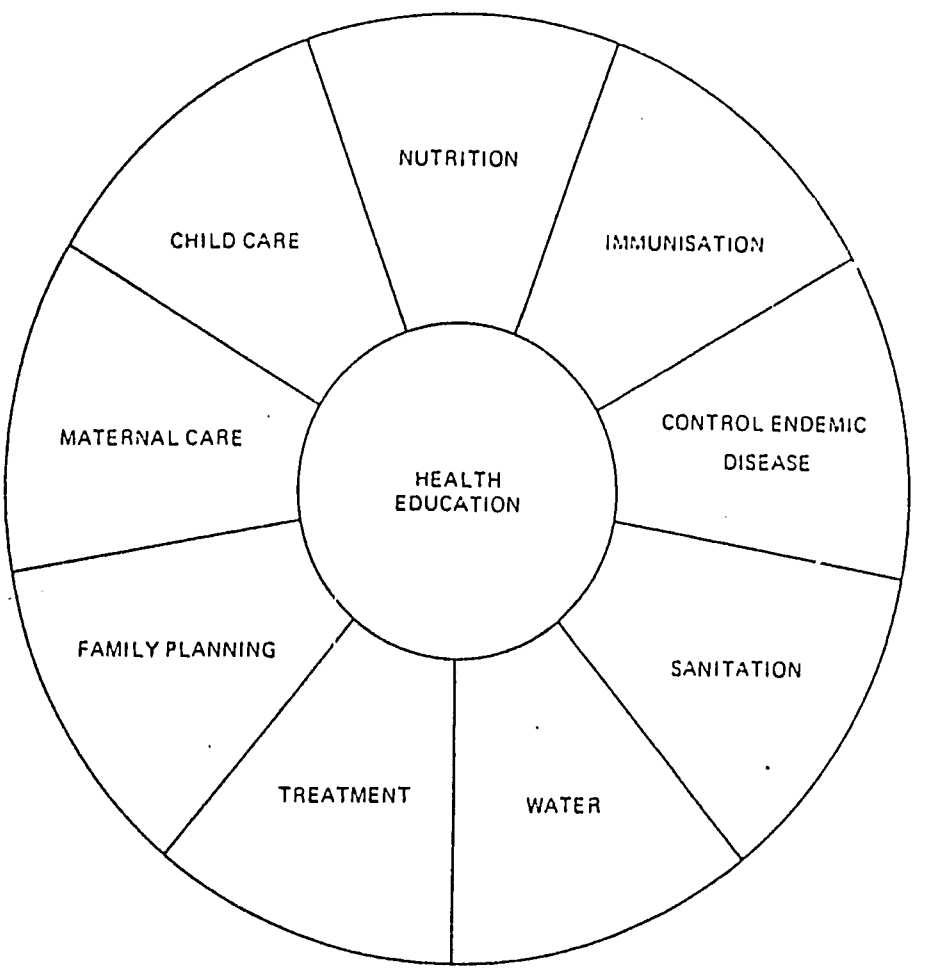
The Eight Elements of Primary Health Care

The World Health Organization has defined eight elements of PHC. Not all of these elements are present in every health care programme. They represent a goal to work towards. As many of these elements as possible should be encouraged in every community striving towards health for all. These elements are;

Health Education
Nutrition
Immunisation
Maternal and Child Health and Family Planning
Water and Sanitation
Control of endemic Diseases
Treatment of Common Diseases
Provision of Essential Drugs

We have looked briefly at the principles, strategies and elements of PHC as they have been developed over the years in the international world. It is important to realise that the way in which these are applied will be different for every country. Primary Health Care is an approach. It is a flexible system which needs to fit all types of circumstances. It must be adapted to the health problems, the culture, the way of life and stage of development reached by the community. Primary Health Care needs to develop as the community develops. It is part of the whole social development process.

Primary Health Care is an approach to health



The circle of Primary Health Care

1.6 THE TWO SIDES OF THE 'HEALTH COIN'-MEDICAL CARE AND PRIMARY HEALTH CARE

We have seen that PHC is different from medical care. It has a wider range of components (water, nutrition and so on) and many different strategies (community participation and intersectoral co-operation).

But both systems of care necessary and complement each other. A PHC worker needs to refer some patients to treatment centres or to a hospital for more specialised medical care. These two systems are best seen as two sides of a coin. Every country needs both systems of care.

Some of the differences between the two systems:

The Medical Care System	The Primary Health Care approach

BEST AVAILABLE COPY

The medical system is 'vertical', i.e. separate from other government departments	This functions best through intersectral co-operation
A curative system, emphasising treatment and drugs, doctors and hospitals or auxiliaries and dispensaries	Mainly preventive and promotive. Emphasises water, sanitation, immunisation, nutrition and health education
Emphasises improved technology and specialisacion	Emphasises common conditions, 'at risk groups' and reduction of infant mortality
Treats individuals who are sick	Helps healthy people in the community to prevent sickness as well as treating the sick
Auxiliaries are regarded as substitutes for doctors	Auxiliaries are the main agents of health promotion and change
Health is seen as a technology brought in from outside	Health promotion is a family and community activity
Discourages traditional medicine and ignores culture	Encourages the health positive aspects of traditional medicine and cultura
Is expensive, with a strong bias towards urban areas and hospitals.	Is less expensive with a bias towards equal distribution, rural areas and the urban poor
Often paid for by central government finance	Partly supported by community self-reliance
Causes the patient to be dependent on the doctor, nurse and health service	Helps the individuals and communities to become more capable of looking after themselves

BEST AVAILABLE COPY

Definition

Population Participation - the organized efforts to increase control over resources and regulative institution in given social situation on the part of groups and movements of those hitherto excluded from such control (UN Social Development)

Community Participation - not limited to the provision of cheap labor or few material to implement plan made by someone else. Neither is it the passive acceptance of a service or the mere physical participation in vertically planned health activity. It is a process of identification with that activity, a mental involvement; a feeling of belongingness which may be manifested in planning and action (Expert. UNICEF)

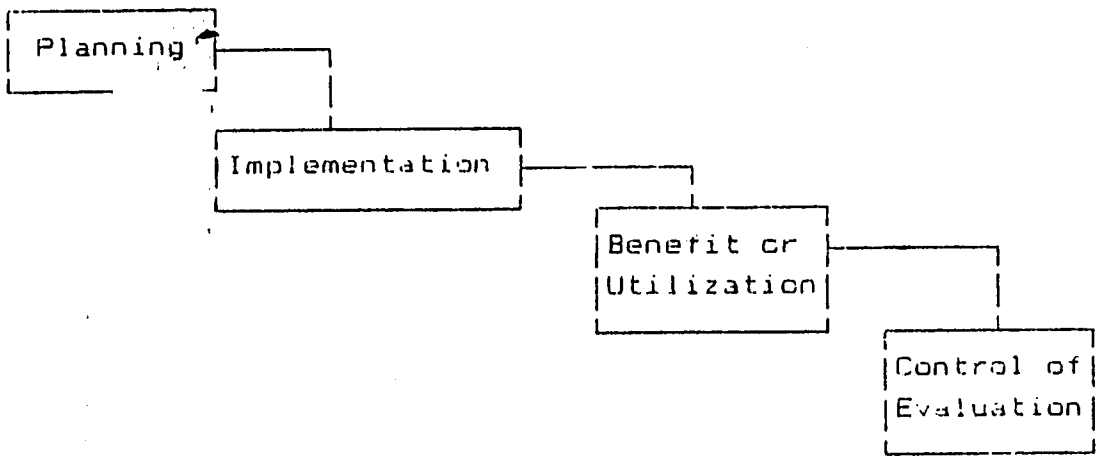
People's Participation - in development is a movement by the people themselves to become involved in their own development at all levels. This movement requires a certain sequence of steps: conscientization, organization, capacitation and concrete action to prove tangible improvements in the community's level of life. The focus of this approval is not on the delivery of services but rather on the shift of power on who made the decisions about that delivery.

Community Participation - is a process by which partnership is established between government and local communities in planning, implementing and utilizing health activities in order to benefit from increased local self-reliance and social control over the infrastructure and technology of PHC (WHO)

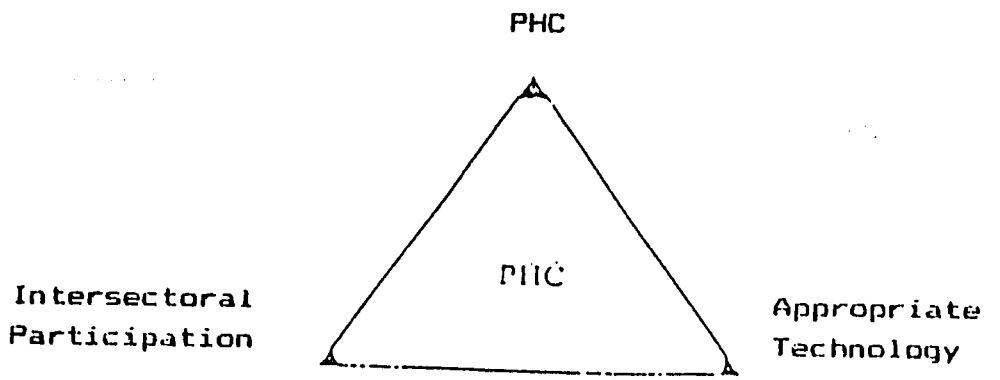
- it is only the observable evidence of involvement.

<u>Community Participation Process</u>

4 Major Dimensions of Participation based on the Definitions



Decisions are major issues in participation. Planning involves who decides on problems, goals, strategies and the required resources to solve the problems. Implementation involves decision - making, too. Implementation has something to do with labor, contributions, materials, finances and management in carrying on with he project. another question is who will benefit from the project and who will control and evaluate the operation of the activity. the one who has the power can act or make the decision.



PHC TRIAD

Values of PHC Approach

1. equity and justice
2. individual and community self - reliance
3. interrelationship between health and development

Basic Reasons for Having Community Participation

1. more accomplishment
2. services at lower cost
3. things are done the right way
4. guarantee felt need involved
5. use indigenous knowledge and practice
6. free population from dependence on professionals
7. intrinsic value
8. catalyst for further development

Delivery of PHC based on Master plan

I. Community-based PHC:

1. Selection, training, or upgrading of the primary health worker (BHW or midlevel) at the basic health centre level for the delivery of PHC, supervision of VHV's and TBA's.

2. Recruitment and training of traditional birth attendants. Specific target areas would be addressed initially based on community profile and resources.

3. Provision of medical kits from BHC's for BHW's and TBA's with periodic replenishment of the consumable items.

4. Conducting continuing education programmes for supervision purposes and upgrading health workers knowledge.

5. Integration of the vertical projects and the manpower. The authorities of both sides are expected to make plans related to their programme area and evaluate if the plan is being implemented properly. Training of the integrated staff at all the different levels will be carried out by them. Moreover, they will conduct operational research to find out better means of implementation. Actual implementation of their plan and programme will be done by the integrated health services at the various levels. Integration of activities of all the vertical projects at the district level will strengthen the district health system.

6. Selection and training of VHV's with the help of village health committee to participate in health programmes. In areas where possible targets would be set for these activities based on indicators relating to feasibility and support available for this type of programme.

II. Rehabilitation of basic health services facilities at the District level in support of PHC

1. Survey of existing health facilities supported by all parties within target areas. These surveys will be undertaken in order to define the resources which are in place and their operational and structural capacity.

2. Rehabilitation of basic health centres, which were rendered non functional, due to damage caused by war or lack of maintenance.

3. Reconstruction of those basic health centres partially or completely destroyed in areas where there are no other health facilities for the provision of health services to rural population in remote areas.

4. Rehabilitation and reconstruction of all other heath facilities which are yet non functional and located at rather closer distances from provincial hospitals.

5. Relocation of specified existing functional health facilities which due to placement do not serve an adequate population.

6. Supervision and in-service training of community based primary health worker working in rural areas.

7. Strengthening the laboratories located at these levels to support early detection of major communicable diseases.

8. to upgrade or rehabilitate existing Comprehensive health centres which in fact a BHC + 5 bed facility as a first referral level for the provision of comprenhsive health care.

9. To strengthen and establish primary care h
(Basic health centre with
a back-up support for 3-4 districts BHC's in rural areas.

10. To provide transport for supervision of BHC's activities in the field and for conducting training

BEST AVAILABLE COPY

programmes.

11. Provision and procurement of procedural manuals for the staff of basic health centres and health posts.

12. Provision of supplies and equipments for proper functioning of the provincial hospitals.

13. Laboratory and other appropriate technology has been dealt with under separate headings.

III. <u>Secondary and Tertiary level health care services</u>

1. To establish and rehabilitate the Regional Hospital to render highly speciality medical services highly complicated and refer emergency cases.

2. To supervise the implementation of various vertical programmes which have already been integrated into BHC's.

3. To undertake the various training programmes on technical as well as managerial for all the categories of health personnel at the BHC's and provincial levels. Refer to discussion of health manpower whereby the decentralization of training is a goal.

4. Conduct periodic evaluation of various health programmes and participate in the process of reprogramming and planning.

<u>Facilities</u>:

The facilities needed as a first referral service at the district level starting as described earlier include the following:

1. Basic health posts are situated at the village level serving a population of 500-5000 people. Since these posts are supplied as part of the community contribution there are no costs associated with them except of transport and essential supplies. Budget listed in Table 5.
2. basic health centre at the district and subdistrict level or in large villages depending on the population.
3. Comprehensive health centre at the district level depending on the population density.
4. Primary Care Hospital with 15-20 beds for 1-4 districts depending on population and geography.

In this plan to consider the reconstruction and rehabilitation of the necessary health facilities there are two important factors to consider.

First, it is important to note that the effective catchment area of any
Basic Health Centre is optimally within a radius of 3-10 kilometres. Each administrative district and sub district has vastly different total area, geographical features, population dispersion and composition which influences the population base any particular health unit can serve. Based on the low geographic impact of any such health center alternative approaches must be considered to reach a larger percentage of the population.

Second, the number of operational health facilities at all

levels within the pyramid currently available within Afghanistan is not entirely clear due to the multiple sources of support including the Government of Afghanistan, the Afghan Interim Government, Nongovernmental agencies as well as others. Prior to the renovation or construction of any health facilities it is imperative that surveys be undertaken in order to address: The numbers of these health facilities which can e utilized as health centres or hospitals; the extent of damage to the existing health facilities with estimates for the rehabilitation. Based on this information the numbers of facilities needed to be newly constructed as proposed within this Masterplan may be reduced.

What follows here is the description of the needs based on the criteria as stated in the beginning of the chapter. The background regarding each type of facility has been described and is also available in the table defining population base.

PHC Infrastructure

The foundation of the primary health care pyramid in the country at the time, is the primary health worker (PHW) or Basic health Worker (BHW). Most of the health problems which cause death nd disability in Afghanistan can be handled at the village level by BHWs working with a referral system which provides support and feedback.

The primary health workers or BHWs serve as the level of entry to the "formal" health system. These workers are taught to provide basic preventive community health education on topics for common, potentially life-threatening conditions such as diarrheal disease, malaria, and acute respiratory infection. Finally, they are taught to play a supportive role in immunization programs. These health workers are based within the villages in what are termed health posts. Often these consist of one room within the home of the health worker or the space is donated by the community authorities. Currently there are over 1432 BHW's active in rural Afghanistan. BHW training capacity is being built to train and support a ratio of at least one BHW for every 5000 people, though in less densely populated areas or in very difficult geographic areas, one BHW may serve as few as 500 people. The target area size is estimated at 3-5 kilometers.

The next level in PHC is the Basic Health Centre. Basic health Centres are taffed by one physician or two to four midlevel health workers and serve a community base targeted at 5000 to 30,000 people. The midlevel health worker is taught to diagnose and treat the most common health problems (70-80%) of patient visits. Within the rural there are estivated to be 2500 midlevel workers supported by various sources. This level of worker is designed to extend the scarce physician resources. These Basic health centers are usual for the subdistrict or district level services. They are expected to serve as centers for immunization campaigns also.

The next level is the comprehensive Health center or the Basic health center with 5 inpatient beds. Ideally, a comprehensive health center is staffed by a medical doctor with the support of midlevel workers. Under the present circumstances, however, many of these facilities will not have a fully qualified medical doctor. This type of facility is designed to serve a target population of 30,000-50,000 people.

The next level in the in the PHC pyramid is the Primary Care Hospitals which are expected to serve one to four districts, depending on population and geography. The target population is greater than 50,000. Primary Care Hospitals should be staffed by one to three medical doctors and be expected to have ten to twenty patient beds, a field laboratory, and portable X-ray capability. PHC hospitals will serve as the main referral point for patients from Comprehensive and Basic Health Centers.

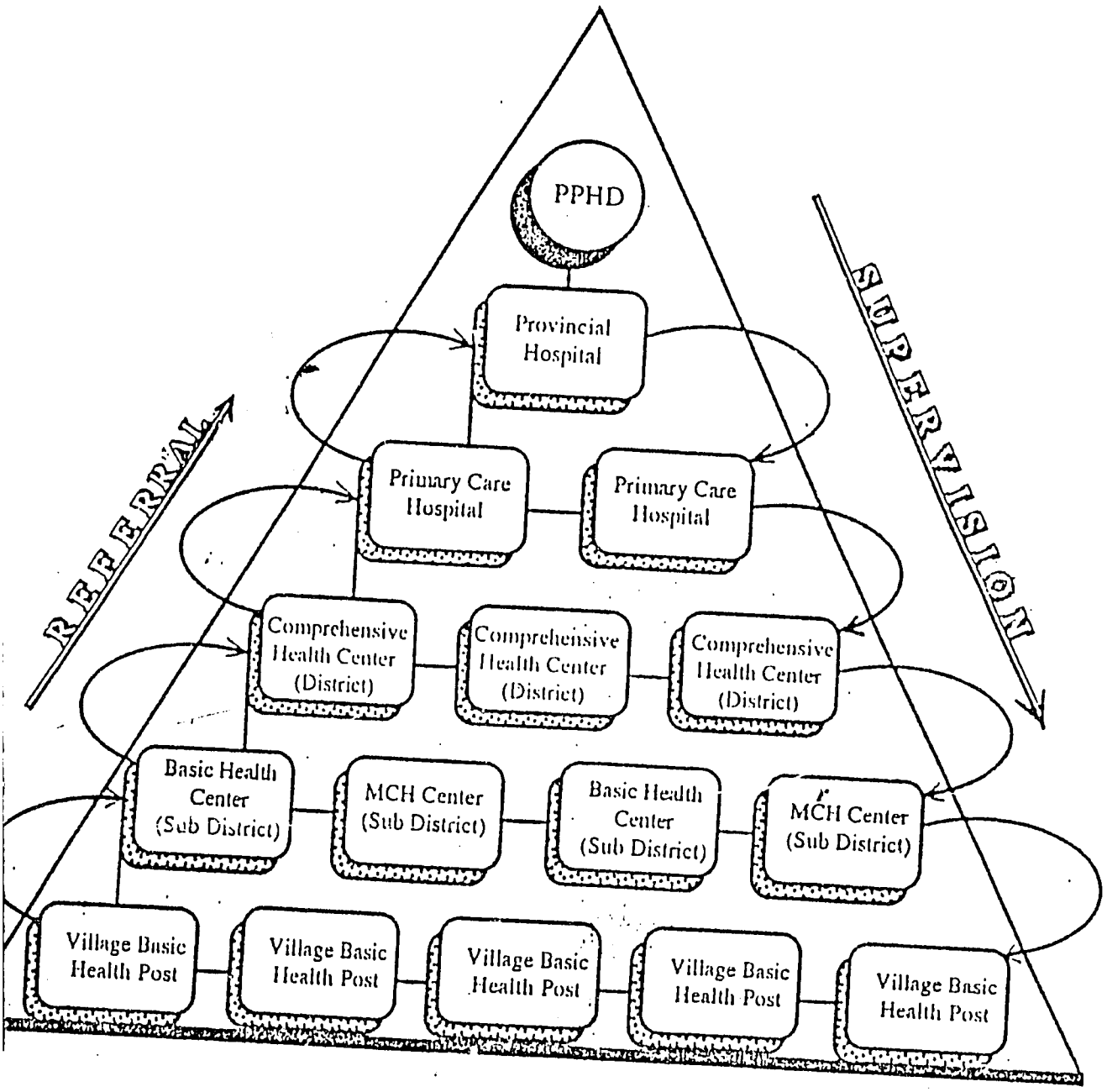
The next level is the provincial hospital which will offer specialized medical services, most major surgical services, freeze point capability, health worker training expanded laboratory services, prosthesis fabrication, and other more specialized services will be provided by provincial hospitals and small number of regional referral hospitals located in major cities. Though provincial hospitals are expected to have up to 50-100 beds. the facility is designed to cover at least 1 province.

The regional health hospital is designed to cover 3-6 provinces and has 150-200 beds. The services offered will include a more advanced technology with regards to laboratory and radiological services.

The national hospitals are designed to provide the higher medical education and referral services within the country.

Due to numerous years of conflict the actual number of operational facilities at each of the levels described here is not entirely clear. The absolute numbers in the midst of a fluid political situation is changing and although it is known is that physical resources do exist supported by both sides an inventory based on standardized survey formats is necessary. It is true that some of the health resources serve a very large target population and function in a nonpartisan manner rendering care to all Afghans whereas others are poorly operational or under utilized due to placement or management. It is the goal of both parties to create a clear understanding of what exactly does exist and based on this information undertake an exercise which will lead to either reallocation or reconstruction/construction based on needs and set targets within the overall design o sustainability. Therefore, the budgeting and detailed planning at this time can only be an approximation based on estimated population and the best information available regarding what currently exists.

AFGHANISTAN
PROVINCIAL HEALTH SYSTEM



BEST AVAILABLE COPY

3. FRAMEWORK FOR HEALTH PLANNING

A. ACHIEVING IMPACT

The most important objective of any health system is to have an impact on health status - to reduce mortality and morbidity to the maximum extent possible. A health plan for Afghanistan must have the same objective. To achieve the maximum possible impact with a given level of resources, the following questions are important:

1. What are the most important and most frequent health problems; what are the most important causes of death, according to age and sex?

2. To what extent will Afghans go to government health facilities when they are sick and to what level (village level, health center level, or hospital level)? To what extent will Afghans use private sector services, traditional healers, self-care, or do nothing at all when they ar sick?

3. Government health workers, at different levels, will be able to see that number of patients in a day (that is, what will be their "productivity")?

4. Given particular health problems (such as malaria, pneumonia, or diarrhea), what kinds of interventions at what levels will have what sort of impact on mortality and morbidity?

5. To what extent will "vertical" programs (such as immunization or malaria-spraying) have an impact on mortality?

To answer these questions one must make a number of assumptions based on the best available information and, to some extent, on guesswork. With experience, and with better information, the assumptions can be modified and improved. These assumptions are very important since health planning priorities heavily depend on them

B. BUILDING A SUSTAINABLE DELIVERY SYSTEM.

Whatever health system is developed inside Afghanistan over the next five years must be sustainable by the Afghans in the long term without substantial donor assistance. This is because of the likelihood that donor support will be considerably reduced as the world's political interest in Afghanistan is reduced. With this consideration in mind it is essential that Afghans use donor resources wisely so that they will not be stuck with a health system ten years from now which they cannot afford to maintain. The decisions that are made now and over the next one to two years about how donor funds are spent will determine whether Afghans can sustain their system ten years from now.

A sustainable health system in Afghanistan in the year 2000 is one in which the recurrent costs are affordable by Afghans (including government and private sectors). In order for this to happen there must be some combination of cost reduction and revenue generation applied to the present system. Large hospitals are very costly to maintain and their health impact is very small when one considers the total population.

For example, in Ghana in 1978, hospital care received a very disproportionate amount of national health funds, compared to primary health care, for the portion of the population served by hospitals.

If this kind of imbalance is to be avoided in Afghanistan's future, there must be careful planning now which considers the various options for investing in health care and which rejects those which lead to high long-term recurrent costs without a corresponding benefit in terms of health impact.

What are some of the options for cost reduction and revenue generation for Afghanistan's future?

1. **Cost Reduction and Control**

   - Reduce and/or eliminate salaries for village-level health workers.

   - Build only the minimum number of hospitals necessary and use the least expensive technology required for a major health impact.

   - Use only drugs which are generic, have a high impact, are therapeutically necessary, and which are rationally prescribed.

2. **Revenue Generation**

   Consider having patients pay for curative services and for drugs (revolving drug funds).

   Consider cross-subsidies (wealthier patients subsidizing the cost of poorer patients).

C. REVENUE PROJECTIONS

Traditionally, health care services provided by the Afghan government have been free of charge. Funds to pay for these services have come from different government revenue sources such as taxes and sale of state owned resources. Both of these sources depend on the nation's levels of total production and income. In the past these have been modest resources, and in the near and medium term it is unlikely that they will even reach these historic levels.

The government can consider the various levels of funding it may be able to provide, but there will be obvious constraints above certain levels. While donor funds can be encouraged, they are rarely available for covering general ongoing recurrent costs. It is possible that the health planner can target certain health problem areas that are of more interest and importance to the donors (such as immunization and rehabilitation), and receive discrete support for these. These will probably still result in a shortfall of funds in providing the level of coverage and health impact desired by the health planner.

POTENTIAL FUNDING SOURCES

	CAPITAL DEVELOPMENT (a)		RECURRENT OPERATING COSTS(b)		COMMENT
	1989	1999	1989	1999	
Government of Afghanistan	--	++	--	++	Tax base over next decade uncertain.
Donors					
UNICEF	++	++	++	++	Training,vehicles,commodities,tech,assist.
WHO/UNDP	?	++	?	?	Funds currently through PVOs & Kabul.
UN Operation salam	?	++			Potential large capital support in reconstruct.
U.S.A.I.D.	++	?	++	?	Mostly development & commodities long-term
European Donors (c)	?	?	?	?	Interests uncertain.
Japanese	?	?	?	?	Interests uncertain.
Arab	++	?	++	?	
Countries(d)	++	?	++	?	
Soviet Union					Current assistance is through Kabul.
PVOs	++	?	++	?	Long term involvement uncertain.
Patient Charges	--	--	--	?	Charges for drugs, curative services possible.
Community Contribution	--	?	--	?	Community participation possible.

(a) Renovation, construction, start-up training, major equipment, vehicles

(b) Drugs, supplies, salaries, transport costs

(c) Includes Sweden, W. Germany, Britain, EEC and other current and potential European donors.

(d) O.I.C., Saudia Arabia, Kuwait, Sudan, and other bilateral programs.

BEST AVAILABLE COPY

In the mo . we have looked at thr oaches to funds to pay for health services: government sour mited by the economic growth of the country; donor aid. n is likely to reduce sharply over time; and fees from patients/"users", which are subject to the users' economic health.

As an alternative to reducing health services, it is possible to try to recover some of the costs of providing health services and drugs from those who directly benefit from them. A variety of user fees can be tested in the model, ranging from a flat per visit fee, to drug costs, to charges covering costs only for curative visits. In fact any or all of these can be considered, and in varying proportions.

D. PLANNING IN AN UNCERTAIN ENVIRONMENT:

Given the uncertain environment in Afghanistan, it will be difficult to make informed decisions. However, there are data that can be estimated and assumptions that can be tested.

Some proportion of existing resources will be used for hospitals, for health centers, for manpower development, for drugs, for vertical programs... but whether the particular mix chosen will be in Afghanistan's best long-term interest, whether the greatest possible health impact will be achieved or not, whether Afghanistan will be able to afford the system it creates without massive and unending foreign assistance... only health planning, despite all its imperfections, will increase the likelihood that the answer to all of these questions will be "yes".

The temptation to say, (The future in Afghanistan is so unpredictable that it makes no sense to go through a health planning exercise) must be rejected. Assumptions will have to be made about future health care costs and new the health system will function. As better information becomes available, these assumptions can be revised and new assumptions put in their place. Better data on epidemiological patterns, or disease incidence and prevalence, will improve the validity of assumptions. No matter how crude the planning process is when it begins, new data, new information coming in will gradually, over time, make the process more refined, more realistic, and a better predictor of the future.

6. Coverage and impact:

Given the health plan's number of health workers and facilities, the model attempts to measure the impact of the health plan. The model uses estimates of the effect that can be expected from particular aspects of the health plan on certain indicators of public health such as infant mortality. These are impossible to predict accurately, but do highlight trade-offs in health impacts as a result of different allocations of resources.

C. WHAT DATA CAN BE ADJUSTED?

Almost all the cost, utilization, and epidemiological data can easily be adjusted or modified. In addition, the planned services and location of facilities are expected to be changed to reflect alternative health plans. Further, there is a revenue generation section in which user fees can be charged to patients.

D. WHAT ALTERNATIVES CAN BE TESTED?

Once the model has provided a "full service" scenario for a provincial or national health plan, the planner has a base case to begin with. This incorporates the planner's review of the data relating to cost, utilization and epidemiology, and results in a plan for services in the absence of financial constraints.

The planner can compare the costs of this plan with the available government funds and make changes to the plan, either with respect to alternative sources of revenue, or reduction of services. Services can be altered by reducing either staff or facilities.

The facilities can be reduced or downgraded directly in the location table, or the planner can change the model's method of allocating facilities on population size by increasing or decreasing the population levels and the type of facility that a particular population size is assigned by the model. At the facility level, the planner can also adjust the services and staffing pattern at different facility types.

At the worker level, the planner can change the number and level of workers that deal with health needs and problems. The result of reduced staff will be lowered cost, and lowered health coverage or impact.

The major alternatives can be tested by shifting the location of health services, say from large hospitals to small clinics. The alternatives can reflect the difference in cost and impact of community-based health plan versus a hospital-based health plan.

Graph 1: Number of health Care Facilities

The first graph shows the number of "facilities" (health posts, clinics, and hospitals) which would result under the three basic alternatives. Naturally the "full service" alternative, which has no financial constraints, has the largest number of facilities in total as well as each level.

Comparing the other two alternatives, the PHC option has 7 fewer hospitals and 10 fewer clinics, but 73 additional health posts.

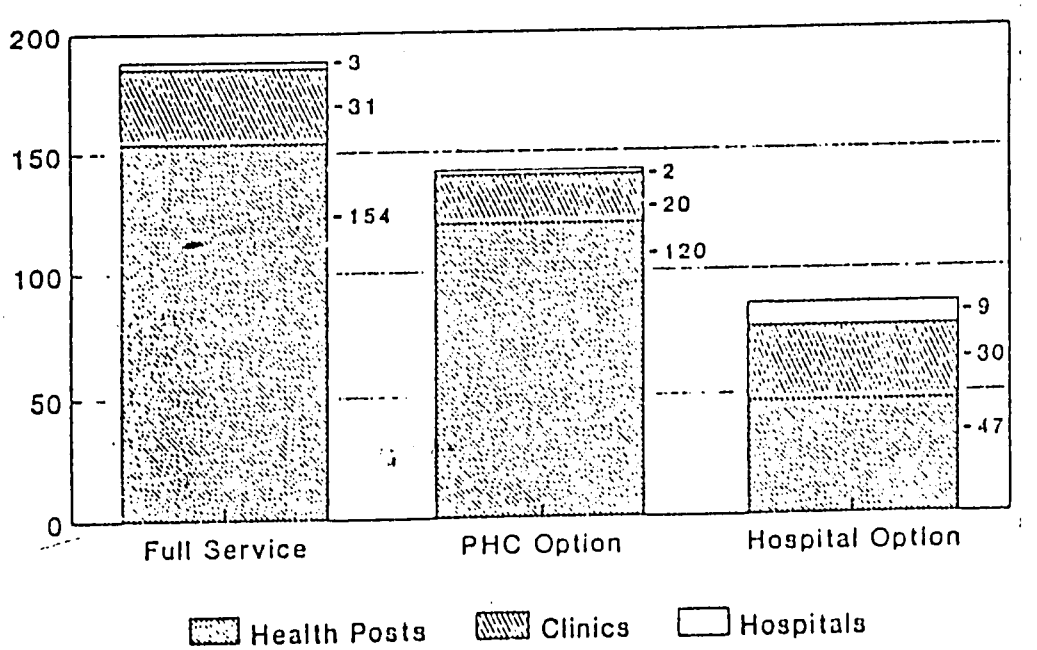
NUMBER OF HEALTH CARE FACILITIES
3 Alternatives, Tahkar Province

Graph 2: Number of Health Care Providers

The second graph shows the number of health care providers of each category (Basic Health Workers, Lady Health Visitors, Vaccinators, and Doctors) which would result under the three basic alternatives. Again, the "full service" alternative shows the largest number of resources.

While the PHC alternative has more than twice as many BHWs, LHVs, and Vaccinators, the Hospital alternative compensates with only slightly more doctors.

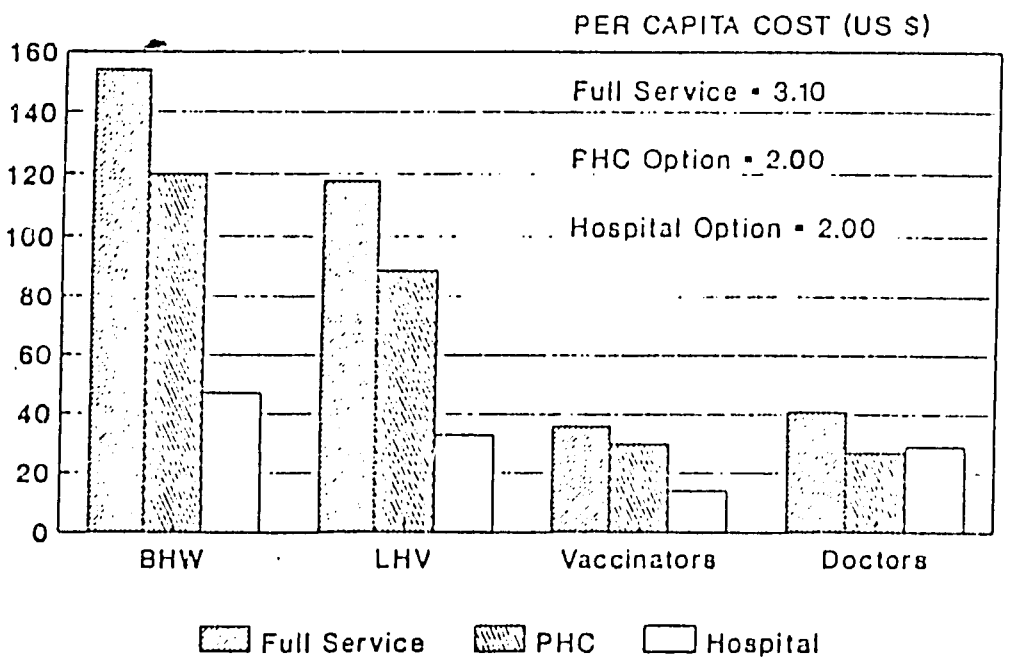
NUMBER OF HEALTH CARE PROVIDERS
3 Alternatives, Tahkar Province



Graph 3: Projected Coverage

The third graph shows the projected coverage of the population under each of the basic alternatives. Coverage is measured in three areas of health problems: immunizations, maternal care, and acute illness. Interestingly, each of the three coverage measures indicate that the hospital option would provide the least coverage compared to the other alternatives.

PROJECTED COVERAGE
3 Alternatives, Tahkar Province

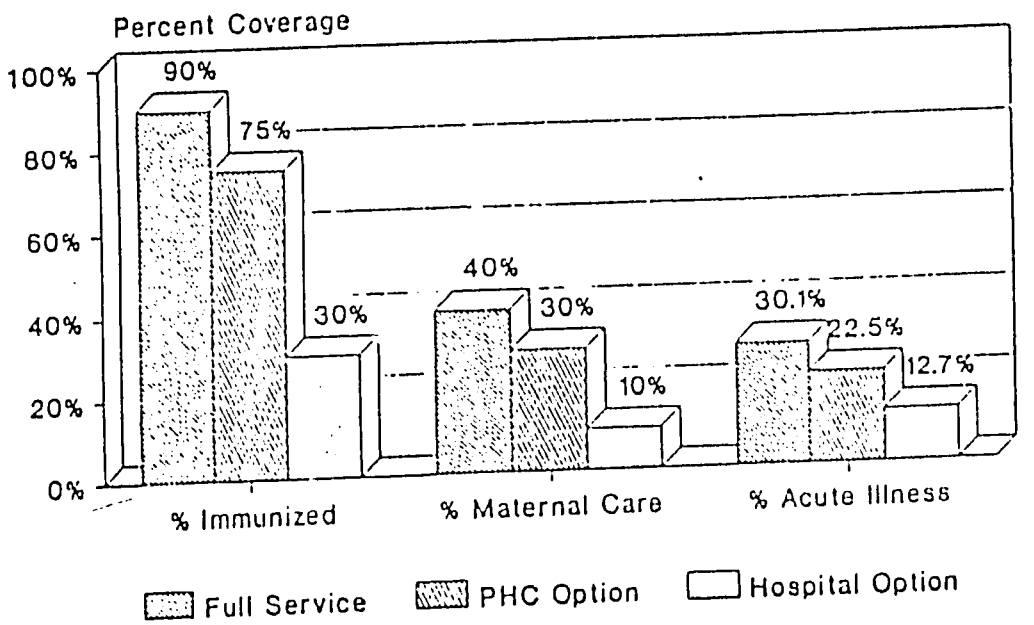


BHW • Basic Health Worker
LHV • Lady Health Visitor

Graph 4: Project Impact on Mortality

The fourth graph shows the projected impact on four major mortality indicators: infant mortality, child mortality, maternal mortality, and the crude death rate. Section 1, Current health Situation, compares these indicators for Afghanistan to other developing countries. Given current rates, this graph shows the projected percent improvement in each of the rates. While the "full service" alternative still prevails, the "PHC" alternative reflects significantly greater impact than the "Hospital" alternative.

PROJECTED IMPACT ON MORTALITY
3 Alternatives, Takhar Province



C. ISSUES IN REVENUE GENERATION

The government relies on taxes and income from state enterprises to provide funds to run the health system. The state of the national's economy for the near future does not indicate that this traditional source will be available in any quantity. Even when relatively strong, there will be other pressures on the overall government budget.

Donor funds may meet some of this shortfall in the short run, but it is unlikely to be sustained support. Alternative sources of revenue are fees charged for services and for supplies such as drugs. It is possible to direct these fees so that certain traditional pubic health programs and target service populations still receive free or significantly subsidized care, but that curative care can be somewhat self-supporting or can subsidize other services.

Fees can also help in motivating appropriate utilization of facilities, and encouraging compliance with referral patterns.

FIRST PRINCIPLES

OF COST-EFFECTIVENESS ANALYSIS

IN HEALTH

COST-EFFECTIVENESS ANALYSIS (CEA) is a technique for identifying the most effective use of limited resources. Originally developed in the military realm, CEA has come to be applied to many areas of social policy, including health care. Although the economics and medical literature contain a number of reviews of the technique (1-4), its principles deserve wider understanding as consumers, providers, and regulators increasingly participate in the shaping of health care policy. This paper is a nontechnical discussion of the principles of cost-effectiveness analysis applied to health, in particular, preventive health programs: these principles are illustrated with examples, and the strengths and weaknesses of this approach are discussed.

Principles:

Cost-effectiveness analysis is a way of summarizing the health benefits and resources used by health programs so that policy makers can choose among them. It summarizes all program costs into one number, all program benefits (the effectiveness) into a second number, and it prescribes rules for making decisions based on the relation between the two. The method is particularly useful in the analysis of preventive health programs, because it provides a mechanism for comparing efforts addressed to different diseases and populations (5). Cost-effectiveness analysis requires fewer troublesome steps than its close relative, cost-benefit analysis, because CEA does not attempt to assign monetary values to health outcomes or benefits. Rather, CEA expresses health benefits in simpler, more descriptive terms, such as years of life gained. Details of cost-effectiveness analysis vary among practitioners and circumstances, and some problems still have not been resolved satisfactorily. The version we describe is a straightforward one applicable to a broad array of health programs.

As alternative, widely used formulation (2) is that CEA is a method to determine which program accomplishes a given objective at minimum cost. This alternative definition can be derived from the more general formulation for cost-effectiveness analysis: that is, the analysis of tradeoffs between monetary and non monetary (in this case health) effects.

The five major steps in our formulation of cost effectiveness analysis are summarized in the chart.

Step 1. Define the program to be analyzed: its focus, processes, and limits. Seemingly minor differences in the definition of the program, such as targeting it to high-risk persons, can have major impacts on costs effects. For these reasons, a precise definition of the program is critical.

A given problem may be amenable to a variety of approaches. Cost-effectiveness analysis can be used creatively, in conjunction with health expertise, to formulate innovative programs. One might use cost-effectiveness analysis first to compare markedly different programs, such as immunization or treatment, as a means for preventing deaths from influenza. If immunizations are identified as the best general approach, CEA can then be used to refine variants of an immunization campaign and to tailor its design to the specific situation. Refinements involve such issues as the ages of the vaccines and the means of delivery. The program to be analyzed can then be described by answering the six questions generally covered in the lead to a newspaper article; who, what, when where, why, and how.

Step 2. Compute the net monetary cost for prevention and treatment of illness under the proposed program compared with the cost of the status quo. generally, costs are computed from a societal perspective, that is, the value of all societal resources used in the program are counted as costs, regardless of who pays for them. It is often convenient to compute costs on a per participant basis.

These are four parts to step 2. The first is to compute the gross costs in each year of the program's operation. For example, if the program includes screening, the gross costs are those of screening, followup of positive results, and treatment of persons who might otherwise have gone untreated if their cases had not been found. The timing of each expenditure relative to the beginning of the program is noted.

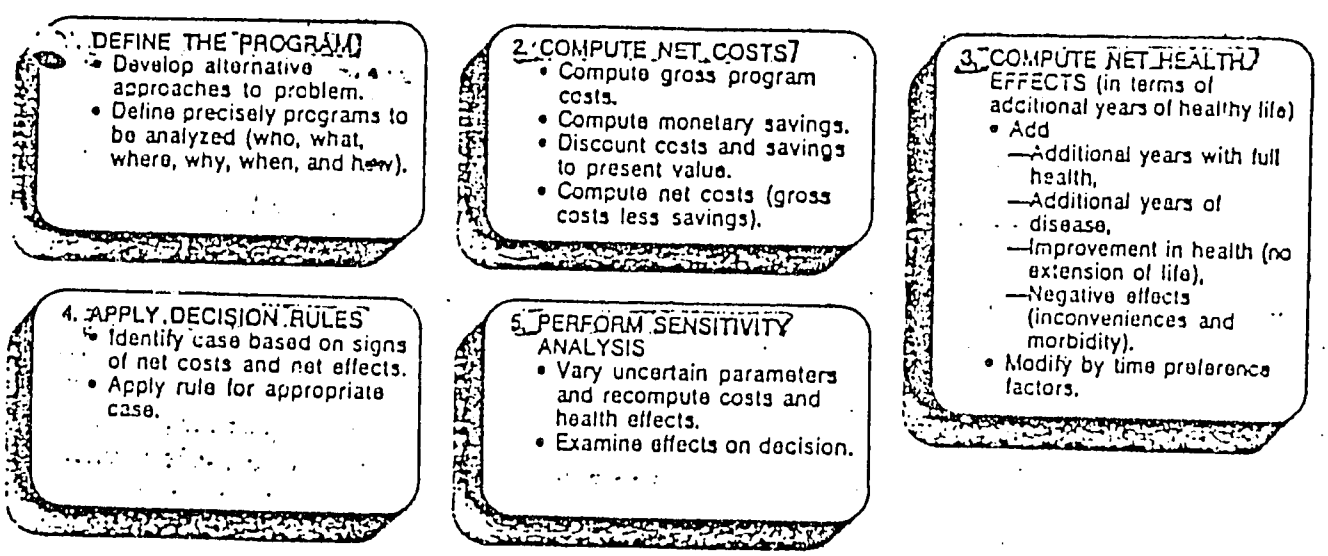
The second part in computing net costs is to calculate the monetary savings attributable to the program, sometimes called direct benefits. these savings are the costs of avoided treatment that otherwise would have been obtained. Note that this step involves calculating the demand, rather than the need that is obviated. It would be inappropriate to count as monetary savings the avoidance of costs of needed services which are not now provided, so-called unmet need. The effects of services that obviate unmet need will be included as health benefits under step 3.

The third component in computing net costs is discounting to present value. Discounting is a procedure economists use to relate costs and savings occurring at different times to a common basis. The principle is that future costs are less expensive than present costs because (a) most people would accept less money to receive it sooner and (b) a smaller amount of money can be invested by society and allowed to grow at a compound rate of interest (analogous to the growth of a savings account) to yield the amount of money required for future costs. This rate of interest is called the discount rate. For example, suppose that one cost of a program is an expenditure of $1,000 but the expenditure will not be made for 5 years. Suppose the discount rate is 5 percent per year. The $1,000 is then discounted to about $780. In other words, $780 put aside and allowed to grow at 5 percent will become $1,000 in 5 years. The principle of discounting also applies to savings achieved by the health program.

The discount rate, usually in the range of 5 to 15 percent, depends on the cost of obtaining money for the institution for which the analysis is being conducted (for example, society as a whole, an employer, or a health provider). Because there may be uncertainty or disagreement about the rate, the analysis is sometimes repeated using alternative discount rates. The discount rate used should reflect opportunity costs and the rate of time preference for money. Uncertainty and "market imperfections" (especially divergences caused by income taxes between the social productivity of investment and private return) complicate the determination of the appropriate discount rate. Despite a vast economic literature-see for example Meyer (6) - this issue is still not entirely resolved.

Net costs are calculated in the fourth part of this step by subtracting savings from gross costs-both in present-value terms. Net costs can be positive, negative, or zero.

Steps in cost effectiveness analysis:



BEST AVAILABLE COPY

Step 3. Compute the health effects benefits. Cost benefit analysis requires that benefits be expressed in monetary terms, but cost-effectiveness analysis permits the use of any commensurate measure of benefits. Lives saved, complications averted, or cases of illness prevented are examples of possible benefit units. A more general and sometimes preferable measure is the additional healthy year of life, also known as the quality-adjusted life year, or QALY (7). function years and well years are similar concepts (8). Additional years of healthy life are the algebraic difference between the number of healthy years a program recipient expects to live because of the existence of the program being evaluated and the number of healthy years he would have expected had there been no program. Estimation of these numbers must rely heavily on epidemiologic findings, expert opinion, controlled trials and, when available, randomized trials.

Health effects must be calculated from the same perspective (for example, societal or governmental) and basis (total, or per participant) as costs. The change in years of healthy life resulting from a program may be expressed as the sum of four types of health effects.

The first and most valued type of effect is additional years of healthy survival. If, for example, a preventive program postpones death by 1 year during which perfect health is maintained, then the effect is 1 additional healthy year of life.

The second type of effect is also a postponement of death, but during this extension of life, perfect health is not maintained. The proposed program in this instance is said to achieve "additional years of disease." Suppose that, for example, preventive care extends the life of a recipient by 1 year, but during it the recipient is restricted to home. Presumably, the recipient does not value that year as highly as a year of perfect health. The CEA should reflect this valuation. A year restricted to home might, for example, be valued at 80 percent of complete health. Percentages such as these are value judgments that should reflect the preferences of affected persons.

Although assessment of these preferences is difficult, progress in determining such values has been made through interviews with patients (9), through forced-choice questionnaires with professionals (7), and through interviews with consumers (8,10).

The third type of effect is an improvement in health without affecting survival. For example, one's symptoms or the restrictions of being homebound might be relieved. The benefit, in these cases, is the difference between the value of a year at lower life quality and the value of the year at the improved level of health.

The fourth type of effect is negative, the adverse effect arises because some health programs are inconvenient or have some associated morbidity, or restrict activities. Examples of preventive measures with negative effects are requirements that a staunch Bostonian move to Phoenix, Ariz, for asthma relief, that a person visit his physician weekly, or that he discontinue his favorite foods or activities. Presumably, a year with these restrictions is preferred to the alternatives of premature death or sickness, but it may not be valued as highly as a year of full activity without these restrictions. The negative effect is the difference between the value of a year without restrictions and the value of a year with restrictions. The negative effect might, for example, be 5 percent of a year.

Programs with only one type of effect (for example, averting deaths in a narrow age range) are relatively straightforward to evaluate; changes in that effect are compared to costs. More problematic are programs with diverse effects: perhaps extending some lives at perfect health, extending others at impaired health, enhancing the quality of health of other lives without extending them, and having negative effects on still other lives. to measure all these effects by a common metric is a formidable task. While the QALY holds promise of being an appropriate common unit, the practical difficulties of converting various impacts on health into QALY terms should not be underestimated. A more concrete measure of effects, such as cases of cancer prevented, should be used whenever it is common to all programs being compared.

All health effects should be subjected to a discount factor, based on the society's time preferences. Generally, people prefer their health benefits sooner rather than later (9). Suppose, for example, that one preventive measure promised 5 additional healthy years and those 5 years were to be the next 5 years. Another preventive program promised 5 additional healthy years that would not start for 20 years. We would probably prefer the program that provided us with the benefits sooner. This observation implies that benefits should be discounted, though not necessarily at the same rate as costs. Many analysts, for example Weinstein and Stason (4,11), add the further assumption that society's tradeoff between money and marginal health effects remains constat over time. This assumption achieves the convenient result that benefits are discounted at the same rate as costs.

The present values of the four types of effects can be summed to give a measure of present net effects. The net effects will be in units of years of healthy life.

Step 4. Apply a decision rule based on the net costs and net health effects. The rule must be selected from among the four cases, as described in table 1.

In the first case, the net costs and net effects are both positive; that is, there ar true benefits but also real costs. In other words, the health of recipients is judged to be better with the proposed program than it would have been without the program, but the program uses resources. In these situations a cost-effectiveness ratio is calculated by dividing the cost by the improvement in years of healthy life. The result is a measure of efficiency, expressed as dollars per year of healthy life. The lower this number, the more efficient is the program, in the sense that it can produce years of healthy life at relatively low cost for a year. If funds are limited, then they should be spent first on the more efficient programs; that is, on those activities that would produce years of healthy life more cheaply.

The second case is that the net costs are negative or zero and the effects are positive. The proposed program improves (or at least does not impair) health, and it reduces costs as well. This kind of program is obviously desirable. Health programs fall into the case 2 situation if they are inexpensive, highly effective, and prevent illness for which expensive treatment would be sought. Provision of sanitary water, immunization against common diseases, fluoridation of community water supplies to reduce dental caries, or antibiotic treatment of streptococcal sore throat are possible illustrations.

The third case arises when the net effects are negative and the net costs are positive. In other words, the morbidity and inconvenience associated with the preventive program more than offset the health benefits that it produces. Such programs cost money while worsening health. Unless compelling factors excluded from the CEA indicate otherwise, such programs should not be implemented.

In the fourth case, the net effects are negative, but net costs are also negative. A program in this category restrains cost but may sacrifice health. Closing a health facility is a case 4 situation. To measure efficiency in cost containment, a cost-effectiveness ratio like that in the case 1 instances should be calculated. A program that entails no sacrifice in health (an infinite ratio) is best. Otherwise, the decision rule should be to select the program with the largest ratio. The selected program achieves the greatest savings per unit sacrifice in health. Programs that save resources but result in worse health should not be excluded automatically; by shifting those resources to more effective programs, overall improvements in health could be realized for the same total level of expenditure.

Step 5. The final step in a cost-effectiveness analysis is to perform a sensitivity analysis. Many of the procedures required to estimate costs and benefits require estimates of data and preferences that are not known with certainty. For example, it is not possible to predict exactly the future discount rate. Opinions can differ about the value of a year with impaired health relative to a year of perfect health. Finally, medical experts are uncertain about the value of various preventive measures, and their professional assessments are constantly updated with new research.

The sensitivity analysis is the process of deliberately varying these uncertain factors to examine their effect on the decision rule. If the final decision is not affected by making different assumptions about these uncertain quantities - by choosing high and low estimates, for example - then one can be relatively confident of the decision. If, on the other hand, the decision would be drastically altered by different estimates, then one should be considerably more cautious in making recommendations. furthermore, one should, if possible, try to investigate further the precise values of these parameters before proceeding. One should also be alert to ways to gain more information about the uncertain issues.

Applications:

Once hypothetical and two actual applications of cost effectiveness analysis are presented as illustrations.

Hypothetical inoculation program. A hypothetical influenza inoculation program is being contemplated by a department of public health.

Step 1. Define the program. Vaccinations would be administered to 100,000 persons aged 65 and older over the next year by public health nurses in existing clinics and health centers.

Step 2. Compute net costs. On the basis of similar programs elsewhere, it is estimated that vaccinations cost $3 apiece (medications, marginal labor costs, and so forth). The inoculations are expected to prevent 1,000 cases of influenza this year and to result in 50 adverse reactions requiring treatment. The average cost of treatment for influenza is $50, and for the adverse reactions, it is $300. The discount rate for converting money and health effects to present value is 5 percent. Net costs for this program are calculated as follows:

Inoculations (10,000 x $3)	$3000,000
Treatment of reactions (50 x $300)	+ 15,000

Gross program costs	$315,000
Savings due to people not getting influenza (1,000 x $50)	-50,000

Net program costs	$265,000

Because all costs would occur in the first year, discounting is not necessary.

Step 3. Compute net health effects. It is estimated that 10 people will not die of influenza this year as a result of this program. They will live for 8 (all healthy) years. Persons who avoid influenza as a result of the program experience an increase in the quality of their life of .04 of a healthy year. (They would have felt miserable with the illness, but it would not have lasted long.) The 50 persons suffering adverse reactions have their life quality lowered by .09 for the next year. Thus, the three health effects ar prolonging 10 lives, enhancing the quality of 1,000 lives by preventing influenza, and impairing 50 lives through adverse reactions. A life prolonged by 8 healthy years is present valued not as 8 years but as 6,79 years, because the worth of all years after the first must be discounted. (The second year is valued as being worth 1 ÷ 1.05 = .952 of the first year and so on.) The other effects are first-year effects and need not be discounted.

The net health effects are calculated as follows:

Type of effect	Healthy years
Additional healthy years (10 x 6.79)	67.9
Health improvement for those spared the morbidity of influenza (1,000 x .04)	+ 40.0
Gross health effects	107.9
Negative effects of adverse reactions (50 x .09)	- 4.5
Net health effects	103.4

Step 4. Apply decision rules. This is a case 1 situation: definite health gains are achieved, but at net positive costs. Dividing net costs by net health gains, we obtain the cost-effectiveness ratio: $265,000 ÷ 1,3.4 healthy years = $2,563 per healthy year.

This ratio should help decision makers to determine whether to implement the inoculation program. If alternative programs extend lives at costs of less than $2,563 per life year, they should be given funding preference over the inoculation program. If alternative programs cost more than $2,562 per life year extended, the inoculation program should be preferred.

Step 5. Perform sensitivity analysis. All parameters for the analysis that are subject to doubt may be varied discover the impacts on the results. Suppose that some experts think that only 800 cases of influenza would be prevented by the inoculations. Such a supposition would reduce net savings by $10,000 (200 x $50), thus increasing net costs by that amount. Net health effects would be reduced by 8 (200 x .04) healthy year. The cost-effectiveness ratio is now: $275,000 ÷ 95.4 healthy years = $2,883 per healthy year.

Would this change affect decisions about the program? The first decision considered - whether or not to implement the inoculation program alone-might be affected. If decision makers conclude that they can afford to save lives and to enhance health at a cost of $2,700 per healthy year and that they cannot afford to pay more than this, then the decision is altered. Under the original analysis, the program would be implemented; under the revised analysis it would not be. The sensitivity analysis indicates to the decision makers how much uncertainty resides in the analysis that guides their actions.

Stool guaiac test. Neuhauser and Lewicki (12) analyzed the stool guaiac test in screening for colon cancer. The decisions in this application of CEA are both the basic desirability of the test and the optimal number of retests per patient. The cost-effectiveness approach may be used to address both issues. To reduce the chance of missing a case, the test can be repeated, but there are followup costs for all positive tests, both true and false positives. As shown in table 2, the cost per additional case identified mounts rapidly with test replications. The first screening test is highly cost effective: it gains an additional year of life for only $294. Further tests gain additional life years at progressively increasing costs. The additional benefit from six tests compared to five is so slight that the cost per additional case discovered, and the cost per year of life gained due to the sixth test, are in the millions of dollars. Pursuing such a screening program to the last degree of perfection is inefficient. Cost-effectiveness analysis indicates that resources might better be spent elsewhere, perhaps by more outreach and screening of high-risk persons.

Mobile coronary care units. A mobile coronary care unit is an emergency vehicle with equipment and trained personnel for monitoring the victims and providing emergency treatment for heart attacks. It is intended to reduce mortality prior to hospitalization, the period when half of the heart attack deaths occur. Zeckhauser and Shepard (13) performed a preliminary analysis under the optimistic assumptions that these mobile units cut prehospital deaths in half and that the additional survivors have a prognosis comparable to past heart attack survivors (table 3).

Discounting costs at the rate of 5 percent, they estimated the cost per 30 year-old male of having a mobile coronary care unit available for the rest of his life. The present-valued cost over the subject's remaining life time for the unit and staffing it is $49. The cost of treating heart attacks that the recipient would not otherwise have lived to suffer is $52, and the cost of other medical treatment arising from greater longevity is $29. The total is $130 per person.

As an initial indication of health effects, the authors calculated the impact of the mobile coronary care unit on life expectancy at age 30. they used data from the literature, subjective estimates for some parameters, and computer simulation. The gain in life expectancy estimated by these procedures was a third of a year, or 4 months. This measure was then refined to reflect two facts: (a) that these additional years are likely to be added far in the future, mostly between ages 55 and 80; and (b) that some of these additional year will be ones with impaired health due to heart attack.

Table 2. Incremental cases of cancer detected and marginal cost per year of life saved by successive stool guaiac tests in a population of 10,000

Number of tests	Incremental cases detected	Cost per year of life saved
1	56.9469	294
2	5.4856	1.373
3	0.4580	12,288
4	0.0382	117,384
5	0.0032	1,181,174
6	0.0003	11,776,803

SOURCE: Reference 12.

Table 3. Computation of cost effectiveness (per male from age 30 years) of having a mobile coronary care unit in the area

Estimated life time cost or effect	Unit
Costs (dollars)	
Unit and staffing	$ 49
Treatment of heart attacks	$ 52
Other medical treatment	$ 29
Total costs	$130
Health effects (QALYs)[2]	
Year before heart attack	0
Years with heart attack (.015 x 80 percent)	.012
Subsequent years (.057 x 95 percent)	.054
Total effects	.068
Cost effectiveness	
Cost effectiveness - $130 ÷ .066 QALY = $1,970 Per QALY	

[1]Present value. [2]QALY = quality adjusted life year. SOURCE: Reference 13.

In calculating the equivalent number of healthy years added by the mobile coronary care unit, certain assumptions about health quality were necessary. A year of life in which a heart attack occurs was assigned a value of only 80 percent that of a year in full health. The value was reduced to this level because the victim is hospitalized for several weeks, is homebound for several more weeks, and may be unable to work or to carry out normal activities for several months after the infarction. Second and later years after the attack were valued at 95 percent of the value of a year at full health.

This value reflects the inability of some survivors, due to anxiety or to some residual disability, to resume full activities. Applying these quality-adjustment factors and a discount factor of 5 percent per year, the authors estimated net benefits to be .066 year-or only 24 days-per person. The final estimate of the cost-effectiveness of the mobile coronary unit is $130 divided by .066 years. This works out to be about $2,000 per perfectly healthy, presentvalued year gained. Assuming that this ratio is correct, it indicates that the mobile coronary unit is a relatively efficient way of prolonging life.

Nevertheless, a sensitivity analysis indicates that this estimate should be regarded with caution. although communities have installed mobile coronary care units, is some areas these units alone (without the backup assistance or citizens trained in cardiopulmonary resuscitation) reduce mortality very little (14). Whereas the analysis assumed that persons saved by these units would have a prognosis similar to that of other heart attack victims who reach the hospital alive, the prognosis may actually be considerably worse. In the latter instance, the benefits will be smaller.

The present value of the costs could be greater than the $130 per person that was estimated. That estimate assumed that the area being served was sufficiently populous to utilize a mobile coronary care unit fully and that the population was sufficiently dense so that the unit could reach the victim quickly. The cost-effectiveness ratio of $2,000 per healthy year cited previously might therefore be regarded as a best-case (or lower-bound) estimate. The cost effectiveness of mobile coronary care units could be 10 times worse, or $20,000 per additional year of healthy life. it would then be of the same order of magnitude as estimates made of the cost effectiveness of the treatment of moderate hypertension (11).

Strength and Limitations:

Comparisons of programs. For purposes of illustration, suppose that the hypothetical inoculation program were real and that the differences in discounting among the preceding illustrations could be ignored. Suppose that the health department was willing to invest in health programs only if it could buy years of healthy life at less than $5,000 per year. Then it would fund the cancer detection program with two repetitions (at $1,373 per healthy year), the mobile coronary care unit (at $1,970), and the inoculation program (at $2,563). The third stool guaiac test would not be pursued, and the mobile coronary care unit would be deferred if the unfavorable conditions in the sensitivity analysis prevailed.

Alternatively, suppose that the health department faced a budget ceiling, rather than a maximum amount per year. In these circumstances, we would allocate resources to programs in the order of their cost-effectiveness ratios until the budget was exhausted. That s, it two repetitions. It is the most cost effective of all the possible programs. If budget funds were left over, the department would next fund the mobile coronary care unit, the second most cost-effective program. Next in priority would be the inoculation program. If resources permitted, the third or fourth stool guaiac test could be added. This would not be done, however, until all programs with better cost-effectiveness ratios had already been funded. While cost-effectiveness analysis cannot determine the most appropriate total investment in health, it can indicate the best way to allocate a predetermined budget among health programs.

Data limitations. The most salient practical problem in performing cost-effectiveness analysis is the lack of adequate data. Definitive data on the likely health effects of preventive programs are rare, and cost data, too, are often insufficient

this problem complicates and reduces the precision

tiveness analysis, it may paradoxically increa

attractiveness of performing this analysis.

Many important decisions cannot wait until ideal data are obtained. Compared with alternative processes of decision-making - for instance, cost-benefit analysis or intuition-cost-effectiveness analysis is better able to cope with data problems because CEA avoids the difficult problems of money valuation, and it uses a sensitivity analysis to check on the implications of uncertainty in the data. Cost-effectiveness analysis, moreover, provides framework for using the using the available objective data and the subjective estimates of experts. Representative experts or consumers can be polled and ranges of values could be considered. A weakness of cost-effectiveness analysis, there for, is that it rarely yields a single, definitive answer. Its partly compensating advantage is that assumptions are made explicitly and their effect on the analytic results is made clear.

Reflecting the values of consumers. A related weakness is the practical difficulty of incorporating consumers input into an analysis. In theory, the method can incorporate the preferences of any representative consumer in evaluating alternative programs. Valuations of quality of life can be made by past, current, or prospective recipients of a treatment. Because these values are shown explicitly, the resulting analysis can be scrutinized to assure that these preferences, and expert opinions, have been interpreted correctly. With a sensitivity analysis, the opinions of many experts and the values of many consumers can be incorporated. Undoubtedly, however, analysts will need patience and sensitivity to elicit preferences that are expressed in a usable manner, and consumers may require examples and nontechnical explanations before accepting any numerical analysis.

The unquantifiable nature of human values. Some observers allege that cost-effectiveness analysis may interfere with humanistic values. They assert, as a matter of principle, that health should not be quantified. There is merit in this feeling. A society that based all its decisions on cost-effectiveness analysis might be efficient and healthy, but it could otherwise be cold and sterile. Nevertheless, 1978 health care expenditures amounted to $192 billion, and we cannot rely solely on intuition to choose among competing programs. Some systematic procedures are required.

With care, we can obtain in benefits of procedures such as cost-effectiveness analysis while minimizing the dangers of dehumanized decisions. One solution is to use cost-effectiveness analysis primarily to establish general guideline for the provision of preventive and curative services. Providers and administrators can view these guidelines as general recommendations, not inviolable laws, in making decisions about individual patients.

Determining most worth while uses for limited resources. Lastly, an important strength of CEA should be mentioned. Many persons feel that preventive health services and educational efforts deserve an enhanced role if national health insurance is enacted. Unfortunately, if very preventive program that has been proposed, or even if every program that has some evidence of effectiveness were undertaken, we would spend much more than the present 9.1 percent of our gross national product on maintaining health. Since society is not prepared to allocate unlimited resources for health, it needs a method for deciding which activities are most worth while within ever-present cost constraints. We need to decide how to allocate resources between primary prevention and early detection, or between detection of new cases and followup and more effective treatment of the known ones. cost-effectiveness analysis can also help us choose between medical and nonmedical approaches to protecting health, such as better emergency medical services versus better highway design. As long as the alternative under consideration are directed at a common objective, cost-effectiveness analysis can help illuminate the tradeoff.

In summary, cost-effectiveness analysis cannot tell us what health program society should pursue,what preventive programs we should adopt; these answers as Fein wrote, "are up to society" (15). Cost-effectiveness analysis does, however, provide a framework for organizing information about the effectiveness and efficiency of health programs. With these results, consumers and health policy makers can make more enlightened decisions about which programs to adopt.

HEALTH EDUCATION

1. INTRODUCTION

Education for health is ne of the eight essential components of primary health care (PHC). It is perhaps the most important component, because it is also a part of all the others and because it promotes community involvement in health care and self reliance.

This chapter explains what health education is and how it should be carried out.

2. WHAT IS HEALTH EDUCATION?

2.1 Purpose of health education

The purpose of health education is to promote health through improved health practices.

One of the basic principles of PHC is that to improve health, people must be directly involved in taking action themselves, in their own families and communities, to adopt healthy behavior and ensure a healthy environment.

Health education should inform people not just about facts relating to health but also about their own potential for acquiring better health through their own efforts; this enables people to take responsibility for their own health.

2.2 Changing People's attitudes and practice as well as their knowledge

Health education is more than just giving information or advice about health. A woman may know that immunizations prevent certain diseases but unless she and her children are fully immunized at the correct time, they will not be protected against these diseases. Health education must change people's behavior, and this means changing their attitudes and practices as well as their knowledge. Encouraging people to change their attitudes and practices requires considerable skill and understanding on the part of health, education. Health educators, themselves, need to understand what people think and do with regard to health problems, and why. They must then use a variety of techniques to help people understand their own situation and problems better and choose actions which will improve their health.

For example, a mother's existing practice may be to feed her child only with breast milk for the first year of the child's life.

The attitudes underlying this practice may include any, or all, of the following:

- fear that other foods will upset the child's stomach,
- unwillingness to do anything differently from local tradition,
- pride in the role of the mother as the sole source of food,
- respect for Koranic instruction about breastfeeding.

The knowledge which underlies this practice is that breast milk is the best food and that feeding children other foods is a difficult and risky business. This information is perfectly true, but it is incomplete. The mother lacks the knowledge that introduction of other foods, though difficult, is essential.

Health education can add to this knowledge by explaining about supplementary foods, why they are important, when they should be started and how they should be given.

This explanation or information alone may not be enough to change the mother's attitude. She may not understand or remember the new information. She may not feel confident to try something new; she may e willing, but be faced with strong opposition, scorn or criticism from older relatives. The child itself may reject the new foods.
So she will not change her practice.

In such a case the attempt at health education has not been successful.

In order for health education to be successful, people must:
- understand the health education messages,
- believe the health education messages,
- perceive how the messages relate to their needs,
- remember the health education messages,
- change their attitudes
- and then put the new ideas into practice.

Traditional teaching methods tend to emphasize telling people new information. These are based on the methods commonly used in teaching children in schools. But teaching adults is fundamentally different from teaching children because adults already have much more life experience and this has formed their existing knowledge, attitudes and practices. Health education with adults is about changing existing health behavior and not just teaching some new facts.

Therefore health education requires a very different approach of teaching and also a greater understanding of people. Section 3 covers some different teaching methods which can be used to made health education more effective.

2.3 How people learn

Most knowledge, attitudes and practices relating to health are not learnt through the formal education system (ie at school) - indeed, most Afghan women and a lot of the men have never been to school.

People learn from many other people as well as teachers, and people learn in many other situations as well as formal lessons.

These are some of the ways in which people learn:

- their own experience
- observation
- thinking
- solving problems that arise in everyday life
- formal lessons
- making mistakes and realizing what they did wrong
- reflecting on past experience
- adapting past experience to new situations
- listening to other people
- reading books, newspapers, magazines and instruction leaflets
- listening to the radio
- watching TV and videos

These are some of the people they learn from:

- parents
- other family members
- friends
- teachers
- people observed in the community
- colleagues at work
- elders in the community

Formal lessons given by teachers are only one of a wide range of situations in which people acquire new knowledge, skills and attitudes.

This point needs to be reflected in our health education practice:

- participants can learn from discussion with each other as well as from the health educator.
- they can learn from the materials, visual aids, etc. as well as the health educator talking.
- they can learn by relating the new ideas to their own experience, and by discussing the ideas with people at home and in their community. Health education does not end when the formal health education session ends.

There is an ancient Chinese proverb which is very relevant to health education.

I hear and I forget:
I see and I remember:
I do and I understand.

As an example of this consider teaching someone to make up ORT.

- someone who is just told how to make up ORT will probably forget.
- someone who is told and watches a demonstration is more likely to remember how to make up ORT.
- someone who also makes ORT up themselves, is much more likely to understand how to do it and be able to do it again.

<u>The more actively involved people are in something the more likely they are to understand and remember it and be able to do it.</u>

However it is not always possible to demonstrate a health message and let people actually do it in practice. But it is possible to actively involve people in learning by:

- discussing ideas with them,
- listening to their opinions, experiences and questions.
- providing them with materials and activities which will help them to discover new information for themselves.

2.4 Communication

One-way and two-way communication

The effective communication of health education messages depends on an exchange of ideas between the health educator and the learners. This is called two-way communication. it involves the health educator:

- encouraging learners to explain what they already know and do,
- giving the learners the opportunity to ask questions,
- fully answering the learners' questions,
- giving opportunity for the learners to discuss new ideas amongst themselves,
- finding out what the learners have understood and learnt from the session.

Some teachers feel that they must do all the talking themselves. They feel that they are not really teaching unless they are telling the students some new information. But this is one-way communication. This is not appropriate for health education.
The main emphasis in this type of teaching is on the teacher, who decides what the student should learn; the student passively receives the knowledge.

In health education two-way communication is essential in order for the learners to be actively involved. The teacher's role is to guide learners to develop their own knowledge, skills and attitudes, rather than just acquiring the teacher's. This process involves people in making their own decisions and can therefore result in behavioral change. This is not traditional teaching but the promotion of learning; it places the main emphasis on the learner and involves two-way communication between the teacher and the students.

Verbal and non-verbal communication

Attitudes and feelings are often conveyed in gestures, not in words; this is non-verbal communication.

In health education, non-verbal communication is used in many ways, both positively and negatively, and intentionally and unintentionally.

Positive examples would be:

- smiling or eye-contact, indicating approval and interest,
- sitting down with a group to discuss something with them can express non-verbally the feeling of being on the same level, and not superior to them,
- greeting people according to their traditions.

Negative examples would be:

- yawning can express boredom and the feeling that the person's time is being wasted;
- not looking at the person being talked to, can also do the same thing in a more subtle way;
- tutting, shaking the head or wagging a finger can all express dissatisfaction non-verbally.

People are generally very sensitive to non-verbal communication, and health educators in turn need to be sensitive to this and be aware of how and what they are communicating in this way.

An extension of this is "practising what you preach". The health educator who tries to motivate people to use soap to wash hands before a meal and then promptly eats food without washing his hands with soap, conveys the message that he feels that soap is not really necessary. It is extremely unlikely in this situation that other people will be convinced that it is necessary for them! The health educator should be an example for the learners.

2.5 Literacy

Literacy is the ability to read and write. Literacy is not an indication of intelligence, or of knowledge. It only indicates that the person has had the opportunity to go to school. People who are not literate may be highly intelligent, and often have very good memories. They deserve as much respect from the health educator as literate people. They should not be treated as stupid.

However as they cannot write and read, writing cannot be used to help them to remember information given in the health education session. Therefore, in order to help people remember, health education messages must be:

- limited in number, and
- repeated frequently.

Pictures and visual aids have to be "read" in a similar way to written words. People who have not seen many pictures may not be able to relate a picture to the object it represents. Also many pictures use conventions to represent real things. For example, a health worker showed a poster-sized picture of a fly, and explained how flies spread diseases. At the end of the session, one of the audience said that the talk was very interesting but luckily they did not have that problem in their village because they only had small flies there.

Pictures may also use symbols that do not really look like the object they represent, for example, a circle with spikes sticking out to indicate the sun shining. Again people may have difficulty understanding this. Even more difficult are symbols like ticks and crosses to represent good and bad, or "do" and "don't".

However, if the health educator explains them carefully, people can learn to "read" pictures during the health education session. But very few pictures convey messages successfully without explanation to non-literate people.

When using visual aids, the health educator needs to:

- be aware of these possible problems,
- learn how to look at visual aids from the point of view of someone to whom they are new,
- explain the content and meaning of pictures to people.

2.6 Helping people learn

There are some general points which the health educator should be aware of when teaching.

People learn better if:

- they are learning about something which interests them and is important and relevant to them.
- the new knowledge builds on their existing knowledge, and does not conflict with deeply held beliefs.
- the new information is presented logically and makes sense.
- the new information is presented in a relaxed atmosphere, without distractions or interruptions
- the new information is presented by someone they respect and feel they can trust.

All adults have a lot of experience of life. They already have developed their own ideas about health; also, they may be much older than the health educator. The health educator needs to be respectful, patient and tactful.

2.7 Situations for health education

Health education may take place in a lot of different situations, for example:

- home visits
- clinic consultations
- scheduled talks to small groups
  - at the clinic
  - in the community
- meetings with large groups
  - at the clinic
  - in a mosque
  - in schools

The health educator may be working with people in any of the following ways:

- one to one,
- one-to-one but with others listening,
- with small groups of 3 to 5 people,
- with groups of 5 - 20 people,
- with a large meeting of more than 20 people.

The health education may be:

- with a person who is ill, and needs help on management of the illness,
- with a person who is not ill and need motivation to prevent illness,
- with a group of people who need help in putting into practice a health-promoting project such as environmental sanitation.

All of these, and many other, situations require the health educator to use different techniques. These are health with in more detail in the next section.

2.8 The difference between education and training

In these guidelines, health education is used in the sense of learning by members of the community. Each 'session' stands on its own and is not necessarily part of a course. The participants are not selected, anyone in the community may attend. Participants are likely to be different at each session.

Training, on the other hand, refers to a scheduled series of inter-related sessions attended by the same participants on each occasion. for example, courses for CHWs, dais, sanitation workers, dispensers etc. participants are selected for training according to particular criteria and are expected to attend sessions regularly. Training is therefore, more formal and organized, while health education in the community is non-formal.

The teachniques described in these guidelines are divided into two groups. The first group, Section 3: Health education techniques, comprises techniques which are appropriate for health education in the community.

The second group, Section 4: Techniques for training, consists of techniques which are primarily applicable in training situations. However, many techniques from the first group are also important in training.

It should be noted that these guidelines are directed primarily towards health education and training with non-literate or semi-literate people.

Body talk

The awareness of body language is often a key to successful personal and business relationships. The secret of being successful lies in the manner in which we utilize verbal as well as non verbal communication to communicate and mani-pulate others with their bodies as well as their voices.

The ability to handle others improves dramatically after taking into consideration the entire behaviour patterns of a person.

When we become aware of the body signals being sent by others and learn to interpret them effectively, it in turn creates an awareness in us to monitor our own signals. over ourselves and we learn to function more effectively.

We do not need words alone to communicate our involvement or our eagerness in a certain situation. The expression of our eyes, the way in which we refuse to look at someone full in the face by letting our glance side away, holds a wealth of meaning. However, it is very difficult to gain control of all the different methods of communication. There are literally thousands of bits of information exchanged between human beings within moments. We are all programmed to handle these many bits of data, but on an unconscious level. We run a very high risk of mishandling them if we start to evaluate every gesture the other person makes. We must realize that an aware mind is not necessarily as effective as an unaware one. In the words of a Kinesic analyst there are "no body positions or moments, in and of itself, that have a precise meaning.

In other words crossed arms do not always mean that the other person is on the defensive. Downcast eyes do not portray modesty always -may be the girl with the downcast eyes does not want to let you know that she cares about you! For all you know she might be avoiding eye contact to avoid giving access to her thoughts. Therefore because of these native interpretations of Kinesics do not try to made a parlar game out of a science.

Change in body posture normally communicates the change in our attitudes. For example in courtship the Man will tighten his abdominal muscles and pull in his belly when he approaches his lady love almost preening like a peacock. His shoulder if normally sag will straighten out squarisly making him appear more macho than he might ordinarily be. It has been noticed that some men attract the attention of women from their being exceptionally good looking or rich. This ability arises from their having command of body language. They are able to signal their availability, masculinity, aggression and knowledge more successfully thus becoming a ladies man without making any obvious moves.

More than seventy percent of the suicides committed all over the world can be avoided if attention was paid to the body posture of a person. Does his body slump more than it should ordinarily? Have his eyes become more list less?

Is he paying less attention than he ought to? Ninety five percent of the suicides are committed after a person has despaired of any help coming his way. In most of the cases appeals for help are mad in a subtle manner - there are too many pointers left on the trail by the patient. But to one we all become indirectly responsible for the suicide being committed.

Narcotics has spread like a plague in our society. its slow poison is slowly destroying the very fibre of our lives. Specially the teenagers are becoming a victim of this curse. But we can fight against this monster if we are aware of the signs. For instance the person withdraws and becomes non communicative. Since his body metabolism slows down, his movements also become slow. The rims of his eyes become red and swollen. There is an unusual amount of weight loss. The person becomes irritable and losses his calm. All these symptoms are easily discernable. Therefore, all we need to do is pay attention.

Helping people to lead healthier lives

It is natural for people to help each other. This is especially useful when people have to solve difficult problems. There are some people whose full-time job is helping others. among them are teachers, social workers, policemen, agricultural agents, religious leaders, and of course, health workers. There are three general ways in which these people can try to help other people lead healthier lives:

- They can force or push people to change, and threaten punishment if the changes are not made.

- They can give ideas or information in the hope that people will use them to improve their lives.

- They can meet with people to discuss problems and promote their interest and participation in choosing the best ways to solve their own problems.

Let us look at three examples of how a health worker can provide help.

Using force

There was once a family did not keep their home and land clean. They would throw their rubbish and faeces onto a big pile just behind the house. This pile became a home for rats, flies, and mosquitos. it is not surprising that the children of this family often had fever and diarrhoea.

One day Mr. D. a health worker, visited the family. He was very sad when he saw their home. He told the family that they were making trouble for themselves and for the whole community. They did not pay attention. He came again and again - with no result. Finally, he told the family that if they did not clean up the place by the next week, he would take them to court where they would have to pay a big fine. The family wa afraid of this, so they quickly cleaned their house and yard.

The health worker came the next week, as promised. He saw that the place was clean. He then told the family that they must always keep the place clean. He again threatened to take them to court if they disobeyed him. The man left and did not come back for some months.

When the family had not seen the man for some time, they decided that his threat had not been serious and they became angry. They did not see why a stranger should come to their house and push them around. Soon they began throwing rubbish behind the house again.

Finally, the health worker returned and saw the mess. But this time when he tried to talk to the family they told him to go away. They said they would fight him if he tried to enter their house.

Thus when the health worker attempted to force and push the family, they did what he said at first: later they became angry and refused to cooperate.

Giving information

The season in which many children get measles was coming to Patel village. The health workers there were worried because not many of the children had been immunized against measles. They decided to call a meeting of the village leaders and mothers.

At the meeting the health workers talked all about measles. They said it was caused by a tiny virus that spread through the air from one child to another. This happened especially in places where children were close together. They explained that measles appears as a rash. There is also fever. The dangers of measles were listed as pneumonia, blindness, and death. The disease, they noted, spread more easily at that time of year, so the health workers asked all villagers to bring their children to the health centre on a Wednesday morning as soon as possible. At the centre a special injection would be given to protect or immunize the children from the disease.

After about a month the health workers noticed that very few mothers had brought their children for the measles immunization. They became worried. They know that they had given correct information to the villagers. They went to the village leaders to find out what was happening.

The village leaders told the health workers many things. First they said that the villagers believe measles is caused by the smoke from certain types of firewood. Secondly, they did not want to believe that the disease could pass from one person to another. Finally, they said that some mothers wanted the immunization, but would have difficulty coming to the health centre, because the most important market in the area was held every Wednesday morning.

These health workers did better than the one in the first example. They did not use force. They got a few people to come for immunization. But they were not successful enough. Even though the health information they gave was correct, it was not enough to encourage most mothers to bring their children for

immunization. There were other influences on the mothers behaviour that the health worker had not taken into account.

Discussing and participating

Good health workers visit people in their community and listen to their problems.

> One day Mrs. M. a health worker, came to see a group of farmers. She sat and listened to their problems for a while. The farmers were complaining of being weak and tired. The health worker saw that they were very pale. She suspected that the farmers had hookworm.
> First the health worker asked the farmers what they thought caused their problem. Some said overwork. Others said the weather was too hot. One even said that farmers from the next village were jealous and were using magic to cause the weakness. Then the health worker asked what the farmers had been doing to solve the problem. One said his wife was making him eat more. Another said he was going to sleep early. A few said that they were drinking tonics made from herbs. The health worker asked if any of these actions had cured the problem. All of the farmers said 'No'.
>
> Next, the farmers asked the health worker if she could help them. The health worker said that she would try but that she would need to know more about the farmers daily work. She asked what the farmers wore at work. Their answer was Short trousers and a singlet or light shirt. Did they wear anything on their feet? The answer was No. Where did they defecate while on the farm? The farmers said that they eased themselves anywhere nearby.
>
> The health worker said Thank you. Your answers give me some idea about the problem. Do you know that small worms can get inside people? A few mentioned that they had seen worms in their stools occasionally. The worms must have got in somehow.

'There are different worms, with different ways of entering the body' said the health worker. 'Once inside, some worms eat food in the gut while others eat blood, making people weak. One worm called hookworm gives farmers a lot of trouble because it is in the soil. It is possible that this worm might be causing your problem. After burrowing into someone's foot, it moves to the gut where it hooks on and drinks blood. The worms are not always seen in the stools. 'When a person defecates, some of the tiny eggs of the worm pass with the stool,' added the health worker. Some farmers were not sure about this. One asked 'Why is hot weather not to blamer' The health worker replied that hot weather helps the eggs of the worm to hatch and grow in the soil. 'What about our jealous neighbours?' asked another farmer. The health worker explained that neighbours could spread hookworm by defecating in the fields although they may not know about hookworm either. Finally, the farmers accepted these ideas.

The health worker asked 'Now what can you do to prevent hookworm?' One farmer answered, 'Wear shoes.' The others did not like this idea because shoes were costly and hot. another said, 'Use latrines'. The rest laughed, because they said they could not afford to build a latrine on every farm.

The health worker asked if there were more simple and less expensive things the farmers could do. One farmer said 'Sandals are cheap. Local shoemakers make them, and rubber and plastic ones are sold in the market.' Another farmer suggested 'We could use our hoes to dig a hole each time we defecate'. Group liked these ideas. They all agreed to buy sandals and to bury their faeces when on the farm. The health worker commented that burying faeces on the farm could be dangerous unless it was done far from any place where someone might dig it up by mistake when ploughing.

Before she left, the health worker asked all the farmers to meet her at the clinic. There she could test their faeces for worms and, if hookworm eggs were seen, she could give them medicine to kill the worms. she reminded them of the farmer's wife who had said that her husband should eat more.

The health worker said that this was wise because the worms had eaten so much blood. She said that green leafy vegetables and meat would help make their blood strong again. Of course they should clean and cook the vegetables and meat well. The farmers thanked the health worker. The next day all the farmers came to the clinic. Every one of them was wearing sandals.

This health worker was successful. She did not push people and did not merely give information. She helped people think about their own problems and asked them to think about the ways of solving the problems. These farmers participated. In the end they all agreed to take the actions that would improve their health.

The role of health education

In the three examples just described, only one health worker was practising health education. It was the third health worker, who encouraged the people to understand their problems and choose the most appropriate solutions for themselves.

Health behaviour and health education

> Think about the problems facing the first two health Workers. What should those health workers have done if they had wanted to use health education?

BEST AVAILABLE COPY

The health education approach encourages people to talk about their problems and to find their own solutions to them. The role of the health worker is to help people consider what solution is best.

Health workers can use health education successfully by:

- Talking to the people and listening to their problems.
- Thinking of the behaviour or action that could cause, cure, and prevent these problems.
- Finding reasons for people's behaviour (beliefs, friends ideas. lack of money, and others).
- Helping people to se the reasons for their actions and health problems.
- Asking people to give their own ideas for solving the problems.
- Helping people to look at their ideas so that they could see which were the most useful and the simplest to put into practice.
- Encouraging people to choose the idea best suited to their circumstances.

<u>What do we really mean by health education?</u>

Health education is the part of health care that is concerned with promoting healthy behaviour.

A person's behaviour may be the main cause of a health problem, but it can also be the main solution. This is true for the teenager who smokes. The mother with the poorly nourished child, and the butcher who gets a cut on his finger. By changing their behaviour these individuals can solve and prevent many of their own problems.

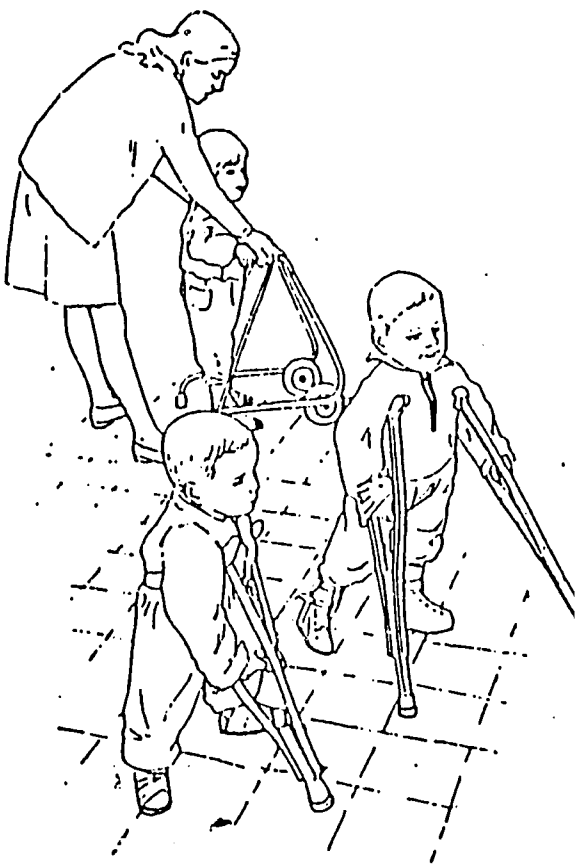
Through health education we help people understand their behaviour and how it affects their health. We encourage people to make their own choices for a healthy life. We do not force people to change.

Health education does not replace other services, but it is needed to promote the proper use of these services. One example of this is immunization: scientists have made many vaccines to prevent diseases, but this achievement is of no value unless people go to receive the immunization. Similarly, Incinerators for burning refuse are useless unless people will make the effort to put the refuse inside the incinerators.

Health education encourages behaviour that promotes health, prevents illness, cures disease, and facilitates rehabilitation. The needs and interests of individuals, families, groups, organizations, and communities are at the heart of health education programmes. Thus there are many opportunities for practising health education.

Health education is not the same thing as health information. Correct information is certainly a basic part of health education, but health education must also address the other factors that affect health behaviour such as availability of resources, effectiveness of community leadership, social support from family members, and levels of self-help skills. Health education therefore uses a variety of methods to help people understand their own situations and choose actions that will improve their health. Health education is incomplete unless it encourages involvement and choice by the people themselves. for example merely telling people to follow "good health behaviour" is not health education. Although bringing a child monthly to the clinic for weighing is a behaviour that promotes health some mothers may see the situation differently. Some may believe that a child who is healthy purpose in weighing babies, and some may feel that their housework and other jobs are more important than weighing a healthy baby. In health education these different views are considered when seeking solutions to problems.

Also, in health education we do not blame people if they do not behave in a healthy way. Often unhealthy behaviour is not the Health behaviour and health education.



In addition to preventing disease, health education can be used for many other purposes. As shown here, it can play a part in providing skills for the rehabilitation of handicapped people.

fault of the individual. In health education we must work with families, communities, and even regional and national authorities to make sure that resources and support are available to enable each individual to lead a healthy life.

WHO IS A HEALTH EDUCATOR?

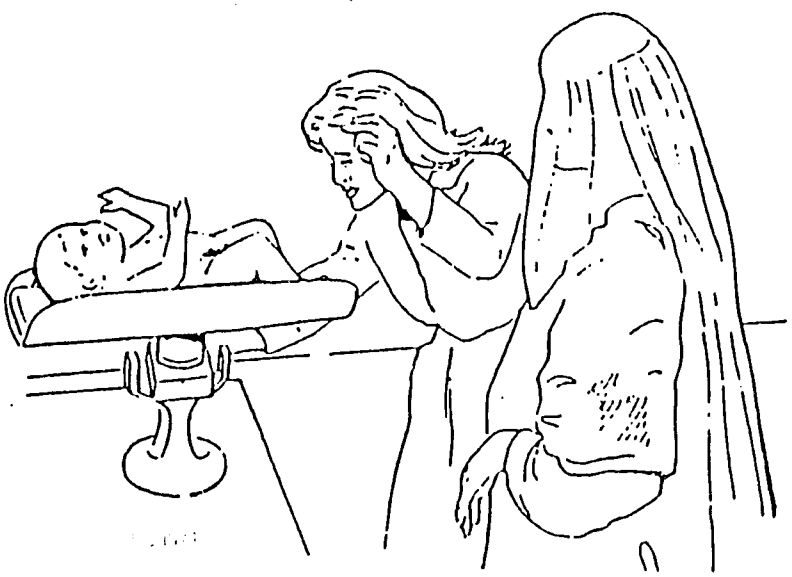
Once we understand what health education is about, it is important to answer the question, 'Who is a health educator?' It is true that some people are specially trained to do health education work. We may refer to those people as specialists. But since all health workers and concerned with helping people to improve their health knowledge and skills. All health workers should practise health education in their jobs. By carrying out health education activities, nurses, dispensers and of course, community health workers, can make health care more effective.

Health education, then, is really the duty of everyone engaged in health and community development activities.

If health and other workers are not practising health education in their daily work, they are not doing their job correctly. When treating someone with a skin infection or malaria, a health worker should also educate the patient about the cause of the illness and teach preventive skills. Drugs alone will not solve the problems. Without health education, the patient may fall sick again and again from the same disease.

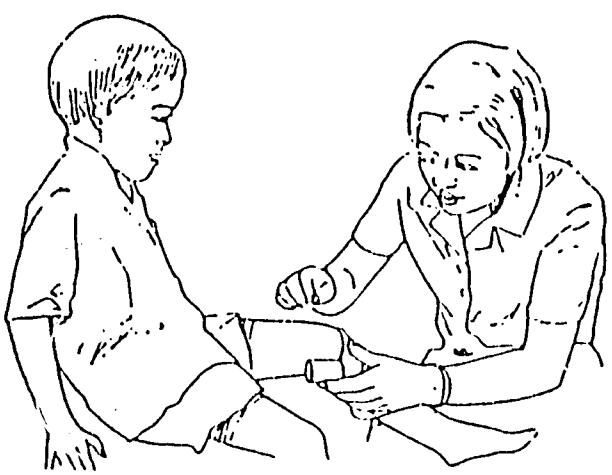
Likewise, an environmental sanitation programme should include health eduction. It is not enough for the ministry or an agency to provide sanitary wells, latrines, and waste collection facilities: the people will continue to suffer from the diseases caused by poor sanitation if they do not use the facilities. If a health education approach is taken, the people will participate from the beginning in identifying their sanitation problems and will choose the solutions and facilities they want. They will then be more likely to use these facilities and improve their health.

Health workers must also realize that their own personal example serves to educate other. The midwife who does not wear a clean



A healthy baby being weighed at a clinic.

Health behaviour and health education



Health workers have many opportunities to practise health education while they are treating patients, for example explaining to a child why it is important to keep cuts clean, rather than just dressing the cut.

BEST AVAILABLE COPY

Uniform and the dispenser who does not sweep his first-aid post clean set bad examples. People will not believe these health workers when they talk about health and hygiene. On the other hand, health workers who build latrines in their own houses, purify their drinking-water and feed their children nutritious food will, by example, teach their neighbours healthy habits.

Collecting information:

Good health education is based on facts. It would not be correct to say 'I feel that poor nutrition is a problem because so many mothers do not know which foods are good for their children. There must be facts. How many children are poorly nourished? What do we mean by poorly nourished? How do yo measure or check whether children are poorly nourished? How many mothers know what to feed their children? How many do not? If many children are poorly nourished, is lack of knowleoge the only reason? You need this information at the beginning of a programme so that by the end you can easily measure any change and improvement.

What information do we need?

We need to find out what are:

- The most important problems as seen by the person, group, or community you are helping.
- Other problems that you yourself may see.
- Problems that other community workers see.
- The number of people who have these problems.
- The practices that may have led to the problems.
- Possible reasons for these practices.
- Other causes of the problems.

BEST AVAILABLE COPY

To find this information. You will need to learn all about the community where you work. Among other things you will want to know:

- Local beliefs and values that affect health.
- The kinds of behaviour that are acceptable in the local culture.
- Important local people and reasons for their importance.
- How decisions are made about local problems.
- Available health care services. Both traditional and modern.
- Location of services.
- The main occupations for both men and women, the level of education in the community, and the quality of the housing, as these factors may help you learn something about the economic conditions of the people.
- Existing clubs, societies, and organizations.
- The religions practised locally.
- Local ways of sharing ideas and feelings.

Do you know all these things about the community where you work? How did you learn them? If you do not know them all, work together with other health and community workers to collect the information. Each person can be responsible for collecting different types of information about the community. After collecting the information, meet with people and discuss it. See what new things you have learned about the community where you work.

The importance of collecting information

A family would not decide to build a new house without first investigating the availability of land and the cost of materials. A doctor would not begin to treat a patient without first investigating the nature of the illness through such methods as observation, questioning, and laboratory tests. Similarly, health workers practising health education must also investigate a problem before starting a programme or activities to deal with it. Here are some of the reasons why.

- It is necessary to know how big the problem is (how many people are affected) and how serious or dangerous it is (how much death and damage are being caused). Clear information about the nature of a problem will make it easier to choose priorities.

- if information is collected about the nature and extent of the problem both before and after a programme. It will be possible to show what impact the programme has made.

- Information about the community will make it possible to choose the most appropriate way to deal with the problem (strategy), both as regards the problem itself and the culture in which the problem exists. you will find more about priorities and strategy on page 58.

How to collect information

There are three main ways of collecting information about people groups, and communities. First, there is observation, which is the collection of information by watching and listening. Secondly, there is interviewing, which involves discussion and questioning. thirdly, there are records and documents, which are the written observations and experiences of other people.

These three methods are often used together in order to give a complete picture of a problem of survey of a community and its needs. for example regarding the problem of waterborne diseases, it would be useful to interview [illegible] about where they collect their water and how they store it.

Secondly, it would be valuable to observe the various local sources of water to see if, in fact, people use them in the way they said they used them in the interview. Finally, records at the clinic would give an idea of the number of people actually suffering from, waterborne diseases.

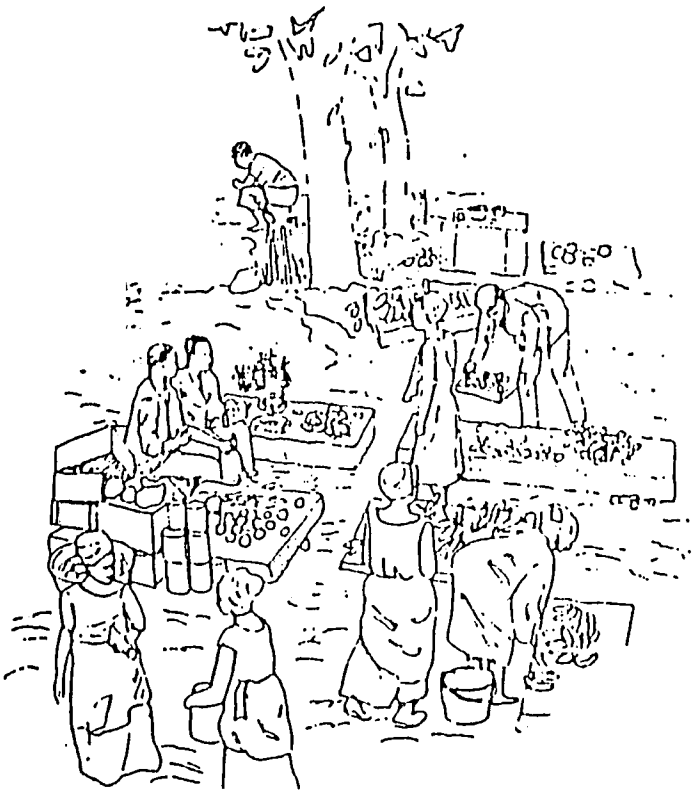
Observation:

Know what and how to observe:

Observation must be done carefully. Decide in advance what to observe, and how it will be observed. for example, parents and teachers may complain that children are passing blood in their urine. This may be caused by schistosomiasis, a disease caught by wading in streams (or ponds) contaminated by people infected by the disease defecating or urinating into the water. In this case it would be important (i) to observe whether the snails that harbour the disease are to be found in the streams, and (ii) to watch the behaviour of the children around the streams. If observation shows that there are disease-carrying snails and that children do play and wade in the streams and defecate or urinate in or near them, then one can rightly suspect schistosomiasis. Another form of observation would be to look at samples of urine of faeces under the microscope.

The local market should be included in any community survey, many health problems can be identified, and important information can be gathered. For example from a study of the market you can find out what food is available locally, and at what price, and you may be able to identify hazards that cause disease.

what price, and you may be able to identify hazards that can disease.



The local market should be included in any community survey. Many potential health hazards can be identified. What problems can you observe in this picture?

Know when to observe:

Observing at the wrong time may give the wrong impression about a problem. Observing a stream during school hours will not give a clear picture of children's wading and swimming behaviour. The best time to observe would be after school and at weekends when children are free to go to a stream if they wish.

Observe thoroughly and accurately:

As pointed our above, observation is not only through the eyes. Important information can also be picked up through the cars, nose, fingers and tongue. Sound. smell, feeling and taste will teach you many things about your community. You should be able to tell people accurately what you have observed. For example, a health inspector sent three sanitary workers to look at a family's house. This is what each said:

- The first person reported 'the area was very dirty;.

- The second said 'the house was no worse than any others in the neighbourhood'.

- The third person said 'the gutter in front of the house was full of leaves and paper. Behind the house was a pile of tins, broken bottles, paper and rags that was as high as my knee and as wide as I am tall. All the rubbish was in this pile. None was scattered around the house.'

The three men observed the same thing, but their comments were different. The first two men made judgements. They did not report their observations completely. Only the third man gave a fairly accurate description. After you have observed something, think carefully about what you have seen; you may even want to write down your observations. Then decide whether what you saw was good or bad. Ask other people to observe the same thing and see if you all agree on what you saw or hard. Having others check your observations helps improve accuracy.

<u>Observe individuals:</u>

Observation is very useful when you are helping individuals who are sick or have problems. The movements of their eyes and body can tell you much. Through observation you can see the signs of sadness, joy, worry, pain, fear, and other feeling.

Through observation you may also learn about a person's personal hygiene or attitude to health problems. for example, by observing cuts and wounds, you can tell if they are fresh, or if the person delayed coming to you. You can sometimes see whether traditional medicine has been used. Some people wear certain charms or symbols that tell you something about their beliefs and religion.

Sometimes you can learn about a person's financial condition or ethnic background by observing the style and condition of the clothes he or she is wearing. But be careful: if your eyes can teach you, they can also mislead you. Remember we all have prejudices. Clothing alone is not a sign of wealth or poverty, for example. Ask questions to see if your judgements are correct.

Observe groups:

Use your eyes when you work with groups or committees. You can see whether some people are paying attention. use your ears to hear if people are participating. you can observe whether the group is happy or angry. If you observe problems you can then help to solve them.

Observation of individual patients is important. Use your eyes to learn how the patient feels and see what modern or traditional remedies may have been tried.

BEST AVAILABLE COPY

It is useful to practise your observation skills. Gather a couple of friends or co-workers together. choose one street in your village or neighbourhood. All of you walk along the street and observe it from the standpoint of environment sanitation. Do not speak to each other until you each the end of the street. Then discuss what you have observed. See if you have observed the same things. Walk back down the street to check you observations.

Use your eyes. Do you see scraps of paper or old tins lying about? Do you see blocked drains?

Use your nose. Do you smell garbage, stagnant water, or human wastes?

Use your ears. Do you hear many flies buzzing or goals, sheep, or dogs rummaging around in waste?

Deciding on priorities:

For a programme to succeed, we must know clearly what we want to do and how we are going to do it.

In the first sections of this chapter, we discussed how to fin out the needs of the individuals, groups, and communities we are trying to help. People usually have many needs. It is not possible to do everything at once, therefore we must decide which problems we will try to solve first. This is known as setting priorities.

After people have decided upon their priority needs, they can think about what must be done to meet those needs. They must spell out exactly what they want in other words, their objectives.

Then with an understanding of the problem and an eye on the objectives, they can consider how best to deal with the problem, that is, what action to take. This is called developing a strategy.

People must determine what their priorities and objectives are, and what strategies are acceptable to them. to do this, they need professional help, but the members of the community must make the final choices.

SETTING PRIORITIES

Setting priorities with individuals

It is not always easy to know what problem to face first. People have many pressing problems like those of the family described opposite.

> Mrs. Antia has five children. The oldest is eight years old, and the youngest nine months. Mrs Antia is pregnant again. The family shares one room, made of boards and metal rooling-sheets, stuck on the back of the house of mr Antia's father, Mrs Antia is not very strong these days. She has not had a regular job for the past four years.
>
> Mr. Antia is a fisherman. He has not been very successful with his fishing lately. Now he spends several months at a time working in the city as a daily paid labourer. The small amount of money he brings back from the city is hardly enough to feed the family. In fact the children are all underweight and sickly.

Mr. and Mrs. Antia discuss their problems with a health worker. These are some of the needs they mention:

- A bigger place to live in.
- more money.
- A job for Mrs Antia.
- Skills for Mr Antia so that he can get a better job.
- Food for the children.
- Medicine for the children.
- Medicine and rest for Mrs Antia.

- A way to stop the family growing in size.

- New clothing so that other villagers will respect the family.

- A radio for Mrs Antia, to relieve her loneliness.

At first some of these needs clearly seem more important than others, but priorities cannot be chosen only on what seems or feels right. There must be a reason for the choice. Below are four questions that can help people see their problems more clearly and make their choice of priorities easier. Note that during discussion people will come to realize that many of their needs are related. Satisfying a priority need may in fact solve many other problems as well.

Which is the most serious problem?
For the Antia family, lack of food may be the most serious problem. Poorly fed children will be susceptible to many diseases which may handicap them for the rest of their lives.

Where does the greatest future benefit lie?
Concern is not only for temporarily solving problems today, but for making the future brighter. Providing Mr Antia with skills so that he could get a better-paid job would give benefit now and in the future.

What needs can be met with the resources available?
The Antia family has little money, and Mrs Antia is unlikely to get a job now. With their existing resources they probably cannot afford new cloths and a radio. They cannot even afford certain foods. But within their resources, there are inexpensive, yet nutritious foods available at the local market.

Which are the problems of greatest concern to the people?
Mrs Antia is most interested in the radio, but both she and her husband are interested in getting a better-paid job for mr Antia. People are more likely to take action to solve problems in which they have an interest than those in which they do not. Also the more people there are who take interest, the more likely it is that the problem can be solved.

After considering all these questions together, Mr and Mrs Antia decided that job training for Mr Antia and buying more nutritious foods within their present budget were their immediate priorities.

Setting priorities with communities

The same four questions should be considered at meetings in which communities are discussing their priorities. When more people are involved, there will be more views to consider. it may take longer to decide on priorities than when only one or two people are concerned.

Educational games can help make clear what is involved in setting community priorities. Such games can be played with a group of health and community workers, with a class of high school students, or even with a group of community leaders. An example select priorities, objectives, and strategies.

A simple scenario can be developed from a case study of a small village with many problems. Everyone who plays the game takes the role of a village member. Each person chooses a different occupation and identity and is asked to express his or her own opinion about which are the most important needs, and why, and what is a priority for immediate action. As the game programmes, it will become evident that people with different backgrounds and opinions will see more benefit in one problem being solved than in another. This will make the discussion lively. Around twenty is a good number for playing this game. Of course you can create as many parts as you need, depending on the number of people in the group.

First, slowly read to the group the story of the village (see page 61). Assign each person a role such as farmer, barber, weaver, or food-seller. Then read the story aloud again, and read the four questions listed on pages 59 60. Ask everyone to think about them. The group should then have a discussion and agree on one or two top priorities. People do not have to a large group. They may break into small interest groups. Some may move back and forth between groups trying to get support for their own ideas. You should move around and listen.

Remind people about the four questions on choosing priorities (you might write them on a board or poster, if people can read). Also remind people that meeting needs usually costs time and money. Encourage players to find the least expensive ways of meeting the needs with the resources available.

Allow the game to go on for about an hour. After that time, stop the discussion even if no priorities have been chosen. Discuss with the participants what they have learned about setting priorities. Discuss how the group could improve its priority-setting skills.

Here is the story of Poro Village which you can use as it is or adapt to make the village sound more like those in the area where you are working.

> Poro is a small rural village of 300 people. it has a big market which used to attract people from all over the surrounding area. Unfortunately the five kilometres of dirt road leading; into Poro have become very rough fewer people ar coming now, so business at the market is not good and the villagers are losing money. The road needs repairing.
>
> The closest water source is a stream two kilometers away which dries up at certain times of year. The main town of the district, about ten kilometers away, has a piped water supply. The residents of Poro feel that they deserve the same.
>
> The nearest school to Poro is in another village reached by a path through the forest. Children using the path have been bitten by snakes and injured through tripping over fallen trees. People in Poro want their own school.
>
> The nearest health centre is in the main town. This is far to travel for a sick person, and the health workers who promise to visit Poro never come. The villagers want a health centre too.

Finally, because the main town of the district has electricity, people feel that Poro should have electricity too. This would help then children study and made life at night more interesting.

Here are some of the roles people can play: farmer, carpenter, baker, weaver, potter, tailor, trader, seamstress, food seller, religious leader, chief (or political leader), bicycle repairer, mason, herbalist, shopkeeper, midwife, housewife.

Health talks / Planning a Health Education Activity.

Purpose:

The most natural way of communicating with people is to talk with them. In health education, we have many opportunities to talk with people. We may dot this with one person or with a family, with a small group or with many people together. Health talks have been, and remain, the most common way to share health knowledge and facts. Too often, however, this method is used by itself. Talk alone is too much like giving advice.

To make a talk more educational, it must be combined with other methods, especially visual aids, such as posters, slides, and flannelgraphs, A talk should be tied into the local setting by the use of proverbs, for example. Interaction and interest should be aroused by using discussion, songs and possibly role-plays and demonstrations.

Group size:

Talks are usually given to small gatherings, although they are sometimes given to much larger groups. For example a talk broadcast over the radio may reach everyone in the country.

When a health talk is well prepared and presented in a lively way, it is an effective method of sharing health knowledge and lack.

Participation:

One problem is that the larger the group, the less participation and discussion are possible. Discussion is necessary so that people can ask questions, share ideas, and be clear about the real message of the talk. This is easy in small groups of 5 to 10 people. In larger groups there is less chance for each person to ask his or her own questions. After hearing a talk to a larger group, some people may go away confused. One way to solve this problem, is for you to stay after the talk so that people can come to you individually to ask their questions.

With talks on the radio, it is not possible to ask questions of the speaker. This problem can be solved by holding a radio meeting. participation and discussion help you learn too. You learn how well you are able to communicate. if many people understand you points, then you are a good speaker. if not you should try to find out why, and then try to do better.

Do not accept silence as agreement or understanding. Ask the group questions to be sure that they understand your points.

Preparing a talk

The following points must be considered carefully.

Know the group

Find out their needs and interests.

Select an appropriate topic

This should be a single, simple topic, Nutrition is too big as a topic. It would take weeks to talk about all the aspects of nutrition. Nutrition can be broken down into many simple topics. such as breast-feeding weaning diet, body-building foods, food needs of older people, cooking methods that preserve food value etc:

Have correct and up-to-date information

Check, in your books and consult resource people (your supervisor perhaps) to check that all your facts are accurate.

List the point you will make

There should only be a few main points. People may forget if you tell them too many things.

Write down what you will say

If you do not like writing, you must think carefully about what to include in your talk. Think of examples, proverbs and stories to help emphasize your points.

Think of visual aids

Well chosen posters photos, etc, will help people learn.

Practise your whole talk

This should include the telling of stories and the showing of posters and pictures.

How many minutes does your talk take?

The whole talk, including showing visual aids, should take about 15 to 20 minutes. you should allow another 15 minutes or more for questions and discussion. If the talk is too long people may become bored and restless.

Making arrangements

Goc organization demands that you pay attention to many details.

Where will you give the talk?

Is the place free from noise? If it is the rainy season, is the place protected from the weather? Is there room for the whole group to gather comfortably? Are there enough seats for those who need them? Is the place small enough for people at the back of the group to hear and see? Can everyone get to the place easily?

At what time will you give the talk

Pick a time when the people in the group have no other duties. Do not pick a time that conflicts with another community event.

A talk may be given at a regular meeting of a social, religious or other organization in the community, Find out the schedule or agenda for those meetings. Do not take more time than the group offers you. They may have other important business to conduct.

Selecting appropriate methods

It is not enough to decide what will be done, by whom and when, we also need to decide how it will be done.

In Chapter I. some of the reasons for people's behaviour were discussed. Once a health worker understands the reasons behind behaviour that is causing a health problem, he or she can use many different methods to encourage a change in that behaviour. There are some important points to take into consideration when we choose a method. First of all, the method must suit the situation and theproblem; it must therefore beselected carefully.

There are many methods, because there are many ways of solving a problem. Before choosing a method, the person practising health education must understand the problem at hand. A doctor, for example, has many methods to choose from in solving medical problems, If a patient is found to have a stomach ulcer, the Doctor will try to understand the problem and choose the best method to use in dealing with it. If the ulcer is not too serious, diet may be the chosen method. By controlling what, when, and how much a person eats, the problem might be overcome. If the ulcer is slightly more serious, drugs may be used, In an even more serious case the doctor may choose to do an operation. It is likely that two or more methods will be used together.

People practising health education must make decisions about which methods should be used to help solve problems related to health behaviour. There are six things to consider before choosing health education methods:

- How ready and able are people to change?
- How many people are involved?
- Is the method appropriate to the local culture?
- What resources are available?
- What mixture of methods is needed?
- What methods fit the characteristics (age, six, religion, etc) of the target group?

How ready and able are people to change?

Remember the story in Chapter I about three women who were asked to buy shoes for their children. The midwife gave a talk in which she provided information, ideas, and suggestions. After the talk, not all the mothers decided to buy shoes.

One mother was ready to change. She had no major problems in her way. She accepted the ideas in the talk and carried out the midwife's suggestion. When people are ready to change, posters, radio, songs, plays, stories, displays, and photographs are some of the educational methods that can be used.

A second mother was interested in changing: she liked what the midwife had to say but she did not know if the family could spare the money for buying shoes. Also she was not sure if the grandmother would approve. The talk certainly gave this woman useful ideas about helping her children, but did not help her organize her family finances.

Approaches that might have helped this woman would have been discussion with family members about how much money they earned, how much they spent, and what they spent it on. Then, though demonstration or teaching, it might have been possible to show the family how to manage their money better so that shoes could be bought for the child. Linking the father with the local farmers cooperative or with the agricultural extension agent might have helped him find ways of earning more money. Then if money was no longer a major problem, discussion with the grandmother about her love for her grandchild could have been used to win her support.

The third mother was hard to reach. She was so worried about her problems that it was difficult for her to take an interest in what the midwife said. She also lacked money and resources. To reach this woman, the midwife needed to use methods that allowed personal contact: counselling and home visits were needed. These would have shown the woman that the midwife was concerned, and would have helped the midwife to learn more bout the woman's problems. The more she was able to learn, the more she would have been able to help.

This woman might have benefitted from belonging to a group or club in which people with similar problems can support and encourage each other. Links with other community agencies could have provided the resources needed to help her care for her child. She could also have been helped by training in skills that would enable her to earn more money to provide for her child.

How many people are involved?

Some methods of health education are designed for reaching a large number of people (for example a group, a neighbourhood or a town) with a message or idea. These methods involve the use of such means as posters, lectures, displays, plays, role-plays, puppet shows, newspapers, radio, film, and town criers.

Providing good ideas quickly to a large number of people is a very useful step in health education. It creates awareness of a problem or idea. If the message is a good one, it will help prepare people to participate in desired action. however, other methods are usually needed to follow up the initial impression made through the mass media. Sending out health messages alone is usually not enough to change health behaviour in a large number of people.

In order to make large-group methods more useful in health education, there needs to be an exchange of views and ideas between the health or community workers who use the methods, and the people who see and hear the health messages. This exchange or views and ideas is called 'interaction'.

You will probably not be working alone. share the responsibility of interacting with the community with other health workers, particularly with community health workers and staff from other community agencies.

Here are some suggestions for developing such interaction:

- After a film or talk, divide the audience into smaller groups for discussion.

- When putting up posters around the community, make home visits and discuss the ideas on the posters with families.

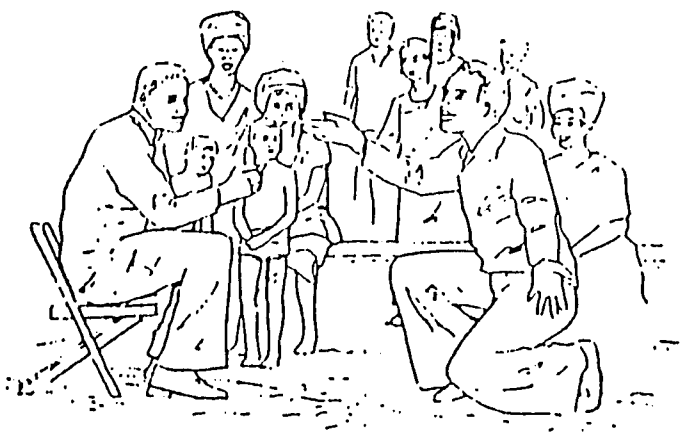
- After a play, ask the actors to go into the audience to talk with people.

- Organize small groups, in various parts of the community, for radio listening combined health committee.

Activities such as practicing new skills, discussing personal feelings, values and money matters, and sharing difficult experiences are best done person-to-person or in small groups (ideally in group of no more than ten people).

Methods suitable for use with groups include story-telling, demonstration, role-playing, case studies discussions, educational games, and other that will be discussed in Chapter 5.

Teaching aids such as projectors and flip-charts may be used with groups of up to 25 people, although again it should be remembered that, when there are too many people, there will be less interaction and personal contact between the health worker and the members of the group.



Role playing can help individuals and small groups of people understand their problems and work out solutions to them. Some members of the groups and out a situation while others watch and make comments and suggestions.

Planning for health education for primary health care

Note that posters, radio and other media designed to reach large groups can also be used with a small number of people.

BEST AVAILABLE COPY

Is the method appropriate to the local culture?

In Chapter 1 we described culture as the way of life of people in a community. Culture will determine the educational methods that will be acceptable and understandable to people. It will also determine the methods to which people will respond by changing to healthier behavior.

For example, the role-playing method requires people to speak out freely in front of others. In one culture people may like to act and speak out. In anotner they may prefer to be quiet and careful about what they do or say. Role-playing would work well in the first culture. It may work in the second, but only after people in the group know and trust each other.

To take another example, photographs have different meanings in different cultures. If you ar working in a community where most people are illiterate, they may not be used to seeing photos as a source of news or information, because they have little experience of books and newspapers. If you are doing a programme on breast-feeding in such a community, and show the women a picture of a mother breast-feeding her baby, their first thought may be that the photo is of your mother or sister. They would not realize that the photo is there to help them learn. Similar problems may arise in using films. We must make sure that people understand why they are being shown photographs or a film.

Role-playing and the use of photographs and films are examples of methods that will not work unless they are adapted to the culture of the community. Ways of adapting methods to culture are mentioned in Chapter 7. But we do not need to worry about adapting methods if we use some of the means by which the people themselves communicate ideas and share knowledge and skills. These include proverbs, town criers, plays, and so on. Such forms of natural communication should be part of any educational programme.

Practical demonstrations are good ways of teaching skills. In a good demonstration people will be given the chance to practice new skills.

Instead of [illegible] the [illegible] is

What resources are needed?

Consider the resources necessary. Some methods require only yourself and the people around you: these include the use of stories and songs, role-playing, group discussions, and community meetings.

Other methods require the use of materials or teaching aids such as posters, flannelgraphs, demonstrations, models, puppet shows, newspapers, and filp-charts.

Then there are methods that use machines: tape recorders, film or slide projectors, etc. Machines usually need electricity. Machines and materials cost money. Try to look for methods that are inexpensive and at the same time effective.

Even if you are able to borrow films, projectors, and an electricity-generating plant, the films may come from a country whose culture your people will not understand. They may not even be in the language of your people. If that should be the case, a wiser decision would be to put on a play. A play simply needs people and a few materials. The local language can be used, and members of the community have a chance to participate. Expensive machines are not required.

Think of other ways in which you can use local resources to make or provide aids to education.

What mixture of methods is needed?

Select a mixture of methods. Variety and repetition are both important. By using a variety of methods you will make your programme more interesting. If you repeat the ideas in different ways, people are more likely to remember them.

If, for example, you are telling a story you may want to show some pictures or posters that relate to the story. then after the story, you may ask some of the listeners to do a role-play in which they act out the story for all to see.

A health talk should be more than just talk. Of course, you will do some lecturing, but you should also show posters. There should be group discussion. Demonstrations and practice will also help people learn more from the talk.

A community meeting can be made more lively if a short play is also presented. This will help make issues more clear to people. A display could be added too. People coming to the meeting could look at the display and learn something about the subject before the meeting starts.

which methods fit the group best?

You will meet different people and groups. Some will be old, some young. Some will be made up of women, some only of men, and some will be mixed. Select and adapt your methods to fit the type of people you meet.

Fables using animals might be better for children than for adults. Lectures may be better for educated people, than for those who have never been to school. If the people belong to one religion, select proverbs from the scriptures and books of that religion.

BEST AVAILABLE DOCUMENT

Organizing a health campaign:

Purpose:

Campaigns can be planned to promote knowledge, skills, attitudes, and values relating to a particular health issue. They may also be used to accomplish a particular community improvement project.

Public awareness is the first key to a successful health campaign. Therefore a carefully planned public information programme should begin as soon as the community decides on the issue or problem it wants to tackle. People need to know what is going to happen, when it will happen, and why the project is important to them in the course of the campaign this information is provided through a series of messages, for which every available channel of communication is used, including personal outreach, town criers, posters, public address systems, announcements at public or group meeting places, and, if possible. radio and newspaper coverage.

A health campaign is organized around one issue or problem. In other words, it has a theme. Examples of themes are 'Clean up the community'. 'Immunize your child'. 'Good food for healthy bodies'. 'Clean water for good health'. These themes will often become the name of the campaign, so should be short, 'catchy', and easy to remember.

The campaign should be concerned with a real problem that has been identified by the community members themselves or is generally recognized. If there is a health committee in the community, it should be active in identifying subjects for campaigns and planning appropriate action.

The duration of the actual campaign activities in the community is often only a week or a month. For this reason, campaigns are often known as 'Health weeks'.

Advanced planning:

While the campaign itself may last only one week, it must be preceded by much planning. The committee may work for several months or a year in order to plan a successful campaign and the necessary follow-up. Members of the community must be contacted well in advance, if they are expected to participate in projects and donate money and materials. Resources must be located, and educational activities organized.

The use of a variety of health education methods will help reinforce the impact. There may be plays, health talks, displays, demonstrations, community meetings, and group discussions. Programmes may be organized in the schools and with other community groups.

Opportunities are provided for the community to participate in projects such as digging latrine pits or building incinerators.

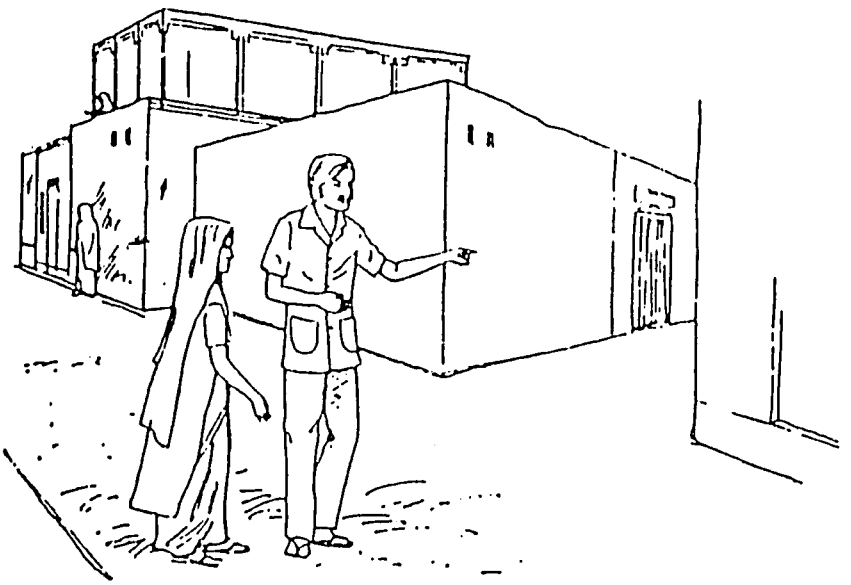
Follow-up

An activity that lasts for a week creates much excitement and interest. But health problems are not solved if people are active for only one week out of the year. They must practise healthy behaviour throughout the year. They must help maintain community wells and latrines in good order every day, not just on one day.

If a health committee exists, its members must watch to see if people continue to practise the health skills taught during the campaign. Home visits, community meetings, posters, group discussions, and school projects throughout the year help people to remember the knowledge and practise the skills they have learnt, and also to maintain the health facilities they have created.

The need for follow-up is one reason why campaigns should be organized by the community itself (through its committees or councils), and not by health workers alone. Follow-up activities are carried out most effectively by the people who live in the community.

For example, a one-week campaign on immunization would be useless without adequate follow-up. Several immunizations require second doses three months after the first. Also, new babies require immunization at different times throughout the year. Planned follow-up activities are therefore essential to make sure that the campaign succeeds in its health objectives.



This child is being immunized as part of a campaign. For the campaign to be successful, planned followup is needed.

Special community events

Every community has festivals, celebrations, and ceremonies. These may mark special seasons of the year such as harvest time. The planting season, or the new year, Some festivals are religious or political, others are held in remembrance of national events and heroes. There are usually many such events throughout the year.

Some festivals are a time for enjoyment and relaxation. Others call for serious thinking and quiet devotion. Whatever the purpose of the festival may be, the whole community usually participates.

BEST AVAILABLE DOCUMENT

Educational value

Most community events have some connection with the health and welfare of the community. A harvest or thanksgiving festival is a time for enjoying and appreciating the bounty of the earth. It can also be a time to think about such things as:

- Nutrition
- Food storage.
- What use to make of profits.
- How to plan for a better crop next season.

The high level of interest and excitement found during festivals and celebrations can be focused on these issues, which are all related to health. Health education in the form of drama, song, dance, displays, school projects and group discussion can be planned for the time of the festival. If the event is political or religious, opinion leaders could be asked to refer to health concerns in the speeches and sermons. During the festival period, special activities could be organized by school children for their schools and their parents.

Talks and demonstrations could be given at the clinic. Let people know that the topic is related to the festival taking place. use traditional dancing, singing, plays, story-telling, and other forms of art.

Planning educational programmes for an event or festival is much like planning for a health campaign. Therefore be sure that the community groups and committees participate in the selection and planning of the educational activities. Again, as in campaigns, community participation is necessary to guarantee follow-up which will ensure that people's new ideas and skills are not lost.

What are some of the festivals and events in your community? How is each festival related to Health or community development? What kind of educational activities could be useful in each festival? Who are some of the local opinion leaders, artists, and community workers that could assist in educational programmes?

A community festival

TEACHING AIDS

Methods and media

- Health talks
- Proverbs
- Lables
- Stories
- Case studies
- Demonstrations
- Posters
- Displays
- Flipcharts
- Flannelgraphs
- Photographs
- Projected materials
- Tape recording
- Films or movies
- Newspapers
- Magazines

BEST AVAILABLE DOCUMENT

Radio
Televi:
Publications
Local of traditional media

5. CONTENT OF HEALTH EDUCATION

5.1 Relevant, practical, appropriate, positive

The previous section dealt with how to deliver health information to the community, this section will be concerned with what should be the health information conveyed to the community.

Health information should be:

- **relevant:** For example, there is no need to discuss ways in which the community may reduce risk of malaria if malaria is not a problem in the RV.

- **practical:** For example, encouraging mothers to give their children meat and eggs would not be practical or appropriate if both were so expensive for the family's budget or if they were not readily available.

- **appropriate:** For example, health education messages need to be culturally appropriate and not conflict with deeply held beliefs.

- **positive:** Health information should be positive and state what should be done to promote good health and prevent disease. In general, negative messages "don't do ....." should be avoided.

5.2 Messages

A convenient way for the health educator to summarize health information is in the form of messages. An example of a message is:

'Mothers should start to breast feed their babies immediately after birth.' This message is simple, practical and appropriate and if the health worker is conducting a session on breast feeding, this is one of the messages that the audience should take away with them.

Although this is a simple message, the reasons for the message may be several. In this case:

- Starting to beast feed immediately after birth stimulates the production of breast milk. If possible, breast feeding should begin not later than one hour after the delivery of the baby.

Posters:

A poster is a large sheet of paper, often about 60 cm wide by 90 cm high with words and pictures or symbols that put across a message. Posters are widely used by commercial firms for advertising products, and to reinforce the message being delivered by other mass media.

Purpose:

Posters can be used effectively for three purposes.

- To give information and advice.
- To give directions and instructions.
- To announce important events and programmes.

Group size:

The target group can be small or large. It can be the whole community. Sometimes you may also want to use posters with individuals. You may be counselling someone in the clinic, in the school, or at your office. If there are posters on the walls that relate to your client's problem, you may take the client to see those posters.

Content

A number of rules should be followed in making posters.

- All words should be in the local language.
- Words should be few and simple.
- Symbols that illiterate people will also understand should be used.
- Colour should be used to attract attention.
- Only put one idea on a poster. Too many ideas will make the poster look clumsy and confuse people. If you have several ideas to pass on, use a flipchart (see pages 222-225).

Posters announcing events should contain the following information.

- The name of the event.
- The date and time.
- The place.
- The organization sponsoring the event.

The poster should be big enough for people to see clearly. If you are using a poster with a group, make sure people at the back of the group can see it well.

Placing posters

Place posters where people will see them.

- Put them in places where many people are likely to pass (market areas, meeting halls).
- Ask permission before you put a poster on a house or building.

- Some places, building, rocks and even trees are sacred or special. Never put posters in these places. It may make people angry, and then they will not learn from your poster.

- Do not leave a poster up for more than one month. People will become bored and begin to ignore it. Change posters often to keep people interested. When you remove old posters, save them if they are in food condition. If a poster is worn and torn, dispose of it properly in a dustbin to set a good example.

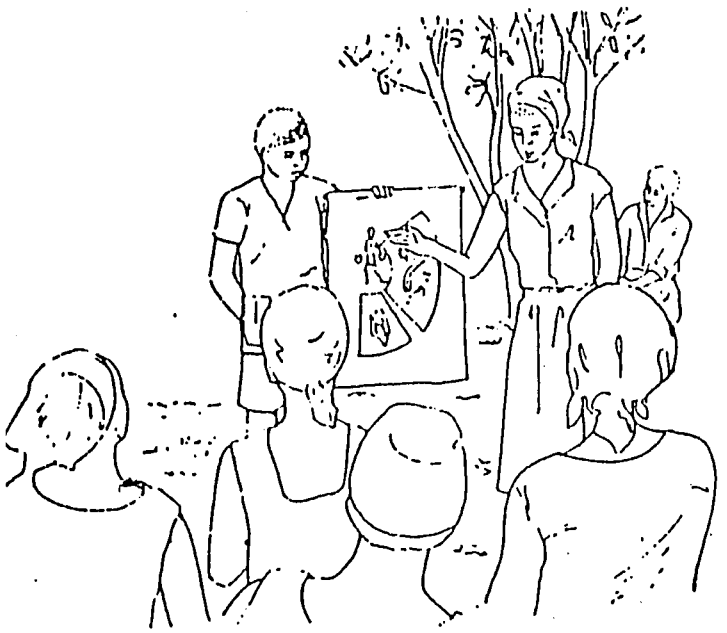
Where to find posters.

The ministries of health, education or information, voluntary agencies and some private companies may have ready-made posters to give or lend. Before you use such posters, pre-test them to make sure that they will be useful in your community.

You, and the people in the community, can design your own posters. A ministry or a private printer in town may be able to print them for you. Find out the cost of printing before you try this. The size of the poster and the number of colours affect the price. ask the printer's advice about the cheapest way to design the poster. You may have to seek gifts of money to cover the cost. If the poster idea is very good, the ministry or a voluntary agency may decide to print it for nothing, but don't count on this. The community can make its own posters from local materials. The rest of this section describes how you can make your own simple posters, pre-test them and use them effectively.

Making posters

Materials that can be used include: large sheets of paper, pens, pencils, crayons, markers, paints and paint brushes, photos, old magazine pictures and glue.
Decide on how to use the poster. This will tell you how many to make. If you want to use the poster as an aid in your health talks, you will need only one. If you plan to use it in the community, you will need many. First count the number of places in which you will put the posters. Do not make more posters than you need, because they will waste money.



Posters can provide ideas and information. This health workers has attached the top of her poster to a wooden stick. This will make the poster last longer. Also she has asked someone from the audience to hold the poster so that she can point at the pictures and move about easily.

Make a test drawing of the poster first, before putting it on a large sheet of paper. Involve your group or health committee in designing it. Make several copies so that you can pre-test the design before you make the final posters.

There are many ways to make pictures for your posters. You or someone else in the group or community may be able to draw or paint well. If there is no one who can draw, you can trace a picture from a book or magazine. Another way is to cut out pictures from old magazines and glue them on the poster. Photographs can be glued on too.

Involve people in making posters. Make one poster as an example and ask members of your committee to help you make more. School children can help too. You might even hold a postermaking competition. this will interest people and help them learn more about health.

BEST AVAILABLE DOCUMENT

Pre-testing:

Remember to pre-test your poster to be sure people understand and accept it. Posters cannot speak. If people do not understand a poster, they cannot ask it questions. All posters that you place around the village or town should have a very clear message.

Using posters in a group:

If you are using posters with a group, attach the poster temporarily to a wall or tree in front of the group so they can all see. You may also ask for a volunteer from the group to help you hold up the poster. This may be better because the volunteer can walk around the group with the poster so everyone can see it closely.

Do not stand in front of the poster while you are talking about it. Do not try to hold it up yourself. This would make it much more difficult for you to communicate effectively with the group. Posters can be used as a bases for discussion. Do not hold up a poster and start explaining it right away. Instead:

- Ask everyone to look at the poster carefully. give them a chance to see it well.
- Ask people what they see. What do they think is happening in the pictures? Let them think for themselves.
- If there are words on the poster, find out if someone can read. Ask him or her to read it for the group.
- Add your own ideas as the discussion continues.
- Turn to the poster again at the end of your discussion. Ask once more what people think is the message of the poster. Repeating and reviewing the message of a poster helps people remember.

Protecting and storing posters:

It is a good idea to glue piece of cardboard to the back of a poster, at least at the top. This will stop it tearing when it is held up for a group to see. Posters should be stored in one of these two ways.

- They may be kept flat inside a cupboard with a blank sheet of paper on top to stop them getting dusty.

- They may be rolled up with a string or rubber band around them. If you attach a small tag to the poster with the title and topic, then you can identify the poster without having to unroll it.

Be sure to keep posters dry and free from dust.

4.3. Audio Visual materials

Explanation and meaning:

Audio-visual materials are those which combine both audio and visual means of communication. People both watch and listen to them. Examples are films, videos and slide shows with accompanying tape recording.

Reasons for using:

To entertain and inform at the same time.
To stimulate discussion.
To provide an experience that people will remember.
To present complex information or ideas in a clear, simple and memorable manner.
To show real life examples of good health practices in similar communities.

Possible problems:

1. A lot of equipment is necessary which is often not readily available.

2. the health educator must know the materials well and this takes time and preparation.

3. Preparing the equipment, materials and location before the session also takes considerable time and effort.

4. Some source of electricity is needed. Power failures and other technical probiems can arise.

5. The materials may not be culturally appropriate.

Suggestions for effective use:

1. Because of the amount of time and effort to organize, enough people should come to see the show but not too many. Therefore, it should be advertised in appropriate places.

2. If the show going to take place outside the BHU, in the community; arrangements should be discussed and agreed with the local leaders/elders well in advance.

3. All materials/equipment must be available and in working order well before the show is due to start, with spare batteries/fuses/bulbs for electrical equipment.

4. The seating should be arranged so that everyone can see and hear clearly. This can be checked before the show by sitting right at the back and noting whether the stage/screen can be clearly seen or not.

5. Before starting explain what the show is about.

6. It may be useful to focus people's attention on the basic ideas running through the show by asking 2 or 3 "focus" questions before starting. People try to learn the answers while watching the show. The answers are then discussed by the group afterwards.

7. Regardless of whether or not "focus" questions have been asked, a discussion should be held after the show. The discussion which takes afterwards can be just as important, from the health education point of view, as the show it self.

   Therefore it is very helpful to have some topics prepared for discussion following the show. This discussion is best done in small groups, of about 5 people per group.

   After the small-group discussions, one person from each group is asked to report back her/his group's idea. In this way, the watching of the show - which is a personal, individual activity - becomes transformed into a collective education experience in which the group pools its ideas and opinions. The role of the health educator is that of a manager. He/She organizes, monitors and directs the proceedings, but without dominating people.

<u>Summary of procedures for using audio-visual aids:</u>

1. Introductory activity (with or without "focus" questions).

2. Show audio-visual material (followed by checking answers of "focus" questions if asked).

3. Small-group discussion.

4. Representatives of the small groups report their group's views to the whole group.

5. Concluding discussion.

4. TECHNIQUES FOR TRAINING

4.1 Role Plays

Method A: As performances to be watched:

Explanation and Meaning:

A role play is a learning activity organized by a teacher in which people act out roles in real life situations. Each person acts out their role in the situation, speaking and behaving in the way they think an ordinary person would behave. For example, a role play could be done of a CHW trying to convince a family of why they should build a latrine.

Reasons for using:

1) Role plays can require trainees to combine and apply a range of skills and knowledge which they have learned. This is the same as they would have to do in real life situations in their future work.

2) Role plays help to revise and reinforce what trainees have learned.

3) Role plays provide a realistic way of practising skills that involve working with people, which is a major part of a CHW's job.

4) Many people enjoy acting in roleplays once they become accustomed to doing this.

5) People usually find role plays enjoyable and interesting to watch.

Possible problems:

1) Some people ar shy and don't like to act in roleplays.

2) Roleplays are difficult to control once they have started, even if the teacher is a roleplayer's.

3) If roleplays go on for too long they become boring.

4) if roleplayers try to make the roleplays too funny then the people watching may laugh so much that they miss the point of the roleplay.

5) Trainers often confuse the practice of a practical skill, e.g. making O.R.S., with roleplay. Practice after a demonstration is not a roleplay. if trainers try to include a complicated practical task in role play then the roleplay may become too long.

Guidelines for effective use:

1) Decide what topics can be taught or revised using roleplay.

2) Plan the content of the roleplay carefully so that the roleplay does not exceed 10 minutes.

3) Early on in the training select people for roleplays who will not be shy or embarrassed. Later on, involve the quieter trainees in roleplays as well.

4) Prepare and, if possible, practise the roleplay with the roleplayers in advance.

5) A few simple aids (props) to help the acting makes the roleplays much more effective e.g. doll, ORS packet.

6) If appropriate, direct the group's attention to the main points of the roleplay before starting. This can be done by asking one or two questions related to the roleplays which the trainees have to answer after the roleplay.

7) Do not allow interruptions during the roleplay. This applies to the trainer as well as the trainees.

8) After the roleplay, ask the roleplayers about their opinions and feelings from the roleplay. This also allows them an opportunity to correct any mistakes which may have been made.

9) Discuss the roleplay with the group. This discussion would include getting answers to any questions that may have been given.

10) Summarize the main points from the roleplay.

11) If appropriate, repeat the roleplay with different roleplayers.

Method B: As small group activities

Explanation and meaning:

The meaning of roleplay is the same as in Method A. The use here is different however. Instead of a few participants acting the roleplay while the rest watch all the participants act out roleplays at the same time. For this to be possible the participants must be divided into small groups. Each group may have the same roleplay or each may be given a different roleplay.

Reasons for using:

1. Reasons 1 to 4 of Method A apply.

2. the fact that no people are watching helps even shy people to get involved in their roles.

3. This using of roleplay can be especially useful for all participants to experience the influence of attitudes on behaviour. They can also try out different ways of trying to change people's attitudes and behaviour.

Possible problems:

1. The different groups may finish their roleplays at different times. This can create organizational problems for the trainer.

2. Designing roleplays that will succeed in getting people fully involved in their roles is difficult.

3. More roleplay aids are required than Method A.

Guidelines for effective use:

1) Decide what topics can be taught or revised using this roleplay method.

2) Design a roleplay which depicts a realistic problem for which the roleplayers must negotiate a solution between themselves. Each roleplayers must be given a specific point of view on the problem. The role should be designed so that a compromise solution can be eventually reached by the roleplayers.

3) Divide participants into groups of appropriate size.

4) Having discussion topics ready for each group to start on as they finish their role plays.

5) Summarize the main points from the role play.

What is a community?

People who share common interests and have the feeling that they belong together form a community. In a community people usually share common values, a common history (or background), and accept certain forms of behaviour as normal for all community members.

People belonging to a certain religion or having the same political beliefs could also be called a community.

A community, then, is not the same thing as an area or land. community is people, not land - but community members will often be able to point out the boundaries of land that belongs to the community.

We can demonstrate this by taking the example of a small village. The houses and farms of the village may occupy 50 hectares of land. We cannot say though, that the land with its houses and farms is the community. There are possibly sons and daughters who have moved away to larger towns and cities. They may have their own children and grandchildren there. yet, they may still feel that they are members of their original village community. Another possibility is that the village land is occupied by groups of people from different backgrounds. In that case, the village may shelter two or more communities. Feeling part of a community is a feeling of belonging that people hold in their minds and hearts. A community cannot be identified simply by looking at the land or lines drawn on maps.

<u>Identifying communities:</u>

Here is a case study that shows why it is necessary to identify clearly the communities with which we work.

> Mr Jola is a health assistant working in a small dispensary that serves ten villages. He would like to involve the people more in providing their own health care. He visits all the villages to see if they would be willing to have a volunteer trained in primary health care. He stops at the first house in each village and asks the people to take him to the village leaders. So far, all have agreed to participate in the programme and to send volunteers for training.

Several months later, there is a cholera outbreak in the next district. Mr Jola meets with the volunteer community health workers to discuss what should be done to protect the people. After several suggestions are made, the community health workers go back to work out specific plans in their own villages.

In a few weeks, the cholera has spread to Mr Jola's district. Fortunately, because of the advance planning, most village were prepared. Few people became sick and none died except in one village, Abedo. There, twenty people, all from the west side of the village, died of cholera. This seemed strange, so Mr Jola went to Abedo to investigate.

On reacning Abedo, Mr. Jola met the community health worker and asked to visit the section of the village where the people had died. Mr Jola talked to the families in that section and made an interesting discovery. These people said that they had originally come from a place about 50 kilometers away. Although they now lived in Abedo, they still had their own leaders, celebrations, and customs. They had never worked closely with the people who were native to Abedo, so they had not participated in any of the primary health care activities to prevent disease. Even though the map showed that these people lived in Abedo, they were really a separate community.

How could Mr Jola have avoided this problem in the beginning? What steps are needed to made sure that a community is correctly identified and involved?

A community cannot be found simply by looking at the lines on a map. It is necessary to walk along the streets and talk to residents to discover where they consider the boundaries of their own community to be. The community survey 1500 pages 40 530 is an educational tool that will help you and the members of the community learn more about belongs to the community and what are its special needs resources and culture.

Mr Jola's problem arose in a rural area. Health workers in towns and cities will find the same type of problem even more often. Towns are made up of many communities. A particular community may live in a certain neighbourhood, which may be divided from the next neighbourhood by streets or streams, but often is not.

Ask the residents to tell you who are the members of the different communities or neighbourhoods, and where they believe the boundary lines are located. Then each neighbourhood can be mobilized to identify and solve its own problems. There will be more cooperation and participation if the people feel that they belong together.

When is community health education needed?

Some health-related problems can be solved by individuals alone. To solve others, the cooperation of many people is needed. Here are some examples showing when the whole community needs to work together to solve a problem.

The provision of a clean water supply system requires time, labour, and materials. It is unlikely that each individual or family in a community can afford their own hygienic well. Similarly, if a village relies on one or two springs for its water supply, no one can have a private source. In that case, everyone in the community must cooperate in the building and maintenance of a protected spring.

In some villages people keep dogs for hunting, herding, or protection. These dogs often move freely in the village and may spread rabies. To increase the protection of the community, all dog-owners in the community must cooperate in immunizing their dogs against rabies. Everyone, not just dog-owners, would be concerned.

In times of emergency for example, during floods many families may lose supplies of food and clothing and be exposed to new health risks. All members of the community must come together and share what they have, so that the whole community will survive.

In short, community health education is needed when a problem affects many or all people in the community and when the cooperation of everyone is required to solve the problem. How can you develop health education at community level? There are three points to keep in mind.

You should get the support of influential people in the community, those who are called 'opinion leaders' or 'key people'.

You should be sure that all the people of the community are informed about the problem and are kept up-to-date on plans and progress. All available channels of communication should be used for this purpose.

 BEST AVAILABLE COPY

You should get the maximum number of people involved so that the community will really strengthen its capacity to do things for its health. This can be done through community health committees, advisory or planning boards, etc.

We will now examine how we can go about achieving these objectives.

Getting opinion leaders involved:

What is an opinion leader?

In every town or village there are people who are respected by others. They may be respected because of their ability to lead, because they are good at their profession (for example have a successful farm or business), because of their long experience, or because they are able to work well with certain groups such as women or young people. Some are very well known: religious and political leaders, for example. Some are quiet, but are respected because of their special wisdom or ability.

When people respect someone, they usually go to that person for advice. When respected people talk, other people listen. Respected people are called 'opinion leaders' because other people in the community value their opinions and ideas. Opinion leaders usually have a following. Not every opinion leader is respected by everyone in the village. Each section or group has its own opinion leaders.

Finding opinion leaders:

Some opinion leaders have titles, which make them easy to identify. Examples of such titles are chief, counsellor, mayor, pastor, imam and reverend, and there are many others. The title alone does not make an opinion leader. Find out if a person with a title is popular within the political, religious, economic, or social group or organization. If, after talking to members of the group, you find out that the person is popular, then he or she is probably an opinion leader.

BEST AVAILABLE COPY

Since not all opinion leaders have titles, you should also look for them by asking people who they go to for advice on matters of concern (farming, child care, health, and other needs). If you find that many people name one individual, then you can be certain that this person is an opinion leader.

Working with opinion leaders:

Visit the opinion leaders in your town. Find out their views on the welfare of the community. See what ideas they have about improving the community's health. Ask them for their advice. Share your own ideas with them and involve them in any local project. If they accept your ideas about community health, they may pass them on in advice to others. Opinion leaders have an important role in encouraging other people to adopt healthier behaviour and supporting them in their efforts to do so.

One thing to remember is that, since opinion leaders are usually elders or other important people, you should approach them in the respectful way. Let them know that you value their leadership in the community. If the leaders see that you respect them, they will listen to your ideas more closely.

The opinion leaders you will want to approach will depend on the type of programme. If your programme is about child health, visit the respected old grandmothers who influence child-raising practices. If you plan to develop a youth programme, look for youth leaders and young adults whom young people respect and listen to.

Who are the important political, social, and religious opinion leaders in your village? Who are important opinion leaders among the farmers and the different craftsmen? Who are the important opinion leaders among the women?

BEST AVAILABLE COPY

Promoting participation:

From your experience you probably know that it is often difficult to obtain the participation of every member, even in small groups. Participation by the whole community is still more difficult.. here are some reasons people may give for not participating in a community project.

- 'No one told me about the project'
- 'I was angry: they only told me a few days in advance'.
- 'They never thanked me for the work I did the last time'.
- 'I did not agree with the plan'.
- 'The date was the same as the big market in the district town, so we couldn't come'.
- 'No one told me exactly what I was supposed to do'.
- 'They never asked me what I thought, so why should I help

Have you heard other reasons being given for not participating?

To encourage participation you should try to:

- Keep people informed about activities that are being planned.
- Encourage suggestions to be made, directly or through a representative, to the planning committee.
- Set out specific tasks and jobs for everyone. You will need to explain the tasks and maybe provide some training. People should also understand how important their own job is to the success of the whole project.

  Find out on what date most people will be able to participate.

 BEST AVAILABLE COPY

Give praise and show appreciation to all who help. For example you could take a photograph of everyone who helped with a project and display it where it can be seen by members of the community.

Mobilizing community resources for a project:

Mobilizing community resources means that every member of the community is encouraged to give whatever resources he or she can offer towards solving a community problem. a health committee, club, or association cannot build a new market, a road, or a well alone. Help is needed from the whole community.

Planning the project:

The planning skills described in chapter 3 are most useful here. One of the main things to remember is that the community should:

- Identify its own needs.
- Plan its own solutions.
- Get the maximum number of people to participate voluntarily in the project.

A main purpose is to strengthen the ability of people to solve their problems using their own resources. Besides being the least costly way of solving a problem, using local resources also give people a feeling of pride and self-worth. Identifying resources (pages 64071) is most important for the effective mobilization of the community.

BEST AVAILABLE COPY

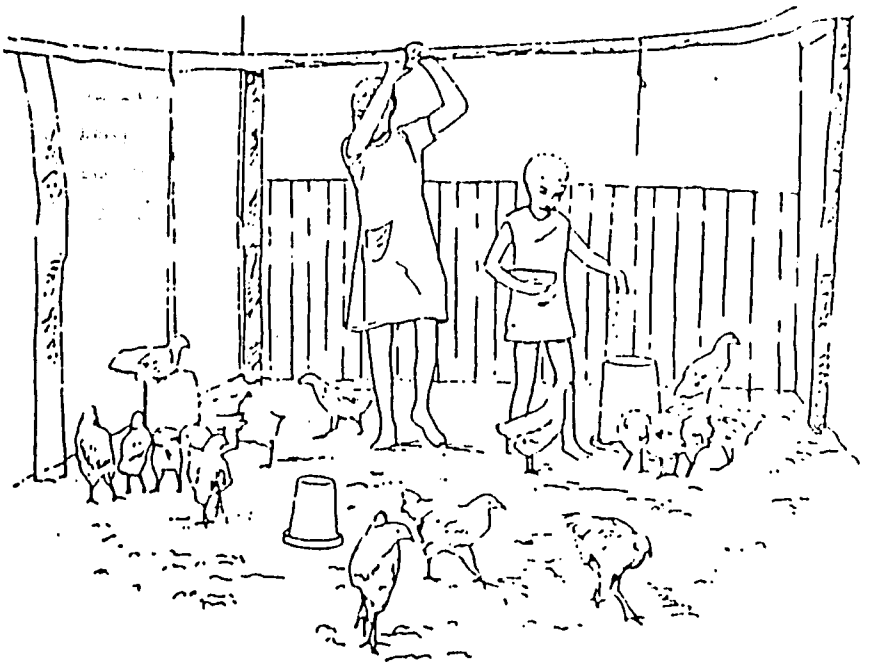
People in this village have decided to build a new classroom for their primary school through self-help. Here the village women are participating by collecting sand, a local resource to be used in making cement for the building.

You should not make plans for the group. Encourage its members to make decisions for themselves. Decision-making is one of the skills the group is learning. Of course you may give guidance and suggestions. In particular, make sure the group is realistic about the amount of time and other resources they will need for the project.

Developing self-reliance:

As the group begins the project, you should be around to watch and give suggestions. You may have to demonstrate some new skills. Then step back and let the people learn by doing the work for themselves. As the work is being done, meet the people and discuss their progress. find out what they are learning. Praise them when they are doing well.

BEST AVAILABLE COPY



A school-run poultry farm is a project through which children can learn about nutrition, develop a sense of responsibility and gain self-help skills, and therefore self-reliance. These skills and the feeling of self-reliance will spread to the families of the children.

Point out any problems you might see. Ask the group to think of solutions to the problems.

At the end, discuss with the person or group the results they have achieved. Find out if they are happy with the way the project turned out. What new skills and ideas did they learn? What might they do better next time? Praise them for what they have achieved. This will encourage them to continue.

If a project does not succeed, people often become sad or angry. This is natural. If this happens, you must help people see that learning can come out of mistakes too. Help them see the reasons for the failure. Do not let people start blaming each other. Encourage them to discuss how they will work better next time.

BEST AVAILABLE COPY

Think about the values in the community where you work. Do people value cooperation and helping friends in need? Do they value the idea of each person giving service to the community? Is it important to people that their community looks progressive to the neighbouring communities?

If these values are present in a community, people are likely to be motivated into action that will improve their community and develop self-reliance.

Developing a partnership with people:

People do not always understand why they should try to improve their health by their own efforts. They feel sometimes that health care is the responsibility of the government. Of course, the government has a responsibility in this area. And it is clear that the promotion of people's self-reliance should in no way be an excuse for health workers to avoid rendering the services that the community is entitled to receive.

Here is an example of a community-based project where it, took a long time to establish a real partnership.

> Right from the beginning the health project workers tried to involve the people in planning and programming. They were careful to ask 'What can we do together about the problem', and they started defiy the issues with the people. The people liked this very much, because they had an input to make. Previously, in another development project in the area, health workers had been conducting surveys without consulting them. The people did not even know what happened to the surveys afterwards. There was no feedback whatsoever. So, this time, they really appreciated being involved and informed.

BEST AVAILABLE COPY

However, when the point of planning was reached and the health workers asked 'What can you do about your problem?' the people were shocked. They said 'Why us, why not you? . It is your duty they had been quite comfortable letting health workers take action in the past. Now they were asked to do something about their, problems themselves. The people did not quite understand why it should be that way.

The leader of the project said that one important lesson they learned was that they needed to help people regain confidence in themselves and to reassure them that they could do it. She explained that in the past, health workers had taken away from the people their decision-making power and discouraged them from thinking for themselves. This led to people lacking confidence in their capacity to become active partners.

Partnership, self-reliance and community participation are all easy to discuss in a forum. They are much more difficult to put into practice. As the saying goes, it is easier said than done. Involving the community requires a tremendous investment of human resources, time and effort. No health worker can make an effective investment without commitment and motivation.

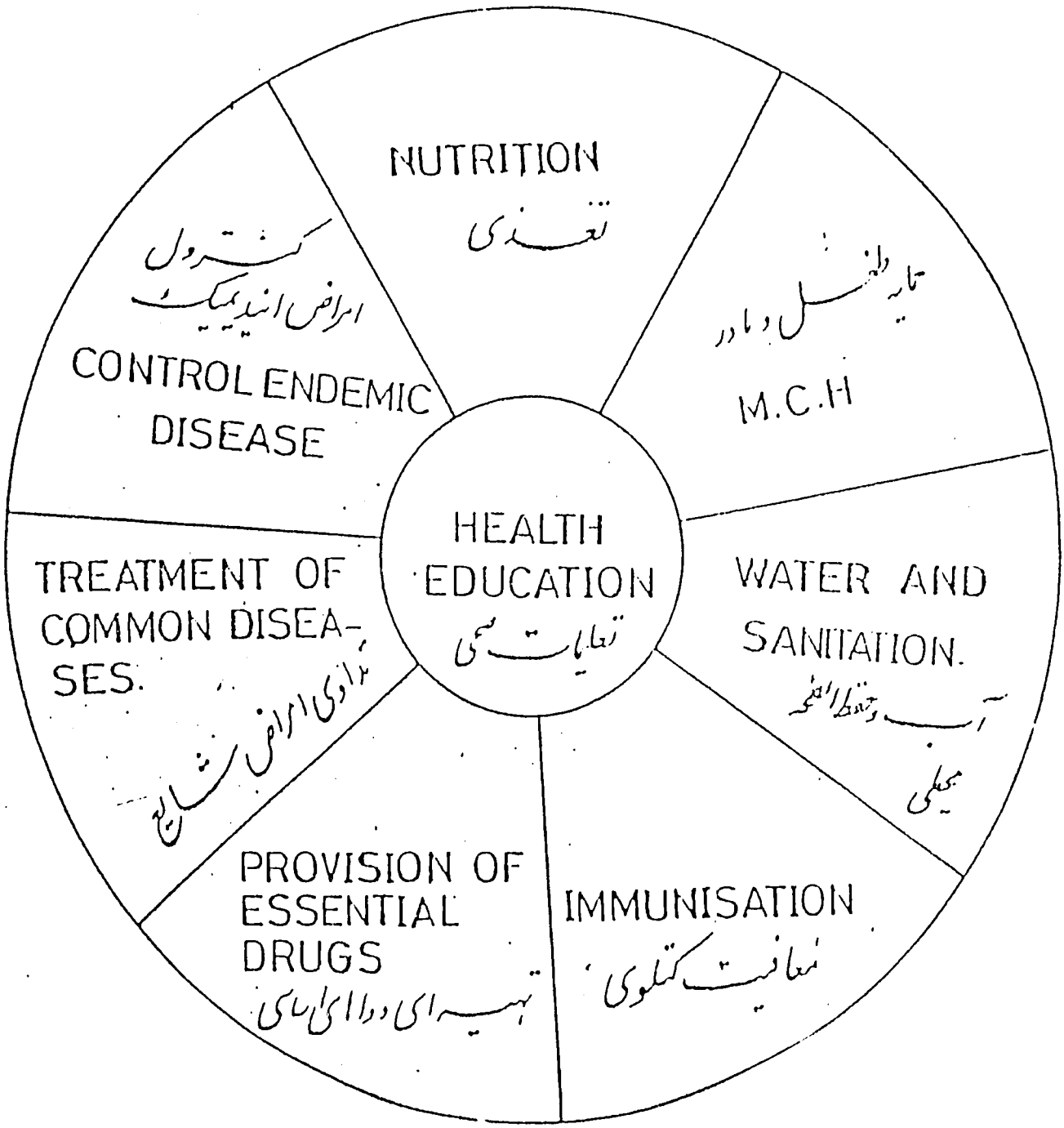
What sustained the project workers through the difficult moments at the beginning was a belief in people. The project workers gave the community much more than expertise, and technical knowledge - they were totally committed to making the project work. When the people realized this a positive relationship started to grow.

Now the project is developing very well and the people are very much involved.

Think about your own experience. Have you sometimes found people reluctant to make an effort or to take on certain responsibilities to improve their health? What were the reason? Did you have the skills necessary to take action? Had you been teaching them these skills?

In what circumstances did you find people most willing to cooperate? What were the factors that created this partnership between you and them?

BEST AVAILABLE COPY



BEST AVAILABLE COPY

67. PROVIDING SUPPORTIVE SUPERVISION:

Supervision is an important part of programme activities. Unfortunately, in some programmes it can be the weakest part. Sometimes there is little or only poor quality supervision so that the workers at levels closest to, and including, community level (often called the field workers) feel neglected, isolated or unsupported. On the other hand, too much supervision can make such workers resent the attitudes, regulations, form filling and manager styles of programme staff.

Supervision is not just a matter of checking on work and giving instructions. It is an important part of effective monitoring.

There are many ways in which supervision can be carried out. The best way is for the supervisor and the workers being supervised to take enough time to share and discuss experiences, problems and progress.

THE BEST SUPERVISOR PROVIDES SUPPORT WITHOUT TAKING CHARGE AND WITH SKILL, UNDERSTANDING AND PATIENCE

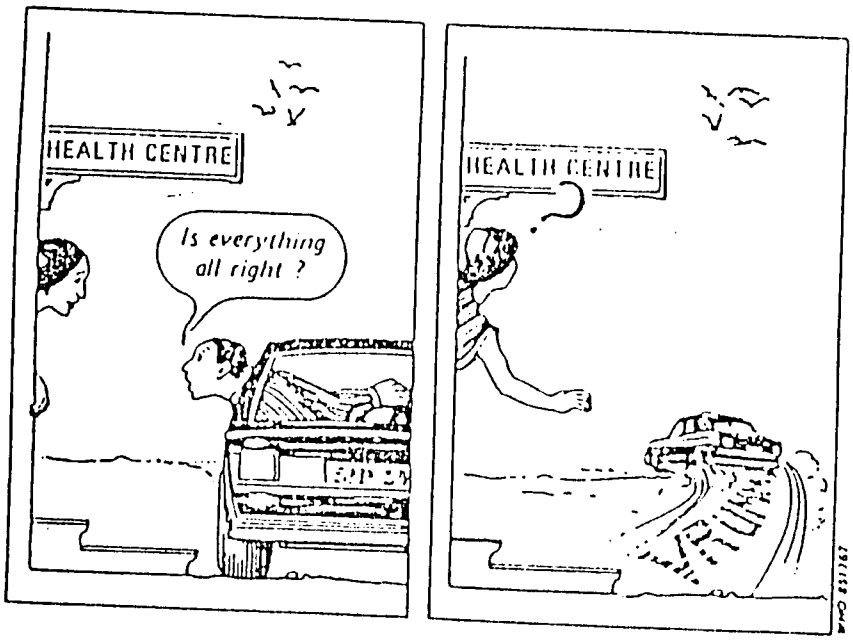
Who makes the best supervisor?

Those who trained the field workers in the first place are often the ones who make the best supervisors for such workers. An important part of good supervision is trust and friendship.

In some countries primary-school teachers have been trained to supervise community health workers. They make good supervisors as they learn just the necessary amount of health knowledge, and they have their own teaching skills which they can pass on the health workers.

An experienced field worker like a community-based worker can also be a good supervisor of other community-based workers. He/she knows, at first hand, the realities and problems of the work. In some places this kind of supervisor can be used to organise an entire network of field workers.

BEST AVAILABLE COPY



Where the supervisor has not taken part in training the field workers whom he/she is supervising, it can be difficult, at first, for both the supervisor and the worker. Also, supervisors sometimes feel that they have little interest in supervision.

The field worker may also feel that a supervisor does not understand his/her needs, problems and working conditions. Supervision then becomes largely a matter of submitting reports and records, there is little exchange of experience, advice and information.

The cartoon below shows the kind of rapid supervision where the field worker does not even get a chance to say "Good morning" let alone make any comments or ask questions.

What is good supervision?

1. Supervisors and worker's in a relationship of partnership.
2. Shared responsibility for mutally-agreed objectives and working methods.
3. Good teamwork, with frequent meetings at which all view points can be expressed.
4. Clear and agreed job descriptions for all involved.
5. The giving of praise where it is due and the opportunity for promotion and/or further training.

BEST AVAILABLE COPY

6. Discussion of mutual progress, problems and plans.
7. Realistic decision-making and planning, according to need, priorities and available resources.
8. Awareness of responsibilities and possible problems in the personal lives of one another.
9. Reaching agreement wherever possible during discussion, or if not, agreeing to differ.
10. Where conflicts arise, listening patiently to all points of view separately, before trying to resolve them together.
11. Avoidance of public criticism, even where it may be justified.
12. Avoidance of favouring some workers in preference to other.
13. Fair distribution of mutally-agreed tasks.
14. Careful joint planning of the work plan with objectives that can be measured or clearly evaluated.
15. Giving advice and instructions that are clear, relevant, feasible and practical.
16. Using the opportunity to share and learn new facts and skill.
17. Providing regular opportunities for workers to meet each other, to prevent feelings of isolation and to encourage learning.
18. Provision of learning materials such as manuals, pamphlets, newsletters and visual aids where possible.
19. Recognition that the supervisor also learns from, and with, the field worker.

How often if supervision needed?

This will depend on:

- how much support the field worker normally receives from community/team/other workers.
- distance and cost (how far it is, and what it costs for a supervisor to visit a worker or for a worker to visit a supervisor).
- reimbursement of costs (whether the worker is being paid for the journey and by whom, and how long the worker is away from work).
- seasonal factors (for example whether it is planting or harvesting time, or the rainy season).

BEST AVAILABLE COPY

- length of visit (whether the visit is for a few hours, overnight or longer).
- normal workload (whether the worker needs more frequent advice or supplies, and also how much time the supervisor has, if super vision is only a part-time activity).

6.8 TAKE TIME TO EVALUATE YOUR OWN EVALUATION:

Evaluation is hard and often painful work. This is because it requires those who are associated with a particular programme to be very honest with themselves and with each other. This is not always easy.

They also have to learn how to use a range of new intellectual and technical skills and to take on new roles and/or alter existing ones. They have to spend long hours looking in great detail at what they are doing and why. They may also have to travel long distances and/or work in very difficult conditions, according to the context of their own programme. From all these experiences a programme and its participants will learn a great deal. Participatory evaluation is also an educational process.

Take time to evaluate your own evaluation. Be critical of your own approach, methods, and results. In this way, not only can you improve your own evaluation abilities but, by sharing your experiences with others, they can learn from them too.

Evaluation strengthens decision-making:

During evaluation many decisions are made. some relate to the way in which the evaluation will be organised and carried out. Some relate t' the results of the evaluation and the ways in which these will be use.

Through participatory evaluation the ob
decision.

BEST AVAILABLE COPY

4.2. Field visits:

Explanation and meaning:

Field visits are activities which take trainees out of their normal place of training to learn in the community, for example, visiting BHU or another project, seeing some wells or latrines, seeing unhygienic or unhealthy places in the community.

Reasons for using:

Field visits enable trainees to learn from what is happening in the community and places or organizations which are relevant to their work. They can also help trainees to apply what they learn in a training course. This reinforces what they have learned and at the same time enable trainees to see the practical application of what they are learning.

Possible problems:

Field visits to see things in the community can attract crowds which may be off-putting for some trainers. Field visits need careful preparation and sometimes transport. Field visits often need lots of time. This may be difficult to fit into a lesson or course timetable. Weather can also be a problem.

Guidelines for effective use:

The trainer should:

1) Decide on what topics can be taught or reinforced appropriate field visits;

2) Decide exactly what the trainees should learn from a field visit;

3) Decide how the trainees will learn this from field visit;

4) Make all necessary arrangements for the field visit well in advance; this includes information all the people involved such as transport staff, community members, project staff and the trainees;

5) Estimate approximately how much time will be needed for the field trip;

6) Explain in advance to any workers who the trainees will be visiting, what the trainees should learn from the visit and what the workers should do with the trainees; the trainer should remember that people have their own work to do, so should not ask for too much;

7) Explain to the trainees the purpose of the field visit, what they should do and any special points about the visit;

8) Provide opportunities for the trainees to actively participate in the field visit; for example, by asking them questions or giving them some assignment related to the field visit; It may be desirable to divide a class into smaller groups;

9) Avoid sending trainees on a visit to a BHU or a project without adequate supervision or preparation;

10) Remember that people who cooperate with a field visit are giving their time and effort to help trainees; they should always be thanked at the end of a visit (especially if the visit is likely to be repeated);

11) Follow up the field visit by discussing the visit with the trainees and summarizing the important points that they should have learned.

Facts for Life
THE TOP TEN:

The following are the top ten messages distilled from FACTS FOR LIFE.

1. The health of both women and children can b significantly improved by spacing births at least two years apart, by avoiding pregnancies before the age of 18, and by limiting the total number of pregnancies to four.

2. To reduce the dangers of childbearing, all pregnant women should go to a health worker for pre-natal care and all births should be assisted by a trained person.

3. For the first few months of a baby s life, breastmilk alone is the best possible food and drink. Infants need other foods, in addition to breastmilk, when they are four-to-six months old.

4. Children under three have special feeding needs. They need to eat five or six times a day and their food should be specially enriched by adding mashed vegetables and small amounts of fats or oils.

5. Diarrhoea can kill by draining too much liquid from a child's body. So the liquid lost each time the child passes a watery stool must be replaced by giving the child plenty of the right liquids to drink - breastmilk, diluted gruel, soup, or a special drink called ORS. If the illness is more serious than usual, the child needs help from a health worker - and the special ORS drink. A child with diarrhoea also needs food to make a good recovery.

6. Immunization protects against several diseases which can cause poor growth, disability, and death. All immunizations should be completed in the first year of the child's life. Every woman of child-bearing age should be immunized against tetanus.

most coughs and colds will get better on their own. But if a child with a cough is breathing much more rapidly than normal, then the child is seriously ill and it is essential to go to a health centre quickly. A child with a cough or cold should be helped to eat and to drink plenty of liquids.

8. Many illnesses are caused because germs enter the mouth. This can be prevented by using latrines; by washing hands with soap and water after using the latrine and before handling food; by keeping food and water clean; and by boiling drinking water if it is not from a safe piped supply.

9. Illnesses hold back a child's growth. After an illness, a child needs an extra meal every day for a week to make up the growth lost.

10. Children between the ages of six months and three years should be weighed every month. If there is no gain in weight for two months, something is wrong.

<u>Diarrhoea</u>
<u>Prime Messages:</u>

1. Diarrhoea can kill children by draining too much liquid from the body. So it is essential to give a child with diarrhoea plenty of liquids to drink.

2. When a breastfed child has diarrhoea, it is important to continue breastfeeding.

3. A child with diarrhoea needs food.

4. Trained help is needed if diarrhoea is more serious than usual.

5. A child who is recovering from diarrhoea needs an extra meal every day for at least a week.

6. Medicines should not be used for diarrhoea, except on medical advice.

7. Diarrhoea can be prevented by breastfeeding, by immunizing all children against measles, by using latrines, by keeping food and water clean, and by washing hands before touching food.

Diarrhoea
Supporting Information:

1. Diarrhoea can kill children by draining too much liquid from the body. So it is essential to give a child with diarrhoea plenty of liquids to drink.

- Diarrhoea is dangerous. Roughly one in every two hundred children who get diarrhoea will die from it.

- Most often, diarrhoea kills by dehydration, which means that too much liquid has been drained out of the child's body. So as soon as diarrhoea starts, it is essential to give the child extra drinks to replace the liquid being lost.

- Suitable drinks to prevent a child from losing too much liquid during diarrhoea are:-

- Breastmilk

- Gruels (diluted mixtures of cooked cereals and water)

- Soups

- Rice water

- In almost all countries, special drinks for children with diarrhoea are available in pharmacies, shops, or health centres.

Usually, these come in the form of packets of oral rehydration salts (ORS) to be mixed with the recommended amount of clean water (see box). Although these 'salts' are specially made for the treatment of dehydration, they can also be used to prevent dehydration.

Do not add ORS to liquids such as milk, soup, fruit juice or soft drinks.

- An effective drink for diarrhoea can also be made by using eight level teaspoons of sugar and one of salt dissolved in one litre of clean water.

- If non of these drinks is available, other alternatives are:-

- Fresh fruit juice

- Weak tea

- Green coconut water

- If nothing else is available, give water from the cleanest possible source (if possible brought to the boil and then cooled).

- To prevent too much liquid being lost from the child's body, one of these drinks should be given to the child every time a watery stool is passed:-

- Between a quarter and a half of a large cup for a child under the age of two

- Between a half and a whole large cup for older children.

- The drink should be given from a cup (feeding bottles are difficult to clean properly). If the child vomits, wait for ten minutes and then begin again, giving the drink to the child slowly, small sips at a time.

- Extra liquids should be given until the diarrhoea has stopped. This will usually take between three and five days.

ORS - a special drink

A special drink for diarrhoea can be made by using a packet of oral rehydration salts (ORS). This drink is used by doctors and health workers to treat dehydrated children. But it can also be used in the home to prevent dehydration. To make the drink:

- Dissolve the contents of the packet in the amount of water indicated on the packet. If you use too little water, the drink could make the diarrhoea worse. If you use too little water, the drink could make the diarrhoea worse. If you use too much water, the drink will be less effective.

- Stir well, and give to the child to drink in a cup.

2. When a breastfed child has diarrhoea, it is important to continue breastfeeding.

- When a breastfed child has diarrhoea, breastfeeding should continue, and if possible increase. If the child cannot suck, it is best to squeeze out the breastmilk and feed it to the child with a clean cup.

- If the child is being fed on milk powder solutions or cow's milk, more liquid should be given by adding twice the usual amount of clean water to the child's normal feed.

3. A child with diarrhoea needs food.

- It is often said that a child with diarrhoea should not be given any food or drink while the diarrhoea lasts. This advice is wrong. Food can help to stop the diarrhoea. [illegible] lead to serious malnutrition unless parents make a special effort to keep feeding the child during and after the illness.

A child with diarrhoea usually has less appetite, so feeding may be difficult at first. But the child should be tempted to eat frequently. by offering small amounts of his or her favorite foods.

. Children who eat solids should be given soft, well-mashed mixes of cereal and beans, or cereal and well-cooked meat or fish. Add one or two teaspoonfuls of oil to cereal and vegetable mixes if possible. also good for the child are yoghurt and fruits (especially brightly coloured fruits such as bananas, mangoes and pineapples). Foods should be freshly prepared and given to the child five or six times a day.

4. Trained help is needed if diarrhoea is more serious than usual.

. Parents should seek help from a health worker without delay if the child:-

. Becomes dehydrated. Some signs of dehydration are:-
Sunken eyes
Extreme thirst
No tears when the child cries

. Has a fever

- Will not eat or drink normally and vomits frequently.

- Passes several watery stools in one or two hours.

- Passes blood in the stool (a sign of dysentery)

- If a child has any of these signs, qualified medical help is needed quickly. The doctor or health worker will give the child a drink made with special oral rehydration salts (see box). In the meantime, keep trying to make the child drink liquids.

5. A child who is recovering from diarrhoea needs an extra meal every day for at least a week.

* Extra feeding after the diarrhoea stops is vital for a full recovery. At this time the child has more appetite and can eat an extra meal a day for at least a look. This will help the child to catch up on the food 'lost' while the child was ill and the appetite was low. A child is not fully recovered from diarrhoea until he or she is at least the same weight as when the illness began.

* Breastfeeding more frequently than usual also helps to speed up recovery.

6. Medicines should not be used for diarrhoea, except on medical advice.

* Most medicines for diarrhoea are either useless or harmful. The diarrhoea will usually cure itself in a few days. The real danger is usually not the diarrhoea but the loss of liquids from the child's body.

* Do not give a child tablets or other medicines for diarrhoea unless these have been prescribed by a trained health worker.

7. Diarrhoea can be prevented by breastfeeding, by immunizing all children against measles, by using latrines, by keeping food and water clean, and by washing hands before touching food.

* Diarrhoea is caused by germs from faeces entering the mouth. These germs can be spread in water, in food, on hands, on eating and drinking utensils, by flies, and by dirt under fingernails. To prevent diarrhoea, the germs must be stopped from entering the child's mouth.

* Poverty and lack of basic services such as clean drinking water mean that many families find it difficult to prevent diarrhoea. But the most effective ways are:-

- Give breastmilk alone for the first four-to-six months of a baby's life (breastmilk helps to protect babies against diarrhoea and other illnesses).

- At the age of four-to-six months, introduce clean, nutritious, well-mashed, semi-solid foods and continue to breastfeed.

- If milk-powder solution or cow's milk has to be used, give it to the child from a cup rather than a bottle.

- Use the cleanest water available for drinking (water from wells, springs or rivers should be brought to the boil and cooled before use).

- Always use latrines to dispose of faeces, and be sure to put children's faeces in a latrine, or bury them immediately (children's faeces are even more dangerous than those of adults).

- Wash hands with soap and water immediately after using the latrine and before preparing or eating food.

- Cover food and drinking water to protect it from germs.

- If possible, food should be thoroughly cooked, and prepared just before eating. It should not be left standing, or it will collect germs.

- Bury or burn all refuse to stop flies spreading disease.

* Measles frequently results in serious diarrhoea. Immunization against measles therefore also protects a child against this cause of diarrhoea. There is no vaccine to prevent ordinary diarrhoea.

<u>Immunization</u>
<u>Prime Messages:</u>

1. Immunization protects against several dangerous diseases. A child who is not immunized is more likely to become undernourished, to become disabled, and to die.

2. Immunization is urgent. All immunizations should be completed in the first year of the child's life.

3. It is safe to immunize a sick child.

4. Every woman between the ages of 15 and 44 should be fully immunized against tetanus.

Immunization
Supporting Information:

1. Immunization protects against several dangerous diseases. A child who is not immunized is more likely to become undernourished, to become disabled, and to die.

* Immunization protects children against some of the most dangerous diseases of childhood. A child is immunized by vaccines which ar injected or given by mouth. The vaccines work by building up the child's defences. If the disease strikes before a child is immunized, immunization is too late.

* A child who is not immunized is very likely to get measles and whooping cough. These diseases can kill. But even children who survive these diseases are weakened by them and may die later from malnutrition or other illnesses.

* Measles is also an important cause of malnutrition, mental retardation, and blindness.

* An unimmunized child will almost certainly be infected with the poliovirus. And for every 200 children who are infected, one will be crippled for life.

* Tetanus germs grow in dirty cuts and kill most of the people who become infected - if they are not immunized.

* Breastfeeding is a kind of natural immunization against several diseases. Some of the mother's resistance to disease is passed to the child in her breastmilk, and especially in the thick yellow milk (called colostrum) which is produced during the first few days after the birth.

2. Immunization is urgent. All immunizations should be completed in the first year of the child's life.

* It is vital to immunize children early in life. Half of all deaths from whooping cough, one third of all cases of polio, and a quarter of all deaths from measles, occur before the age of one year.

* It is vital for infants to complete the full course of immunizations, otherwise the vaccines may not work. Some vaccines need to be given only once. Others have to be given three times, with a gap of at least four weeks between each dose.

* The important thing for parents to know is that a child should be taken for immunization five times in the first year of the child's life:-

- At birth, or as soon as possible afterwards, babies should be immunized against tuberculosis. The first dose of polio vaccine can also be given at this time.

- At the age of six weeks, parents should bring their babies for a first immunization against diphtheria, whooping cough, and tetanus. These three vaccines are given together in a single injection called 'DPT'.

- At the ages of 10 and 14 weeks, parents should return for their infants to have two more doses of DPT vaccine. A dose of polio vaccine should also be given on each of these visits.

- As soon as possible after the age of nine months, parents should bring their babies for immunization against measles.

* Measles is one of the most dangerous of all childhood diseases. for the first few months of life, the child has some natural protection against measles, inherited from the mother. This interferes with the measles vaccine. But after about nine months, natural protection comes to an end. The child is now at risk from measles and can and should be immunized. So it is vital to take a child for measles vaccination as soon as possible after the age of nine months.

* If for any reason a child has not been fully immunized in the first year of life, it is vital to have the child immunized as soon as possible thereafter.

	Immunization schedule for infants*
AGE	DISEASE TO BE IMMUNIZED AGAINST
Birth	Tuberculosis (and polio in some countries)
6 weeks	Diphtheria, whooping cough, tetanus, polio
10 weeks	Diphtheria, whooping cough, tetanus, polio
14 weeks	Diphtheria, whooping cough, tetanus, polio
9 months	Measles (12-15 months in industrialized countries)
	*National immunization schedules may differ slightly from country to country.

3. It is safe to immunize a sick child.

* One of the main reasons why parents do not bring their children for immunization is that the child has a fever, a cough, a cold, diarrhoea, or some other mild illness on the day the child is to be immunized. Even if the child with a case of mild illness or malnutrition is brought for immunization, health workers may advise against giving the injections. This is wrong advice. It is now known that it is safe to immunize a child who is suffering from a minor illness or malnutrition, and, where diseases such as measles or whooping cough remain dangerous, every opportunity should be taken to do so

* After an injection the child may cry, develop a fever, a rash or a small sore. As with any illness, a child should be given plenty of food and liquids. Breastfeeding is especially helpful. If the problem seems serious or lasts more than three days, the child should be taken to a health centre.

4. Every woman between the ages of 15 and 44 should be fully immunized against tetanus.

* In many parts of the world, mothers give birth in unhygienic conditions. This puts both mother and child at risk from tetanus, a major killer of the new-born. If the mother is not immunized against tetanus, then one baby in every hundred will die from the disease.

* Tetanus germs grow in dirty cuts. This can happen, for example, if an unclean knife is used to cut the umbilical cord or if anything unclean is put on the stump of the cord. (Anything used to cut the cord should first be cleaned nd then boiled or healed in a flame and allowed to cool).

* if the tetanus germs enter the mother's body, and if she is not immunized against tetanus, then her life will also be at risk.

* Mothers can protect themselves - and their new-born babies - against tetanus by making sure that they are immunized before or during pregnancy. All women of child-bearing age should be immunized against tetanus, and every woman who becomes pregnant should make sure she is immunized.

* if a woman is not already immunized, a first dose of tetanus vaccine should be given as soon as pregnancy is known. The second dose can be given four weeks after the first, and should be given before the last two weeks of the pregnancy.

A third dose should be given 6 to 12 months after the second dose, or durino the next pregnancy.

These three tetanus vaccinations protect the mother, and her new-born babies, for five years. All infants should b
against tetanus during the first year of life.

Coughs and Colds:
Prime Messages:

1. If a child with a cough is breathing much more rapidly than normal, then the child is at risk. It is essential to get the child to a clinic quickly.

2. Families can help prevent pneumonia by making sure that babies are breastfed for at least the first six months of life and that all children are well-nourished and fully immunized.

3. A child with a cough or cold should be helped to eat and to drink plenty of liquids.

4. A child with a cough or cold should be kept warm but not hot, and should breathe clean, non-smoky air.

Coughs and Colds:
Supporting Information:

1. If a child with a cough is breathing much more rapidly than normal, then the child is at risk. It is essential to get the child to a clinic quickly.

* Most coughs and colds, sore throats and runny noses will get better by themselves. But sometimes pneumonia develops and threatens the child's life. Millions of child deaths from pneumonia could be avoided if:-

Parents know when a cough or cold is becoming a serious infection which needs medical attention.

- Medical help and low-cost drugs are available.

* Parents of a child with a cough should know that it is essential to get the child to a clinic or a trained health worker quickly if:-

- The child is breathing much more rapidly than normal (over 50 times a minute).

- The lower part of the child's chest (the area between the two halves of the child's rib cage) goes in as the child breathes in instead of expanding outwards as normal.

- The child is unable to drink anything.

* If a child is breathing normally, coughs and colds and runny noses can be treated at home without drugs. Most medicines sold for coughs and colds are useless or harmful.

2. Families can help prevent pneumonia by making sure that babies are breastfed for at least the first six months of life and that all children are well-nourished and fully immunized.

* Breastfeeding

Breastmilk helps to protect against infections. On average, babies who are bottledfed have twice as many bouts of pneumonia as babies who are breastfed. it is particularly important to give breastmilk <u>alone</u> for the first four-to-six months of a baby's life.

* Feeding

At any age, a child who is well-fed is less likely to become seriously ill or to die because of pneumonia.

* Vitamin A

Vitamin A, from orange or yellow fruits and dark green leaf vegetables, also helps to protect against pneumonia.

* Immunization

Immunization should be completed before the child is one year old. The child will then be protected against some of the most common causes of serious respiratory infections, including whooping cough, tuberculosis and measles.

* Crowding

Overcrowding helps the spread of coughs and colds. At night, infants who are breastfed can sleep with the mother. But older children should be encouraged to sleep on their own.

3. A child with a cough or cold should be helped to eat and to drink plenty of liquids.

* The important things to remember when treating a child at home are:-

* Continue feeding

A breastfed child with a cough or cold may be difficult to feed. But feeding helps both to fight the infection and to protect the child's growth. So it is important to persist in frequent attempts to give breastmilk. Often clearing the child's blocked nose will help the child to suck. If a child cannot suck, it is best to squeeze out the breastmilk and feed the child from a clean cup.

Children who are not being breastfed should be coaxed into eating frequent small amounts. Periods of 'starvation' caused by illness and lost appetite are a major reason for poor growth. When the illness is over, a child should be fed an extra meal each day for a week. Recovery is not complete until the child is at least the same weight as when the illness began.

* Give plenty of fluids

All children with coughs and colds need to drink plenty of liquids.

Hygiene:
Prime Messages:

1. Illnesses can be prevented by washing hands with soap and water after contact with faeces and before handling food.

2. Illness can be prevented by using latrines.

3. Illnesses can be prevented by using clean water.

4. Illnesses can be prevented by boiling drinking water if it is not from a safe piped supply.

5. Illnesses can be prevented by keeping food clean.

6. Illnesses can be prevented by burning or burying household refuse.

Hygiene:
Supporting Information:

1. Illness can be prevented by washing hands with soap and water after contact with faeces and before handling food.

* Washing hands with soap and water removes germs from the hands. This helps to stop germs from getting onto food or into the mouth. Soap and water should be easily available for all members of the family to wash their hands.

* It is especially important to wash hands after defecating, before handling food, and after cleaning the bottom of a baby or child who has just defecated.

* Children often put their hands into their mouths. So it is important to wash a child's hands often, especially before giving food.

* A child's face should be washed at least once every day. This helps to keep flies away from the face and prevent eye infections. Soap is helpful for washing but not absolutely essential.

2. Illnesses can be prevented by using latrines.

* The single most important action which families can take to prevent the spread of germs is to dispose of faeces safely. Many illnesses, especially diarrhoea, come from the germs found in human faeces. People can swallow these germs if the germs get into water, onto food, onto the hands, or onto utensils and surfaces used for preparing food.

* To prevent this happening:

- Use latrines.

- if it is not possible to use a latrine, adults and children should defecate well away from houses, paths, water supplies, and anywhere that children play. After defecating, the faeces should be buried. Contrary to common belief, the faeces of babies and young children are even more dangerous than those of adults. So even small children should be taken to use the latrine. If children defecate without using a latrine, then their faeces should be checked up immediately and either put down the latrine or buried.

- Latrines should be cleaned regularly and kept covered.

- Keep the faeces of animals away from homes and water sources.

3. Illnesses can be prevented by using clean water.

* Families who have a plentiful supply of safe piped water, and know how to use it, have fewer illnesses.

* Families without a safe piped water supply can reduce illnesses if they protect their water supply from germs by:-

- Keeping wells covered

- Keeping faeces and waste water (especially from latrines) well away from any water used for cooking, drinking, bathing or washing.

- Keeping buckets, ropes and jars used to collect and store water as clean as possible (for example by hanging up buckets rather than putting them on the ground)

- Keeping animals away from drinking water

* Families can keep water clean in the home by:

- Storing drinking water in a clean, covered container

- Taking water out of the container with a clean ladle or cup

- Not allowing anyone to put their hands into the container or to drink directly from it

- Keeping animals out of the house

4. Illnesses can be prevented by boiling drinking water if it is not from a safe piped supply.

* Even if water is clear, it may not be free from germs. The safest drinking water is from a piped supply. Water from other sources is more likely to contain germs.

* Boiling water kills germs. So, if possible, water drawn from sources such as ponds, streams, springs, wells, tanks or public standpipes should be brought to the boil and cooled before drinking. It is especially important to boil and cool the water which is given to babies and young children, because they have less resistance to germs than adults.

* If boiling is not possible, store drinking water in a closed or covered container of clear plastic or glass, and leave it standing in sunlight for two days before using it.

5. Illnesses can be prevented by keeping food clean.

* Germs on food can enter they body and cause illness. But food can be kept safe by:-

- Making sure that food is thoroughly cooked, especially meat and poultry.

- Eating food soon after it has been cooked, so that it does not have time to go bad.

- If food has to be kept for more than five hours, it should either be kept heated or kept cooled.

- If already-cooked food is saved, it should be thoroughly re-heated before being used again.

- Raw meat, especially poultry, usually contains germs. So it should not be allowed to come into contact with cooked meat. Utensils and food-preparing surfaces should be cleaned after preparing raw meats.

- Keeping food-preparing surfaces clean.

- Keeping food clean and covered and away from flies, rates, mice and other animals.

6. Illnesses can be prevented by burning or burying household refuse.

* Germs can be spread by flies, which like to breed in refuse such as food scraps and peelings from fruit and vegetables. Every family should have a special pit where household refuse is buried or burned every day.

Malaria:

Prime Messages:

1. Young children should be protected from mosquito bites, especially at night.

2. Communities should destroy mosquito larvae and prevent mosquitoes from breeding.

3. Wherever malaria is common, pregnant women should take anti-malaria tablets throughout pregnancy.

4. Wherever malaria is common, a child who has a fever should be taken to a health worker. If malaria appears to be the cause, the child should be given a full course of an anti-malaria drug.

5. A child with a fever should be kept cool but not cold.

6. A child recovering from malaria needs plenty of liquids and food.

Malaria:
Supporting Information:

1. Young children should be protected from mosquito bites, especially at night.

* Malaria is spread by the bite of a mosquito. Care should be taken to keep mosquitoes away from young children. There are several ways of doing this:-

- By using bed nets (preferably impregnated with a mosquito repellent)

- By using fumigants such as mosquito coils

- By putting screens on house windows and doors

- By killing mosquitoes in the house.

* All members of the community should be protected against mosquito bites. A mosquito can take malaria from an infected person and pass it on to someone who is uninfected.

2. Communities should destroy mosquito larvae and prevent mosquitoes from breeding.

* Mosquitoes breed wherever stagnant water can collect: in ponds, swamps, pools, pits, drains, sometimes even tin cans and hoof-prints. They may also breed along the edges of streams. Filling in or draining places where water collects, or spreading oil on ponds and swamps, can kill the mosquito larvae.

* Regular clean-ups of the neighbourhood help reduce mosquito breeding.

3. Wherever malaria is common, pregnant women should take antimalaria tablets throughout pregnancy.

* Pregnant women are more than twice as likely to suffer from malaria. The diseases also more dangerous during pregnancy. It can lead to severe anaemia ('thin blood'), and may cause a miscarriage, premature birth, or still-birth. Babies born to women with malaria are also very likely to be small, weak, and vulnerable to infections.

* Pregnant women can be effectively protected against malaria by taking anti-malaria tablets regularly throughout pregnancy.

* Anti-malaria tablets should be obtained from a clinic or health worker as not all anti-malarials are safe to take during pregnancy.

4. Wherever malaria is common, a child who has a fever should be taken to a health worker. If malaria appears to be the cause, the child should be given a full course of an anti-malaria drug.

* A child with a fever, believed to be caused to malaria, should be given a course of anti-malaria tablets. This course may last between one and ten days (young babies may be given an anti-malaria syrup).

* A child should be given the full course of treatment, even if the fever disappears rapidly.

* Even if malaria is common, unaffected children should not take anti-malaria tablets every day, as this may prevent the child from building up a natural resistance to malaria.

5. A child with a fever should be kept cool but not cold.

* Children with fever should be kept cool by:-

- Giving a temperature-reducing medicine (such as paracetamol)

- Sponging or bathing with cool (not cold) water

- Not putting too many clothes or blankets on the child

6. A child recovering from malaria needs plenty of liquids and food.

* Malaria burns up energy and the child loses a lot of liquid through sweating. As soon as the child can take food and drink again, these losses should be replaced. Plenty of food and liquid, when the child is recovering from malaria, will help to prevent malnutrition and dehydration.

Breastfeeding:
Prime Messages:

1. Breastmilk alone is the best possible food and drink for a baby in the first four-to-six months of life.

2. Babies should start to breastfeed as soon as possible after birth. Virtually every mother can breastfeed her baby.

3. Frequent sucking is needed to produce enough breastmilk for the baby's needs.

4. Bottle-feeding can lead to serious illness and death.

5. Breastfeeding should continue well into the second year of a child's life and for longer if possible.

Breastfeeding:
Supporting information:

1. Breastmilk alone is the best possible food and drink for a baby in the first four-to-six months of life.

* From the moment of birth up to the age of four-to-six months, breastmilk is all the food and drink a baby needs. It is best food a child will ever have. All substitutes, including cow's milk, milk-powder solutions, and cereal gruels, are inferior.

* Even in hot, dry climates, breastmilk contains sufficient water for a young baby's needs. Additional water or sugary drinks are not needed to quench the baby's thirst.

* Breastmilk helps to protect the baby against diarrhoea, coughs and colds, and other common illnesses. The protection is greatest when breastmilk alone is given to the baby during the first four-to-six months.

* Other foods and drinks are necessary when a baby reaches the age of four-to-six months. Until the age of nine or ten months, the baby should be breastfed before other foods are given. Breastfeeding should continue well into the second year of life - and for longer if possible.

* Frequent breastfeeding, both day and night, helps to delay the return of menstruation and so helps to postpone the next pregnancy. But breastfeeding, on its own, is not a reliable method of family planning.

2. Babies should start to breastfeed as soon as possible after birth. Virtually every mother can breastfeed her baby.

* Starting to breastfeed immediately after birth stimulates the production of breastmilk. If possible, breastfeeding should begin not later than one hour after the delivery of the baby.

* In some countries, mothers ar advised not to feed their babies on the thick yellowish breastmilk (called colostrum) which is produced in the first few days after the birth. This advice is wrong. Colostrum is good for babies and helps to protect them against common infections. The baby does not need any other foods or drinks while waiting for the mother's milk to 'come in'.

* Many mothers need help when they first start to breastfeed, especially if the baby is their first. An experienced and sympathetic adviser, such as a women who has successfully breastfed, can help a mother avoid or solve many common problems.

* Almost all mothers can produce enough milk if:-

- The baby takes the breast into his or her mouth in a good position

- The baby sucks as often as he or she wants, including during the night

* The position of the baby on the breast is very important. A bad sucking position is the cause of problems such as:-

- Sore or cracked nipples . Not enough milk .. Refusal to feed

* Signs that the baby is in a good position for breastfeeding are:-

- The baby's whole body is turned towards the mother

- The baby takes long, deep sucks

- The baby is relaxed and happy

- The mother does not feel nipple pain

* Crying is not a sign that a baby needs artificial feeds. It normally means that the baby needs to be held and cuddled more. Some babies need to such the breast simply for comfort. If the baby is hungry, more sucking will produce more breastmilk.

* Mothers who are not confident that they have enough breastmilk often give their babies other foods or drinks in the first few months of life. But this means that the baby sucks at the breast less often. So less breastmilk is produced.
to stop this happening, mothers need to be reassured that they can feed their young babies properly with breastmilk alone. They need the encouragement and practical support of their families,

the child's father, neighbours, friends, health workers and women's organizations.

* Mothers employed outside the home need adequate maternity leave, breastfeeding breaks during the working day, and creches where their babies can be looked after at the workplace. so employers and trades unions also have a part to play in supporting breastfeeding.

3. Frequent sucking is needed to produce enough breastmilk for the baby's needs.

* From birth, the baby should breastfeed whenever he or she wants to usually indicated by crying. Demand feeding is best for baby and mother, and frequent sucking at the breast is necessary to stimulate the production of more breastmilk.

* Frequent sucking helps to stop the breasts from becoming swollen and painful.

* 'Topping up' breastmilk feeds with milk-powder solutions, cow's milk, water, or other drinks, reduces the amount of milk the baby takes from the breast. This leads to less breastmilk being produced.

* The use of a bottle to give other drinks can cause the baby to stop breastfeeding completely. The sucking action of bottle-feeding is different from that of sucking the breast, and the baby will usually prefer the bottle because less sucking is required.

4. Bottlefeeding can lead to serious illness and death.

* Cow's milk, milk-powder solutions, maize gruel nd other infant foods given by bottle do not give babies any special protection against diarrhoea, coughs and colds and other diseases.

* Bottlefeeding can cause illnesses such as diarrhoea unless the water is boiled and the bottle and teat are sterilized in boiling water before each feed. The more often a child is ill, the more likely it is that he or she will become malnourished. That is why, in a community without clean drinking water, a bottlefed baby is 25 times more likely to die of diarrhoea than a baby fed exclusively on breastmilk for the first four-to-six months.

* The best food for a baby who, for whatever reason, cannot be breastfed, is milk squeezed from the mother's breast. It should be given in a cup that has been sterilized in boiling water. Cups are safer than bottles and teats because they are easier to keep clean.

* The best food for any baby whose own mother's milk is not available is the breastmilk of another mother.

* If non-human milk has to be used, it should be given from a clean cup rather than a bottle. Milk-powder solutions should be prepared using water that has been brought to the boil ad then cooled.

* Cow's milk or milk-powder solution can cause poor growth if too much water is added in order to make it go further.

* Cow's milk or milk-powder solutions go bad if left to stand at room temperature for a few hours. Breastmilk can be stored for at least 8 hours at room temperature without going bad.

* In low-income communities, the cost of cow's milk or powdered milk, plus bottles, teats and the fuel for boiling water, can be 25-50% of a family's income.

5. Breastfeeding should continue well into the second year of a child's life and for longer if possible.

* Breastmilk is an important source of energy and protein, and helps to protect against disease during the child's second year of life.

* Babies get ill frequently as they learn to crawl, walk and play. A child who is ill needs breastmilk. It provides a nutritious, easily digestible food when the child loses appetite for other foods.

Child Growth:

Prime Messages:

1. Children between the ages of six months and three years should be weighed every month. If there is no weight gain for two months, something is wrong.

2. Breastmilk alone is the best possible food for the first four-to-six months of a child's life.

3. By the age of four-to-six months, the child needs other foods in addition to breastmilk.

4. A child under three years of age needs food five or six times a day.

5. A child under three years of age needs a small amount of extra fat or oil added to the family's ordinary food.

6. All children need foods rich in Vitamin A.

7. After an illness, a child needs extra meals to catch up on the growth lost during the illness.

8. Talking, playing, and showing love are essential for a child's physical, mental and emotional growth.

Children Growth:
Supporting Information:

1. Children between the ages of six months and three years should be weighed every month. If there is no weight gain for two months, something is wrong.

* Regular monthly weight gain is the most important sign of a child's overall health and development. It is the child's own weight gain which is important, not how the child compares in weight to other children.

* It is there fore important to weigh children every month. If a child does not gain weight over a two-month period, then parents and health workers should act. The child is being held back either by illness, or poor food, or lack of attention. The following paragraphs cover the most likely causes of poor growth, and the most important actions parents can take to keep a child growing well.

* Breastfeeding helps protect a baby and ensure its growth for the first few months of life. Immunization in the first year of life is also essential - it protects against diseases which cause undernutrition.

* When other foods have to be given in addition to breastmilk, at the age of four-to-six months, the risk of infection increases. From now on, it is specially important to check that the child is putting on weight regularly from one month to the next. If a child under the age of three is not gaining weight, and if the child has good food, these are the ten most important questions to ask:-

- Is the child eating frequently enough? (child should eat 5 or 6 times a day)

- Do the child's meals have too little energy in them? (amounts of oil or fats should be added)

- Is the child frequently ill? (needs medical attention)

- Has the child been refusing to eat when ill? (needs tempting to eat when ill, and extra meals to catch up afterwards)

- Is the child getting enough Vitamin A? (needs dark green vegetables every day)

- Is the child being bottlefed? (bottle and water may not be clean, sugary drinks may be being used instead of milk)

- Are food and water being kept clean? (if not, child will often be ill)

- Are faeces being put into a latrine or buried? (if not, child will often be ill)

- Does the child have worms? (needs de-worming medicine from health centre)

- Is the child alone too much? (needs more stimulation and attention)

Recording the child's weight with a dot on the child's 'growth chart', and joining up the dots after each monthly weighing, gives a line which enables a mother to see her child's growth. An upward line mens the child is doing well. A flat line is a cause for concern. A downward line is a sure sign that all is not well with the child.

2. Breastmilk alone is the best possible food for the first four-to-six months of a child's life.

* From the moment of birth up to the age of four-to-six months, breastmilk is all the food and drink a baby needs to grow well. In these early months, when a baby is most at risk, breastmilk helps to protect against diarrhoea and other common infections.

* Breastmilk is the best food a child will ever have. If possible, breastfeeding should continue well into the second year of life and for longer if possible.

3. By the age of four-to-six months, the child needs other foods in addition to breastmilk.

* Breastmilk alone is the best food for a young baby. At about the age of four-to-six months, other foods should be added. But breastfeeding should continue.

* The baby should be breastfed before being given other foods so that the mother will have more breastmilk for a longer period.

* Boiled, peeled and mashed vegetables should be added to a young child's gruel or other weaning food at least once each day.

* The greater the variety of foods the child eats, the better.

4. A child under three years of age needs food five or six times a day.

* A child's stomach is smaller than an adult's so a child cannot eat as much as an adult at one meal. But its energy needs, for its size, are greater. So the problem is how to get enough energy food into the child. The answer is:-

- Food the child frequently - five or six times a day

- Enrich the child's gruel or porridge with mashed vegetables and a little oil or fat

* A child's food should not be left standing for hours. Germs can grow in it which may make the child ill. As it is usually not possible to cook fresh food for a child five or six times a day, dried foods or snacks should be given in between meals - fruits, bread, patties, biscuits, nuts, coconut, bananas or whatever clean food is easily available. Breastmilk is also an ideal 'snack' and is always clean and free from germs.

5. A child under three years of age needs a small amount of extra fat or oil added to the family's ordinary food.

* The family's normal food needs to be enriched to meet the special energy needs of the growing child. This means adding mashed vegetables and small amounts of fats or oils - butter, ghee, vegetable oil, soya oil, coconut oil, corn oil, ground-nut oil, or crushed nuts.

* Breastmilk also enriches a child's diet and should continue, if possible, until well into the second year of a child's life.

6. All children need foods rich in Vitamin A.

* Over 200,000 children go blind each year because they do not have enough Vitamin A in their bodies. Vitamin A may also protect children against other illnesses such as diarrhoea. It should therefore be a part of every child's daily diet.

* Vitamin A comes from breastmilk, dark green leafy vegetables, and from orange or yellow fruits and vegetables such as carrots, papayas and mangoes.

* If a child has had diarrhoea or measles, vitamin A will be lost from the child's body. It can be replaced by breastfeeding more often, and by feeding the child more fruit and vegetables.

7. After an illness, a child needs extra meals to catch up on the growth lost during the illness.

* One of the most important skills of a parent is the skill of stopping illnesses from holding back a child's growth. In times of illness, and especially if the illness is diarrhoea or measles, the appetite falls and less of the food that is eaten is absorbed into the body. If this happens several times a year, the child's growth will be held back.

* So it is essential to keep on encouraging a child who is ill to take food and drink. This can be very difficult if the child does not want to eat, so it is important to keep offering the child the food he or she likes, usually soft, sweet foods, a little at a time and as often as possible. Breastfeeding is especially important.

* When the illness is over, extra meals should be given so that the child catches up on the growth lost. A good rule is to give a child an extra meal every day for at least a week after the illness is over. The child is not fully recovered from an illness until he or she is at least the same weight as when the illness began.

* If illness and poor appetite persist for more than a few days, the child should be taken to a health worker.

* It is also important to protect a child's growth by preventing illness:-

- Give a child gbreastmilk alone for the first four-to-six months of life, then introduce other foods, and continue to breastfeed.

- Get your child fully immunized before the age of one year

- Always use latrines and keep hands, food and kitchens clean

8. Talking, playing, nd showing love and essential for a child's physical, mental and emotional growth.

* In addition to physical needs, the child also has two other needs which are vital to his or her mental and emotional development.

<u>The need for attachment:</u>

* All children need a close, sensitive and loving relationship with the adult or adults who care for them.

* From the very first day of life, an infant is capable of giving and receiving affection and building a relationship. This relationship, and the feeling of being loved and wanted, is vital to the inner development of the child. It is the basis for the development of the child's sense of security, confidence, and the ability to cope will with other people and the world at large.

* From the consistent words and actions of parents, a child gains a feeling of security, learns what is expected in human relationships, and develops a clear sense of what is right and wrong.

* Anger and violence in the child's family are damaging to the child's inner development.

* The relationships established very early in life help to set the pattern for relationships in adult life.

<u>The need for stimulation:</u>

* The mind of a child, as well as the body, needs help to grow. The three most important 'foods' for the growth of the mind are language, play, and love.

* From its earliest months, a child needs to be 'bathed in works', cuddled, smiled at, listened to, and encouraged to respond by noise and movement. All children need to interact with other people. They need people to touch to, laugh with, smile at, respond to and get responses from.

* Lack of attention makes a child unhappy. A neglected child loses interest in life, has less appetite, and may fail to grow normally in mind or body.

* Children learn by doing. So as the child grows, he or she needs freedom to explore and to play. Play is not pointless. It is one of the most essential parts of growing up. It helps to develop mental, social, and physical skills - including talking and walking. It helps children grow in curiosity, competence, and confidence. It digs the foundations for school work and for learning the skills necessary in later life.

* Play does not always means solving problems or achieving aims set by adults. The child's own play is just as important.

* Encouraging play by providing materials and ideas is one of the most important skills of bringing up a child. Play materials do not have to be expensive. Empty boxes or household objects are as good as expensive toy. Imaginative play, for example when children pretend to be adults, is very important to a child's development.

* Children need help to develop creativity. They need to be challenged to find solutions to problems and decide which solutions are best. The child needs to put his or her ideas and decisions into practice and see what happens - in safety.

* Singing songs and learning rhymes, drawing pictures and reading stories aloud help the child's mind to grow and prepares the way for learning to read and write.

* For healthy growth, all children need praise and recognition for their efforts.

<u>Safe Motherhood:</u>
<u>Prime Messages:</u>

1. The risks of childbirth can be drastically reduced by going to the nearest health worker for regular check-ups during pregnancy.

2. A trained person should assist at every birth.

3. To reduce the dangers of pregnancy and childbirth, all families should know the warning signs.

4. All women need more food during pregnancy. All pregnant women need more rest.

5. Spacing pregnancies at least two years apart, and avoiding pregnancies below the age of 18 or above the age of 35, drastically reduces the dangers of child-bearing.

6. Girls who are healthy and well-fed during their own childhood and teenage years have fewer problems in pregnancy and childbirth.

Safe Motherhood:
Supporting Information:

1. The risks of childbirth can be drastically reduced by going to the nearest health worker for regular check-ups during pregnancy.

* Many of the dangers of pregnancy and childbirth can be avoided if the mother-to-be goes to a health centre as soon as she believes she is pregnant. A health worker will help the woman to have a safe birth and a healthy baby by:-

- Checking the progress of the pregnancy so that if problems are likely the woman can be moved to a hospital for the birth

- Checking for high blood pressure, which is a danger to both mother and child

- Giving tablets to prevent anaemia ('thin blood')

- Giving the two injections which will protect the mother and her newborn baby against tetanus

- Checking that the baby is growing properly

- Giving malaria tablets where necessary

- Preparing the mother for the experience of childbirth and giving advice on breastfeeding and care of the new-born

- Advising on ways of delaying the next pregnancy

2. A trained person should assist at every birth.

* A trained birth attendant will know:-

- When labour has gone on for too long (more than 12 hours) and a move to hospital is necessary

- How to keep the birth clean and reduce the risk of infection

- How to cut the cord cleanly and safely

- What to do if the baby is being born in the wrong position

- What to do if too much blood is being lost

- When to call on more expert medical help

- What to do if the baby does not begin breathing straight away

- How to help the mother to start breastfeeding immediately after the birth

- How to dry and keep the baby warm after delivery

- How to help the mother prevent or postpone another birth

3. To reduce the dangers of pregnancy and childbirth, all families should know the warning signs.

* With any pregnancy, it is important to ask the advice of a health worker about where the baby should be born and who should attend the birth. If a family knows that a birth is likely to be difficult or risky, it may be possible to have the baby in a hospital or maternity clinic. Or it may be possible to move, temporarily, closer to a clinic or hospital so that the mother is within reach of medical help.

* So it is important for pregnant women, their husbands, and other family members to know the signs which indicate that extra care, and regular visits to a health worker, are needed.

Warning signs before pregnancy begins:-

- An interval of less than two years since the last birth
- Mother-to-be is less than 18 or more than 35 years old
- Mother-to-be has four or more previous children
- Mother-to-be has had a previous baby weighing less than 2 kilograms at birth
- Mother-to-be has had a previous difficult or caesarian birth
- Mother-to-be has had a previous premature birth
- Mother-to-be has had a previous miscarriage, abortion or still birth
- Mother-to-be weighs less than 38 kilograms before pregnancy
- Mother-to-be weighs less than 145 cm in height

Warning signs developing during pregnancy:-

- Failing to gain weight (at least 6 kilos should be gained in pregnancy)
- Paleness of inside eyelids (should be red or pink)
- Unusual swelling of legs, arms, or face

Four signs which mean get help immediately:-

- Bleeding from the vagina during pregnancy
- Severe headaches (sign of high blood pressure)
- Severe vomiting
- High fever

4. All women need more food during pregnancy. All pregnant women need more rest.

* The husband and family of a pregnant woman should ensure that she has extra food every day and more rest than usual during the daytime, especially in the three months before the birth.

* A pregnant woman needs a variety of the best foods available to the family; milk, fruit, vegetables, meat, fish, eggs, pulses and grains. There is no reason to avoid any of these food during pregnancy.

* If possible, a woman should be weighed as soon as she knows that she is pregnant. It is important to gain weight every month during pregnancy, and to try to gain a total of 10-12 kilos before the baby is born.

* A pregnant woman can damage her unborn child by smoking tobacco, drinking alcohol, and using narcotic drugs. It is particularly important not to take medicines during pregnancy unless they are absolutely necessary and prescribed by a trained health worker.

5. Spacing pregnancies at least two years apart, and avoiding pregnancies below the age of 18 or above the age of 35, drastically reduces the dangers of child-bearing.

* One of the most effective ways of reducing the dangers of pregnancy and child birth for both mother and child is to plan the timing of births.
The risks of child-bearing are greatest when the mother-to-be is under 18 or over 35, or has had four or more previous pregnancies, or when there is a gap of less than two years since she last birth.

* Avoiding births by having an abortion can be very dangerous. Illegal abortions carried out by untrained persons kill between 100,00 and 200,00 women every year.

6. Girls who are healthy and well-fed during their own childhood and teenage years have fewer problems in pregnancy and childbirth.

* Safe and successful childbearing depends most of all on the health and readiness of the mother-to-be. So special attention should be paid to the health, feeding, and education of adolescent girls. The first pregnancy should wait until at least the age of 18.

Timing Births:
Prime Messages:

1. Becoming pregnant before the age of 18, or after the age of 35, increases the health risks for both mother and child.

2. The risk of death for young children is increased by about 5% if the space between births is less than two years.

3. Having more than four children increases the health risks of pregnancy and childbirth.

4. Family planning gives couples the choice of when to begin having children, how many to have, how far apart to have them, and when to stop.

Timing Births:
Supporting Information:

1. Becoming pregnant before the age of 18, or after the age of 35, increases the health risks for both mother and child.

* Every year over half a million women die from problems linked to pregnancy and childbirth, leaving behind over one million motherless children. Most of these deaths could be prevented by acting on today's knowledge about the importance of planning pregnancies.

* For health reasons alone, no girl should become pregnant before the age of 18. A woman is not physically ready to begin bearing children until she is about eighteen years of age. Babies born to women younger than eighteen are more likely to be born too early and to weight too little at birth. Such babies are much more likely to die in the first year of life. The risks to the mother's health are also greater.

All girls should be allowed the time to become women before becoming mothers. In societies where marry at an early age, couples should use family planning to delay the first pregnancy until at least the age of 18.

* After the age of 35, the health risks of pregnancy and childbirth begin to increase again. If a woman is over the age of 35, and has had four or more previous pregnancies, then another pregnancy is a serious risk to her own health and that of the unborn child.

2. The risk of death for young children is increased by about 50% if the space between births is less than two years.

* For the health mothers and children, parents should wait until their youngest child is at least two years old before having another baby.

* Children born too close together do not usually develop as well, physically or mentally, as children born at least two years apart.

* One of the greatest threats to the health and growth of a child under the age of two is the birth of a new baby. Breastfeeding stops too suddenly, and the moth has less time to prepare the special foods a young child needs. Also, she may not be able to give the older child the care and attention he or she needs, especially during illness. As a result, the child often fails to grow and develop properly.

* A mother's body needs two years to recover fully from pregnancy and childbirth. The risk to the mother's health is therefore greater if the next birth follows too closely upon the

last. The mother needs to give herself time to get her strength and energy back before she becomes pregnant again.

* If a woman becomes pregnant before she is fully recovered from bearing a previous child, there is a higher chance that her new baby will be born too light in weight. Low birth-weight babies are less likely to grow well, more likely to fall ill, and four times more likely to die in the first year of life than babies of normal weight.

3. Having more than four children increases the health risks of pregnancy and childbirth.

* After a woman has had four children further pregnancies bring greater risks to the life and health of both mother and child.

Especially if the previous births have not been spaced more than two years apart, a woman's body can easily become exhausted by repeated pregnancy, childbirth, breastfeeding, and looking after small children. Further pregnancies usually mean that her own health begins to suffer.

* After four pregnancies, there is an increased risk of serious health problems such as anaemia ('thin blood') and haemorrhage (heavy loss of blood). The risk of giving birth to babies with disabilities, or with low birth-weight, also increases after four pregnancies and after the mother reaches the age of 35.

4. Family planning gives couples the choice of when to begin having children, how many to have, how far apart to have them, and when to stop.

* Most health services can provide several methods of safe, effective family planning. No one method of timing births is suitable for, or acceptable to, every individual. Couples should ask advice about the most suitable means of family planning from the nearest trained health worker or family planning clinic.

BEST AVAILABLE DOCUMENT

* Spacing births at least two years apart, and avoiding pregnancies before the age of 18 and after the age of 35, can help to ensure that each baby is born healthy and strong.

BEST AVAILABLE DOCUMENT

PHC
Nutrition

General Concepts of Nutrition

The following concepts are discussed in Unit 1:

Nutrition	Energy Foods
Malnutrition	Protective Foods
Body Building Foods	Mixed Diet

What is meant by nutrition and malnutrition?

The meaning of nutrition has two parts. One part deals with food that we eat. The second part relates to the body. We can say that nutrition is the food that we eat and how our body uses it. In the study of nutrition, we will be concerned with how much and what foods should be eaten, as well as what food does to keep the body health.

It is when we do not have enough food or the right kinds of food that malnutrition results. The word mal-nutrition literally means bad nutrition or bad food intake. A person will suffer from malnutrition if what he eats everyday is either not the proper amount or is not the right variety of food.

Why is nutrition important:

Good nutrition is the key to a long and healthy life. Teaching proper nutrition to others is one of the most important things that can be done to promote health.

Poor nutrition is the primary reason why minor diseases become killers. for example, in developed countries, measles almost never kills any one. but in Afghanistan it can kill 15-40% of the children. There are two main reasons for this difference: in

BEST AVAILABLE DOCUMENT

Afghanistan, children are often poorly nourished when they get measles, and second, often the parents do the wrong things when the child becomes ill.

This section will review the basic principles of good nutrition and how to promote it among your patients.

We can see that good food is needed in order to be healthy and happy. Every one needs to eat the right foods and enough of them. With good nutrition our bodies will:

1. Be able to grow to be strong and healthy.

2. Have enough energy so we will not be too tired to work, play or learn.

3. Be protected against illnesses.

What does food do in the body?

Each of us eats many different foods. These different foods make up our diet. The foods we eat may be separated into three different groups according to their function in the body.

Group 1 - Food may be a body-building food which makes us grow and repairs the body after illness.

Group 2 - Food may be an energy food keeps us from being too tired to work and play.

Group 3 - Food may be a protective food which protects us from certain diseases and frequent illnesses.

What are the right foods?

1. Body-Building Foods (contain lots of Protein)

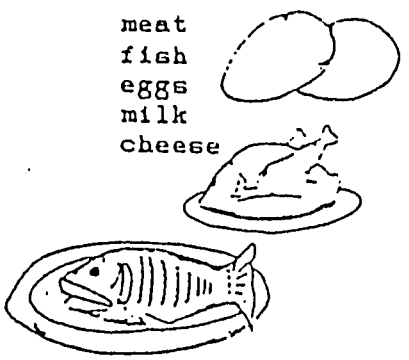
There are many different sources of body-building foods. These foods may also be called protein foods. It is not important that you teach this word to your community. But you should recognise that protein foods are body-building foods because the physician

BEST AVAILABLE DOCUMENT

may call them this. There are animal sources of body-building foods and there are plant sources. The animal sources are more costly but should be eaten if they are available. However, a combination of plant sources such as dried beans and lentils eaten together, can be as good a body-building food as meat. Some examples of body-building foods ar listed below:

Animal Sources

meat
fish
eggs
milk
cheese



Plant Sources

legumes - dried beans, peas, soybeans, lentils, peanuts, groundnuts
nuts
oilseeds - sesame and sunflower

2. Energy Foods (contain lots of carbohydrates, starches and fats)

There are many foods we depend on for energy. They all provide us with the strength to work and play without being tired all of the time. These energy foods may be a large part of a community's diet as these foods tend to be less costly than body-building foods. However, they must not be the only food that is eaten. Some examples of energy foods are listed here:

Grains - Wheat, maize, rice, barley, gram, millet
Banana, sugar cane, potatoes, beetroot, grapes, sugar, sweet potatoes, honey, chestnut, melon
Oil and fat - butter and ghee.

BEST AVAILABLE DOCUMENT

3. Protective Foods (contain lots of vitamins and minerals)

The inclusion of some protective foods in our diet is especially important. These foods, which include most fruits and vegetables and some whole grain cereals, may be more difficult to obtain as they may be less available and more costly. Small home gardens may be a valuable source of protective foods. It is important that some protective foods be included in the diet each day. Here is a list of some protective foods:

Fruits; papaya, mango, orange, lemon, melon, tangerines dates, apricots
Vegetables: sweet potatoes, tomatoes, pumpkin, spinach carrots, cauliflower, cabbage, green leaf, vegetables.
Whole grain cereals: whole wheat, unmilled maize, brown rice

What is a mixed diet?

Since each of our diets should be able to do all three jobs:

1. To build the body,

2. To supply energy, and

3. To provide protection from illness.

Everyone needs food from each of the three groups of food each day. If we have different foods, with some from each group, we are having a mixed diet. A mixed diet is the best diet a person can eat. In order to be healthy and happy, we should eat a mixed diet which has a variety of foods with different foods from each of the three groups. An example of a good mixed diet might be:

a. A bread or cereal made with one or more grains, such as nan
b. Soup made with a legume, such as lentils
c. A fruit or vegetable, such as carrots or cucumber.

 BEST AVAILABLE DOCUMENT

As we can see, this sample diet has food for growth-lentils. it also has food for energy-nan, and a protective food-carrot.

If we were to eat only energy food, such as white rice made with ghee or oil, our bodies would not get enough of the body-building and protective foods they need to be healthy and happy. Without all three foods, the body will not grow to be strong and healthy and will not be well-protected from illness.

Many people eat foods which are all prepared together in one pot. It is important that we consider what different foods are going into the pot and make sure it is a mixed diet. A stew or porridge can be made with foods such as corn meal, beans and tomatoes. this meal would be a mixed diet because it incorporates food for energy (corn meal), body-building food (beans), and food for protection (tomatoes).

Banana, sugar cane, potatoes, beetroot, grapes, sugar, sweet potatoes, honey, chestnut, melon

Oil and fat - butter and ghee.

CHECK YOUR UNDERSTANDING

Protein is another name for _____

2. Name the three different functions food may perform in the body.

a. _____

BEST AVAILABLE DOCUMENT

b. _____

c. _____

3. Consider the foods in the following list. If the food is a body-building food put a "B" in front of it. If the food is an energy food put an "E" in front of it. If the food is a protective food put a "P" in front of it.

_____ Meat	_____ Eggs	_____ unmilled grain (e.g.brown rice)
_____ vegetables	_____ oils	_____ milled grain (e.g.white rice)
_____ fruit	_____ Legumes	_____ roots(potatoes)
_____ fish	_____ Nuts	

4. A mixed diet is a diet which contains _____ foods, _____ foods, and _____ foods at each meal.

5. Nasir and Arif are two boys from the same village. They are both seven years old and both go to the same school. There are many differences between the boys. Arif is bigger than Nasir, and is more clever in school. Nasir is sick and absent from school more often than Arif. He gets tired when they run to school together and often sleeps at lunch rather than playing with the other boys. Arif has a meal to eat before he comes to school each day. Nasir does not eat before he comes to school.

The boys also bring different lunches to school with them. Nasir sometimes brings a nan to lunch. However, if there is none prepared he will often come to school with nothing for lunch. Arif's mother prepares a lunch for him to take to school each day.

BEST AVAILABLE DOCUMENT

Here is what Arif's mother packed for him to take to school one day:

a cooked maize cob
some ground nuts
two tomatoes

a. Looking at what Arif brought to school, identify and

body building foods: _____

protective foods: _____

energy foods: _____

b. Discuss why Arif's lunch is or is not a mixed diet. _____

_____

_____

c. How might their diets explain some of the differences observed between Arif and Nasir?

_____

_____

_____

BEST AVAILABLE DOCUMENT

UNIT I

STUDENT GUIDE

MALNUTRITION

I. ENTRY LEVEL KNOWLEDGE AND SKILL:

Before starting this unit you should be able to:

1. Perform and record the results of the physical exam of an infant or child following the guidelines provided by the instructor.

2. use the diagnostic protocols.

II. OBJECTIVES:

Using the information and experiences provided by the instructor and the module text you will be able to:

1. Identify and differentiate the physical sings associated with Kwashiorkor or marasmus:
2. Demonstrate the use of growth charts.
3. Describe the usual course and common complications of kwashiorkor or marasmus.
4. Use the diagnostic and management protocols as a guide to identification and management of malnutrition.
5. Describe the management procedures from malnourished children.
6. Prepare fortified milk and kitchri.
7. Pass at least (1) NG tube on a child.

BEST AVAILABLE DOCUMENT

UNIT 1

MALNUTRITION

1. General Considerations

Introduction

Malnutrition is a term meaning "Bad or Poor Food Intake". The child with malnutrition is simply not getting enough of the necessary foods needed by all children. There are different levels of malnutrition. When a child is not getting enough good food the earliest sign is that he is not growing properly. When growth retardation is slight, it is called mild malnutrition. When the growth retardation becomes marked, it is called moderately severe malnutrition. We consider children with mild or moderately severe malnutrition to be at high risk for developing severe malnutrition and/or severe infections.

If child continues to be poorly nourished, he will develop the physical signs of severe malnutrition. If the child's diet is severely lacking in both protein and carbohydrates, he will develop Marasmus. He begins to look like "skin and bones". When the diet is severely lacking in protein but the child is getting a fair amount of carbohydrates, he will develop kwashiorkor. His feet and ankles develop pitting edema, the skin flakes off, there is severe wasting of muscle, and he appears miserable.

Cause

Malnutrition is caused by lack of good food. Nutrition is influenced by breastfeeding and weaning practices, choice of foods, storing of food, poverty, agricultural practices and other factors. It is essential for the health of the children of the community to help prevent malnutrition. Mothers need to be taught about the importance of:

Breastfeeding until 2-3 years of age and weaning slowly.

BEST AVAILABLE DOCUMENT

2. Giving children a variety of nutritious foods frequently, beginning at age 4-6 months.

3. Continuing to feed children who are sick.

II. Epidemiology

Malnutrition is found in all parts of the world but is most common among poor and uneducated people. It occurs at all times of the year but is naturally most common during the season when food is in shortest supply. Most malnutrition occurs between the ages of six months and three years. This is when children are being weaned from the breast to an adult diet. It is difficult to make this switch especially if:

1. the adult diet is low in protein, and
2. weaning takes place too quickly.

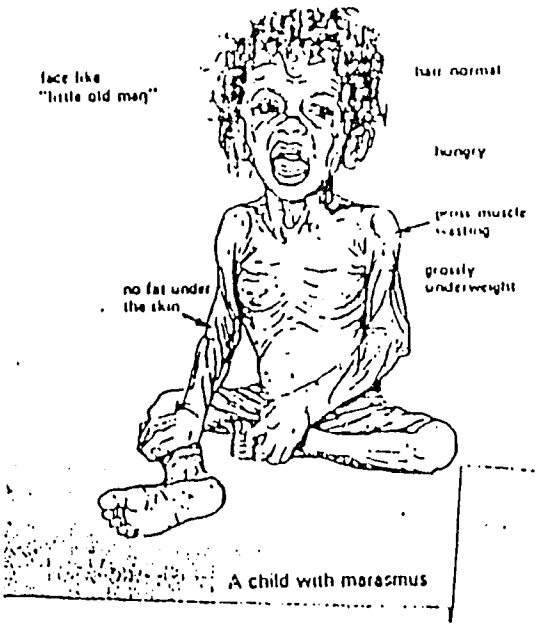
III. Clinical Picture

The earliest sign of malnutrition if failure to grow. The child is not growing as fast as well-fed children of his age.

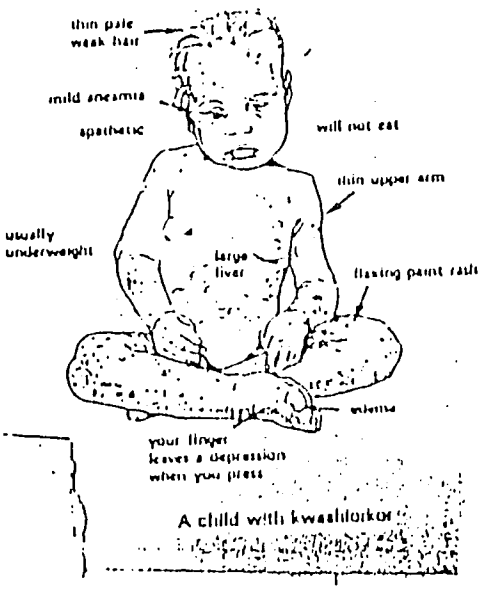
This growth failure can only be seen if the child is weighed periodically in the child care clinic. His growth can then be compared to the normal growth curves on the Growth Chart. If the child continues to be poorly fed over a period of several months, he will develop severe malnutrition - either Marasmus or Kwashiorkor (or a combination of both). Severe malnutrition frequently occurs just after an infection such as measles or bad diarrhea, or at the time of weaning. Unfortunately, children who are suffering from malnutrition are also more likely to develop such an infection. One of the important things to do to break this cycle is to improve the child's diet by educating the mother and father.

BEST AVAILABLE DOCUMENT

- Failure to grow or gain weight normally
- Slowness in walking, talking, or thinking
- Swollen belly, thin arms and legs
- Swelling of feet, face and hands, often with sores or marks on the skin.
- Thinning or loss of hair, or loss of its color (appears red) or shine. The texture of the hair becomes coarse.
- Dryness of eyes, blindness
- Sadness



A child with marasmus



A child with kwashiorkor

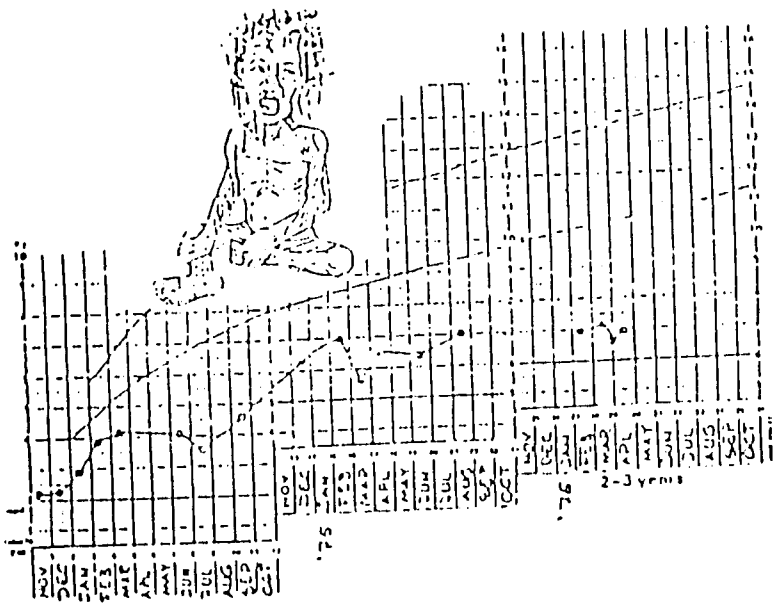
Malnutrition in children may be life-threatening. The two extreme forms of malnutrition are Marasmus (dry malnutrition) and Kwashiorkor (wet malnutrition).

1. Marasmus (dry malnutrition): is from not eating enough. It if total deprivation.

BEST AVAILABLE DOCUMENT

This child does not get enough of any kind of food, especially energy foods. He is said to have dry malnutrition or Marasmus. In other words, he is starved. His body is small, very thin, and wasted. He is little more than skin and bones. Weaning has often been early. This child is usually between 6-26 months old.

This child needs more food - especially energy foods.



2. Kwashiorkor (wet malnutrition): is from not eating enough protein.

This child has not been eating enough body-building foods, or proteins, although he may be getting enough energy foods. He is said to have kwashiorkor. This is also called wet malnutrition because his feet, hands and face are swollen. Although he may look somewhat fat, he has very little muscle left. He is little more than skin, bones and water. His hair will be thinner, coarse and often red in color. The hair will often break easily. Because hair takes time to grow, it reflects the child's nutritional status 1-3 months previously. The Kwashikor child is unhappy and irritable. This chid is usually between 18-48 months of age.

This child needs more foods rich in protein.

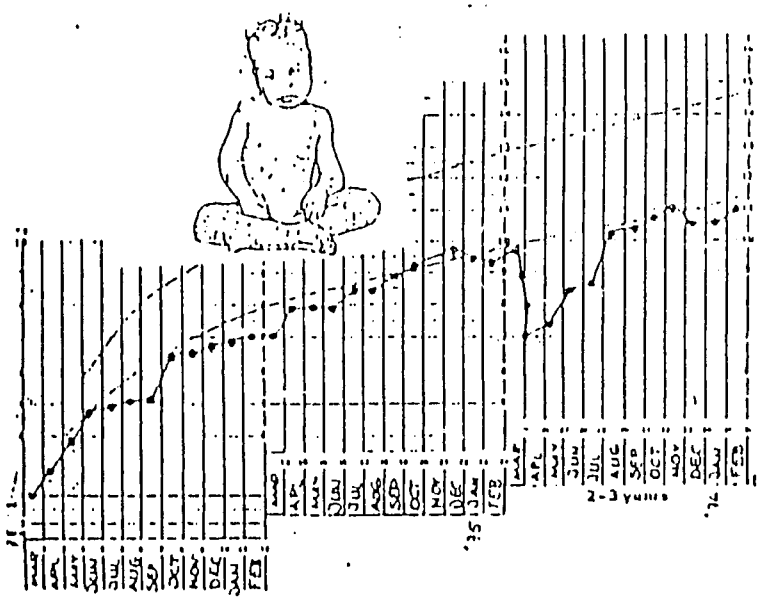
Kwashiorkor is seen most often in babies who stopped breast

BEST AVAILABLE DOCUMENT

feeding too early and are given foods made with rice, corn, sugar, or other energy foods without enough milk or other protein-rich food.

Kwashiorkor sometimes appears when the child has diarrhea or another infection. A child with diarrhea for several days may develop swollen hands and feet, swollen face, purple spots or peeling sores on his legs. This child needs more good food.

Because of swelling, and because he may be even have some fat, the child with Kwashiorkor may look plump, but his muscles are wasted and his upper arms are surprisingly thin.



Neither kwashiorkor nor marasmus develops all at once. A child may already be fairly malnourished and still show few signs. A good way to check if a child is poorly nourished is to measure the distance around his upper arm.

Course of the Disease

Mild to moderate malnutrition may be present for many weeks or even months. The appearance of Marasmus comes slowly as the malnutrition gradually worsens. Kwashiorkor on the other hand can appear suddenly over a period of a few weeks. It commonly occurs following some infection, especially measles or diarrhea. Both Kwashiorkor and Marasmus are dangerous, but of the two

BEST AVAILABLE DOCUMENT

Kwashiorkor is the most dangerous. If not managed quickly and properly Kwashiorkor will soon result in death.

Prevention and Treatment of Malnutrition

Both marasmus and Kwashiorkor can be prevented or treated by eating enough of a balance of nutritious foods. For babies, breast milk is the best food. Breast feeding should be continued as long as possible. Some mothers breast feed for 2 years or longer. The mother needs more protein, vegetables, fruits and energy foods in her diet so that she will make plenty of milk for the baby.

After the first 4 to 6 months the baby should also begin to take other nutritious foods in addition to breast milk.

IV. Management

Mild to Moderately Severe Malnutrition

(Children with growth retardation, as seen on their growth charts, with no sign of severe malnutrition)

1. More and better food at home. The parents should be taught the Six Basic Rules for treating malnutrition.

   Rule I Breast feed until child is 2-3 years old.
   Rule II Start kitchri at four months. (Made with grains and beans-1 c. rice + 1/2 c. Daal + oil).
   Rule III Add other protein foods to cereal mix. Such as: eggs, milk, fish, meat.
   Rule IV Give a variety of fruits and vegetables to children over 4 months old. This includes yellow and green leafy vegetables.
   Rule V Feed a child at least 4 meals a day. Children need
   Rule VI Continue to feed sick children.

2. See often in the regular child care clonic to eat more after than adults, because their stomach is small, or even better at a special nutrition clinic. If you have several malnourished children that you are following, you can start

BEST AVAILABLE DOCUMENT

a special "nutrition education" clinic. This will give you the opportunity to teach several families at the same time about better foods.

3. Maintain Growth Chart: The patients should be considered High Risk. Extra effort should be made to follow these "High Risk" children as closely as possible Special attention will be required to assure they are well immunized and that their nutritional status is improving.

Sever malnutrition

Children with signs of Marasmus and/or Kwashiorkor fall into this group. Children who are so ill that they are unable to eat should be managed at the nearest hospital or health center if possible.

Fortified Milk Solutions

The initial treatment consists of milk with oil and sugar. Powdered non fat milk or powdered full cream milk can be mixed up with oil and sugar and stored in the dispensary. Any type of vegetable oil can be used.

When needed these powdered mixtures or whole milk are mixed with water (see formulas page 35). Do not mix the powders with water more than 4 to 6 hours prior to use or it will sour.

A. Initial

1. Not able to take feeding by mouth.

When the child is unable to take feedings by mouth he should be referred to the hospital. If you must treat him at the dispensary or Health Center use an N-G tube until he is able to take feedings from a cup and spoon or breastfeed.

Give Fortified Milk Solution (FMS) through the N-G tube every 3 hours. The amounts can be calculated according to the following formula. Use dilute strength for the first 2-3 days. Thereafter use full strength mixture.

 BEST AVAILABLE DOCUMENT

1st day	50 ml/kg/24 hrs	in 8 divided doses
2nd day	75 ml/kg/24 hrs	in 8 divided doses
thereafter	125 ml/kg/24 hrs	in 8 divided doses

If the child appears dehydrated you should rehydrate him following the rehydration methods. These can be found in the discussion on diarrhea and dehydration.

Remove the N-G tube as soon as the child is able to take feedings by mouth, then follow the directions under "able to take feedings by mouth".

2. Able to take feedings by mouth.

Give FMS alone for about 1 week. Give the child as much as he wants.

Feed every 3 to 4 hours night and day. Offer water between feedings.

B. Vitamins and Minerals

1. Give multivitamin
2. Give vitamin A 5000 units daily - It should be given for at least three weeks. Check tablet dosage to avoid overdose in children.
3. Give folic acid 3 mg daily. These should be given through the N-G tube when one is being used.

C. Management after the 1st week.

1. Make sure the parents understand that it is the lack of food that causes this disease.
2. Slowly start giving cereal mix plus vegetables, in addition to milk solution.
3. Have mother given a variety of soft foods, including fruits and vegetables, fish, eggs, and meat, as soon as the child is able to take it without diarrhea.
4. Teach the parents the Six Basic Rules for avoiding malnutrition in their children.

BEST AVAILABLE DOCUMENT

5. See often in the regular child care clinic or even better ar a special nutrition clinic. If you have several malnourished children that you are following, you can start a special "nutrition education" clinic. This will give you the opportunity to teach several families at the same time about better foods.

6. Maintain Growth Chart: These patients should be written into "High Risk Registry" kept in the clinic. Extra effort should be made to follow these "High Risk" children as closely as possible. Special attention will be required to assure they are will immunized and that their nutritional status is improving.

Complications

Children who are malnourished are likely to have some infection in addition to their malnutrition. You should examine them carefully. The following diseases are frequently associated with malnutrition.

1. Diarrhea/dehydration
2. T.B.
3. Pneumonia
4. Otitis media
5. Xerophthalmia (night blindness due to Vitamin A deficiency)
6. Malaria

Look for these diseases (and others) and treat them according to the respective management protocols.

Prevention

1. Child Care Clinic

The prevention of malnutrition is one of the primary functions of the Child Care Clinic. The Growth Chart helps to identify children with milk (or early) malnutrition. These children are then considered at high risk of becoming severely malnourished and/or severely ill with an infection. These children and their parents should be given extra attention and advice about feeding.

BEST AVAILABLE DOCUMENT

2. Six Basic Rules

all parents should be taught the six basic rules for avoiding malnutrition in their children.

Rule I Breastfeed until child is 2-3 years old.

Rule II Start cereal mix at four months (Made with grains and beans plus vegetables).

Rule III Add other protein foods to cereal mix. Such as: eggs, milk, fish, meat.

Rule IV Give a variety of fruits and vegetables to children over 4 months old. This includes yellow and green leafy vegetables, as well as all other fruits and vegetables.

Rule V Feed child at least 4 meals a day. Children need to eat more often than adults because their stomachs are small.

Rule VI Continue to feed sick children.

After the age of two years, everyone can eat the same food. Many people in Afghanistan are poorly nourished because they are eating only rice, nan and tea. Teach them to plant many crops and to eat a large variety of food. In this way they will be well nourished and healthier.

Specific deficiencies are described briefly below, along with the more common complaints that they are frequently confused with.

<u>Iodine Deficiency</u>

This is very common in the mountainous regions of northern Afghanistan. It is present wherever goiters are found. Goiters are caused by enlargement of the thyroid gland located at the base of the neck. They are more common in women for unknown reasons. Iodine deficiency is a serious problem for an entire population, not just a cosmetic deformity in women.

BEST AVAILABLE DOCUMENT

Iodine is necessary for normal development of the fetus prior to birth. Iodine deficiency causes fetal wastage (spontaneous abortions), low birth weight newborns, and a higher percentage of people with lowered intelligence for their entire lives.

Iodine deficiency occurs in populations living in mountainous regions because most of the water they drink comes from melted snow. Iodine is a substance present in the soil so if water is coming from wells or underground springs the risk of iodine deficiency is less.

Treatment of iodine deficiency can be done with medicine. Treatment may be done for each individual patient, or combined with vaccination programs. In areas affected by iodine deficiency, everyone living in the area should be treated, but treatment is most critical for women, because they are the ones who have babies, and permanent irreversible damage is done to many of these babies.

Once a person has a goiter it will usually persist for life, remaining even after adequate treatment, although often it becomes smaller. Usually it does not cause a problem. If there is a problem after treatment, such as breathing difficulty, the patient should be referred to a hospital.

Remember, goiter treatment is not an emergency. The presence of goiter in a population indicates the need for treatment of everyone in an organized mass program if possible. The prevention of goiter with the use of iodine (Lugols or eve tincture of iodine) 1 drop in 1 glass of water on a weekly basis is enough. For goiter the use of iodine 5 drops in a glass of water for 1 month followed by the daily regimen may help decrease the goiter or avoid complications. [Refer to endocrine section for discussion.]

BEST AVAILABLE DOCUMENT

Iron Deficiency

This is a common disorder in women who have had multiple pregnancies and in children who have received only breastmilk beyond the age of 6 months. In areas where people are working barefoot in muddy fields, hookworm infestation may also aggravate anemia.

Foods rich in iron include meat, eggs and green vegetables. These foods are often expensive or difficult to obtain, in which case ferrous sulfate tablets may be necessary. Generally, the medication should be continued for at least 3 months.
[Refer to Hematology section for discussion.]

Other Nutritional Deficiencies

Except for iodine and iron deficiencies, specific nutritional deficiencies are very rare in Afghanistan, and so they will be described only briefly.

Vitamin C Deficiency

This very rare disease occurs in people who don't eat fresh fruit or vegetables. In this deficiency, bleeding from the mouth and easy bruising occurs.

In Afghanistan bleeding from the gums is very common, but in almost all cases this is due to poor dental hygiene, and it will only be helped by proper cleaning of the teeth, not Vitamin C.

Clean food and plenty of variety is the key to good health. Teach your patients proper nutrition: fruits, vegetables, meat products, not just rice, nan and tea!

NIGHT BLINDNESS (XEROPHTHALMIA) Vitamin a Deficiency

This disease is seen most commonly in young children. It is caused by insufficient VITAMIN A in the diet. If not recognized and treated early, it leads to blindness. It occurs most frequently in malnourished and sick children.

BEST AVAILABLE DOCUMENT

Signs and Symptoms

Early	-	Night blindness (seeing less well than others at night)
	-	Dry eyes (conjunctiva loses its shine and becomes wrinkled).
Late	-	Small gray bubbles on conjunctiva.
	-	Cornea becomes dull with small pits.
End Stage	-	Cornea becomes sort, bulges and may burst.

Treatment VITAMIN A Capsules

Less than 1 year old:	Day 1: 100,000 units (2 capsules) Day 2: 50,000 units (1 capsule) Day 8: 50,000 units (1 capsule) 30.8?
Older than 1 year:	Day 1: 200,000 units (4 capsules) Day 2: 100,000 units (2 capsules) Day 8: 100,000 units (2 capsules) 30.8?

Overdose of VITAMIN A is dangerous. In the areas where VITAMIN A is plentiful, a single day's dose may be repeated once every 6 months, not more often.

Prevention and Treatment

Adequate VITAMIN A in the diet. Leafy green vegetables, red and yellow vegetables and fruits, milk, eggs, liver and meat, if available.

BEST AVAILABLE DOCUMENT

MALNUTRITION

Review Questions

1. What is the best way of identifying a child who is suffering from the effects of mild malnutrition? (Check the correct answer).

   a. Observe general appearance

Review Questions

1. What is the best way of identifying a child who is suffering from the effects of mild malnutrition? (Check the correct answer).

   a. Observe general appearance
   b. Determine rate of growth
   c. Obtain history of poor appetite

In questions 2 and 3 check the lacking dietary component(s).

2. Malnutrition called Marasmus is the result of a diet lacking in:

   a. fats
   b. proteins
   c. carbohydrates

3. Malnutrition called Kwashiorkor is the result of a diet lacking in:

   a. fats
   b. proteins
   c. carbohydrates

4. Malnutrition most commonly occurs between the ages of six months and two years of age. The occurrence of malnutrition is often associated with what event?

 BEST AVAILABLE DOCUMENT

5. A mildly malnourished child with measles is brought to your clinic. Of the following associated problems, which is more important for you to guard against? (check the one correct answer).

a. Occurrence of measles in other children in the family?
b. Occurrence of severe malnutrition in the child with measles.
c. Infection of the measles skin lesions.

6. It is important to be able to identify Marasmus and Kwashiorkor. In the chart below, fill in the description of each problem. Number 1 has been completed as an example.

	Marasmus	Kwashiorkor
1. General Appearance	skin and bones, usually quiet	miserable and crying
2. Muscles		
3. Skin		
4. Weight		
5. Face		
6. Hair		

7. Explain the difference in the course of the two diseases of malnutrition. Consider:

Onset: _____

Severity: _____

Associated problems: _____

BEST AVAILABLE DOCUMENT

8. malnourished children are at high risk of developing diseases such as pneumonia, TB, malaria, otitis media, and diarrhea/dehydration. What is the reason?

9. Management of malnutrition is best accomplished at home. What can you do to assist in the recovery of the child? Consider your responsibilities to:

   a. The child: _____

   b. The family: _____

10. The dietary management of a child with severe malnutrition includes the administration of fortified milk solution either by mouth or through a nasogastric tube.

   a) How much solution would you administer to a 16 kg child on Day 2 of treatment? _____

   b) How many feedings would you give him? _____

   c) How much milk in each feeding? _____

11. In order to help prevent malnutrition, you conduct child care clinics. During these clinics, you counsel parents on the six basic rules for avoiding malnutrition.

   Rule I: Breast feed until the child is eighteen months old.

   Explain the importance of this rule: _____

12. malnourished children need highly nutritious food to get better. What food can you teach a mother to make at home which will help her baby get better?

BEST AVAILABLE DOCUMENT

GROWTH AND DEVELOPMENT

Monitoring Growth

This section refers to the growth chart below. The growth is a very useful tool in monitoring growth of children. The chart is difficult to use correctly. One must ensure that 1) the information is collected correctly, and 2) it is written onto the chart correctly.

Recording information

The most important information is the direction of the child's GROWTH CURVE. This is the line between the different weighings written on the growth chart. In order to record each weighing on the chart, the medic must be able to find the correct point for weight and age. The following instructions are for correctly using of the growth chart.

First Weighing

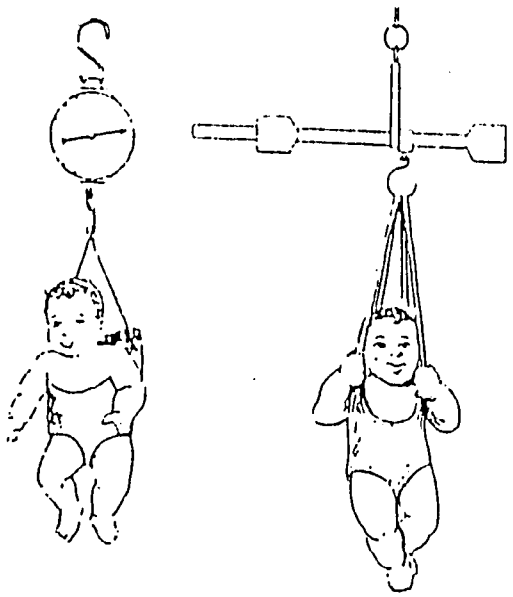
1) Find out the month and year of birth of the child. This may be very difficult information to obtain and requires a series of questions to obtain the most reliable information about the child's actual age. Use of events occurring in the past that can be used as a point of reference, e.g. Eid, a marriage or death date near the child's birth can be very useful.

2) Write the month and year of birth on the bottom of weight chart.

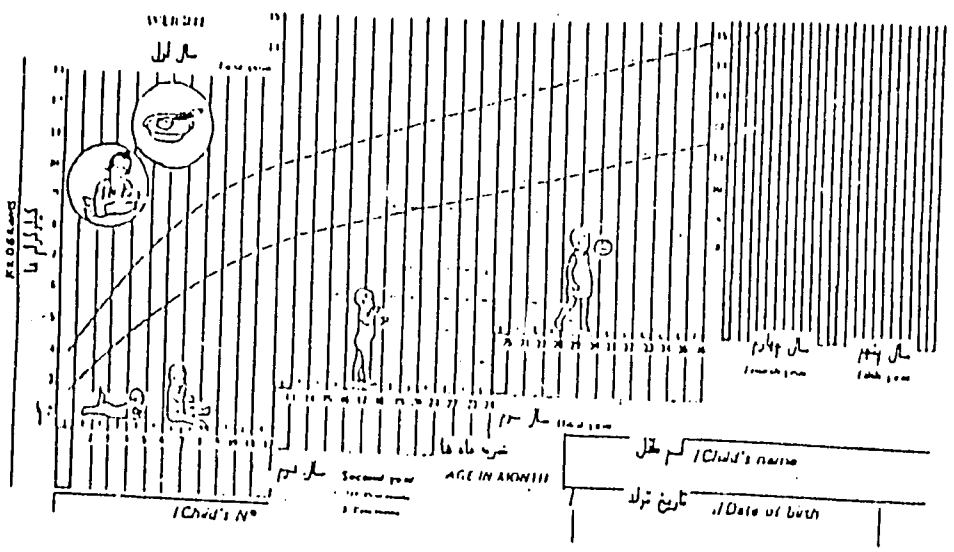
3) Note that there are twelve months in each panel. One panel is for a full year. The first box in every year should always have the birth month written in it. After writing the birth month in his first box, write the same month in the first box of the next year.

BEST AVAILABLE DOCUMENT

4) Weight the child carefully



5) Now put a large dot on the graph. The dot must be on the weight line. It must be directly above the date (the date of weighing):

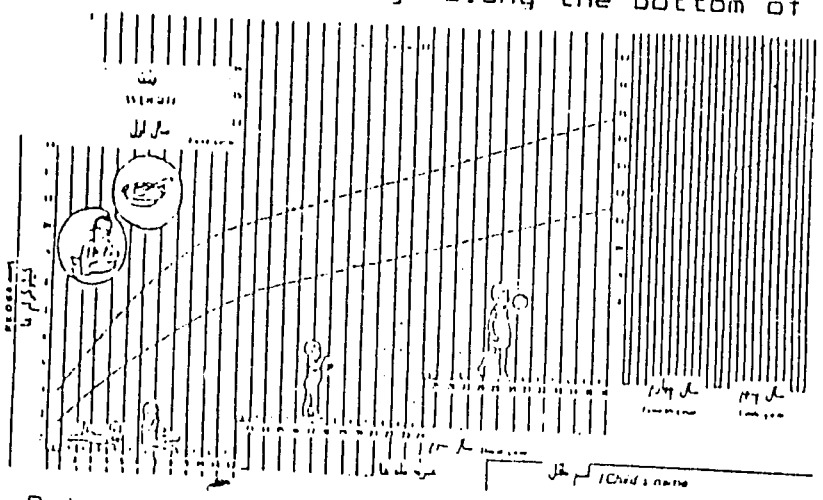


BEST AVAILABLE DOCUMENT

Later Weighings

1) Weigh the child.

2) Find the child's age along the bottom of the graph.



3) Put another dot on the graph, on the child's weight line, and on the appropriate age today.

For example, a child was born in September 1976. He was first weighted in January, and his weight was 6 kg. It is today 10 March, the child has been weighed for the second time, and his weight is 7 kg. Be sure to put the date on the line on which you place today's date. Join together the two dots for the two weighings. If the line is going up the child is growing. If the line is horizontal, or going down, the child is not growing well.

Interpretation

There is much to learn about the interpretation of the weight line. These are introductory instructions.

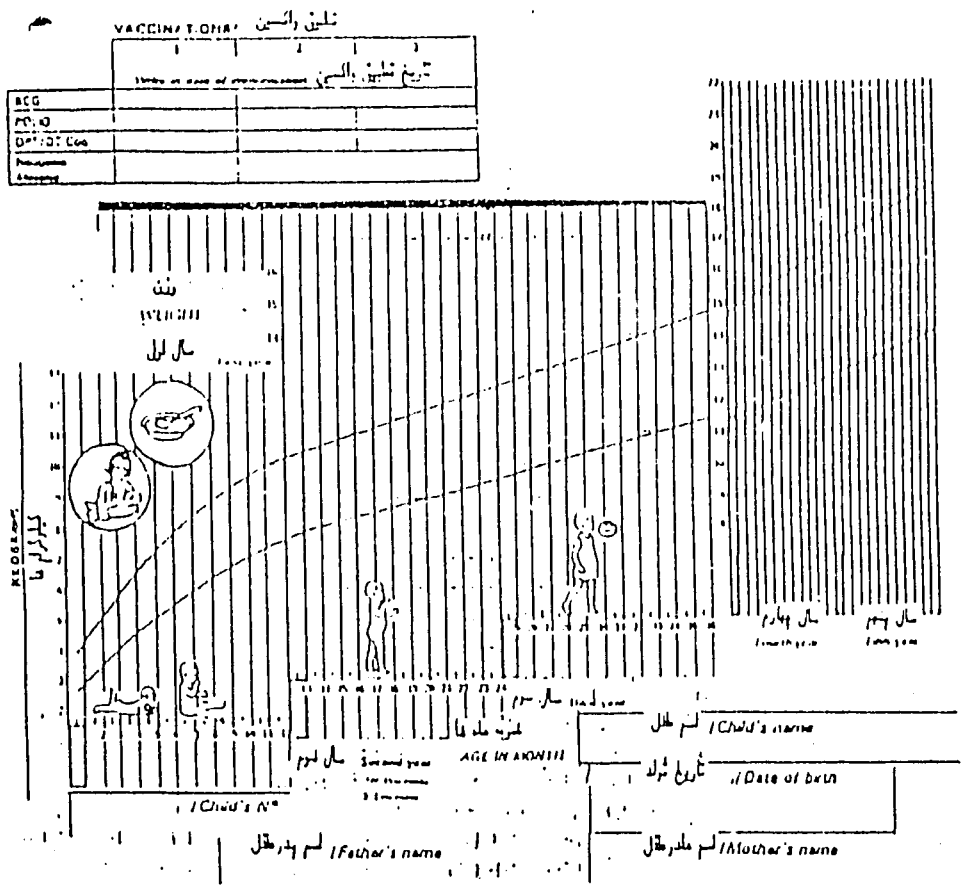
Look at the Growth Line:
You have weighed the child. You have a dot on the chart. If there are two dots join them together. Look at it carefully. Note two things.

1) Note the change in weight between the two weighings. This is the most important thing to look at. If the weight has increased this is good. We can encourage the mother and tell her the child is growing well. If the weight has stayed the same or gone down,

BEST AVAILABLE DOCUMENT

this is not good. We must then try to help the mother so the child gains weight well in the next month.

2) If the child's weight as marked by the dot is below the lower line, encourage the mother to bring him the next month. He may be a small child, or he may be a large child who is malnourished.



Arm Circumference as a measure of nutritional status

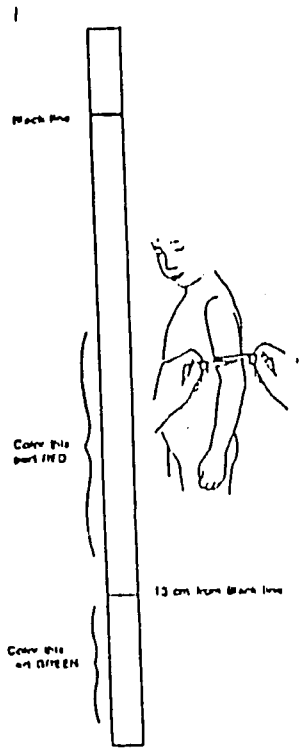
Follow the instructions provided below to measure arm circumference correctly.

1. Measure the left arm of the child, half-way between his shoulder and his elbow. Your strip should just fit around his arm. Don't squeeze it.

2. If the black line touches the red part of the strip, the child is MALNOURISHED.

BEST AVAILABLE DOCUMENT

3. If the black line touches the green part of the strip, the child is WELL NOURISHED.



Upper arm circumference changes very little with age. Between the ages of one and five years, the changes is less than 1 cm. On the other hand, differences of much more than this are seen in malnourished children. Thus, a health worker can rapidly identify the malnourished child during the critical first five years of life. The other advantage is the fact that the age of the child does not need to be as precise.

A CHILD WITH AN ARM CIRCUMFERENCE OF LESS THAN 14 CM BETWEEN THE AGES OF ONE AND FIVE IS MALNOURISHED.

BEST AVAILABLE DOCUMENT

INFANT GROWTH AND DEVELOPMENT

Growth is the increase in size of an individual as a whole and of the various tissues and organs.
Development is the achievement of skills. The rate of this achievement depends on the development and efficiency of the nervous system and the opportunities of learning. Development therefore depends on physical, social, emotional and intellectual factors.

All children go through the same stages of growth and development but each child grows at his or her own rate.

Growth proportions: The head size is normally larger than the chest from birth to 6 months. The head and chest circumference is equal by around one year. Thereafter the chest is larger.

Factors which influences growth include:

1. Genes you inherit from your parents.
2. Nutrition
3. Growth hormones
4. Illness
5. Emotional factors
6. Which sex you are

Weight estimates average

birth	-	4 kilograms
one year	-	9 kilo
two years	-	12 kilo
three years	-	15 kilo
four years	-	17 kilo
five years	-	20 kilo
six years	-	23 kilo
seven years	-	25 kilo

Development guidelines

one month - Lifts head when lying on stomach.
Hands closed but can grasp.
Cries, but can be quieted when held.

BEST AVAILABLE DOCUMENT

three months	Keeps back straight when held in sitting position. Can hold object in hand. Smiles, babbles.
six months -	Grasps object when offered Makes different sounds. Drink from cup brought to lips. Crawls.
nine months -	Pulls self to standing. Says "Mama", "Papa". Responds to name.
twelve months	Walks or walks with help. Points to desired objects Speaks 2-3 words. Obeys simple commands.
two years -	Able to run. Able to climb stairs. Able to stack blocks. Points to four body parts, when asked. Helps dress self.
three years -	Knows and can say name. Jumps. Can draw circle. Plays simple games.
four years -	Skips on one foot. Draws a man and woman. Recognizes colors. Plays with other children. Repeats name and age.
five years -	Runs quickly. Skips on both feet. Washes own face and hands. Can copy a drawing. Is protective towards younger children.

BEST AVAILABLE DOCUMENT

Abnormal Growth and Development is a defect in form, structure, or function in an infant which can occur (1) before birth due to genetic problems maternal infection, trauma to the mother, or maternal malnutrition, (2) as the infant grows, due to infection, intrauterine factors.

our key points for a healthy child:

Good nutrition, including breast feeding rather than bottle and the introduction of clean, solid food such as cereals from age 6 months onward.
Immunizations, complete and on schedule.
Good hygiene. Clean babies fed clean food and water have less infection and better growth.
A lot of love.

UNIT II.

Nutritional Needs

The following concepts are discussed in Unit II.

- Phases of Life
- Nutritional Needs of the Newborn Infant
- Nutritional Needs of the Young Child from Four Months until he is 2-3 years old
- Nutritional needs of the Older Child and Adult
- Nutritional Needs During Pregnancy and Lactation
- Nutrition During Illness.

What are the different phases in life?

In each person's lifetime, there are times or phases that are common to everyone else's. Every person starts life as an infant - a helpless newborn baby. The next phase that all persons go through is that of a young child. The young child grows

BEST AVAILABLE DOCUMENT

rapidly and soon becomes more active, learning to crawl and walk. The next phase is that of the older child. The final phase is adulthood. During adulthood, there is not as much rapid growth occurring. However, activity increases, making the person's energy needs greater. A special time for women is the time of pregnancy or lactation (breast feeding). A new life is born and begins its journey through the different phases of life.

If we put all the phases of life on a line, we would have this:

BIRTH

DEATH

Infant Child Older Child Adult Older Adult

Pregnancy/Lactation

BIRTH

Why do we distinguish between the different phases of life?

The reason for distinguishing between the different phases of life is that as we go through the different phases, our nutritional needs, or the food we need to eat, will be different depending on what phase in life we are in.

What are the different phases of life we should know?

There are four different stages in life with which we will be concerned. They are as follows:

1. The infant, from birth to four months of age. At this time, the infant is growing very fast and is totally dependent on his mother's breast milk for his food.

2. The young child, between four months and until he is to 3 years of age or when he is finally weaned from breast. His need for a variety of foods is greater at this time than when he was getting all of his nutrition through his mother's milk. He must, therefore, begin to have other foods as well as breast milk.

 BEST AVAILABLE DOCUMENT

3. The older child and the adult. Although the total amount of food that a child over three years old and an adult will eat may vary, the type of food needed by an adult and to older child is very similar.

4. Pregnant and lactating women together make up the fourth group. They have special needs for food beyond the needs of the adult male because they are providing for the growth of a baby. If a woman is healthy and eats mixed diet, she has a better chance of having a healthy baby.

What do infants under four months of age need to eat?

The most important thing to remember about feeding an infant is that he must be breast fed. His mother's milk is the best for him. It is the only food he needs during this time.

Keeping in mind that breast feeding is the best way to feed a baby, let us consider some of the reasons why it is good.

Breast milk is exactly what the baby needs. It has the right combination of body-building, energy and protective foods that infant will need. This one food will meet all the needs of infant for food.

Breast feeding is more sanitary than other ways of feed the baby. It is almost impossible to keep a bottle clean enough for a baby. If the baby eats from unclean bottles or cups, he will get very sick. A bottle will frequently cause a baby to get diarrhea and become sick and die. The breast milk is much clean and better for the baby.

Breast milk is cheaper than other kinds of milk for feeding the baby. Purchasing canned milks, powdered formulas or other fresh milk is done so only at a very high cost. The mother will easily provide enough breast milk for her infant at a low cost by increasing how much she eats of certain foods.

It is more convenient to breast feed a child than to prepare formula or bottles for a baby. The milk is ready, at the right

BEST AVAILABLE DOCUMENT

temperature whenever the baby wants to eat. Breast milk is made by the body for the baby so it is neither too hot nor too cold.

A special type of early milk is present at birth called colostrum. This first milk is much more yellow in color and some mothers may think that it is soured. This first milk is not sour and it is very important that a mother should give this to her baby. It has in it many factors (called antibodies) which will protect the child from illness. This is a very important protective food which makes breast milk the best food for the infants. The newborn should be put to the breast in the first or second hour of birth. The baby should not be given ghee or any other food. Putting the baby to the breast early and often is very important: newborns need breastmilk as soon as they are born, and early feeding helps the mother's milk to come out and prevents engorgement of the breasts which can lead to mastitis. Breastfeeding immediately after delivery helps the placenta to come out and the uterus to contract which reduces postpartum bleeding. Tell fathers, dais, village elders and anyone else who will listen the importance of the proper feeding of newborns.

Tips for successful breastfeeding and what to do if the mother is sick or dies:

Lesson: HINTS FOR SUCCESSFUL BREAST FEEDING

Some mothers, especially during the first few weeks of breastfeeding, have some difficulties with breastfeeding such as, short/flat nipples, cracked/ sore nipples, lack of breast milk. Some mothers who have difficulties with breastfeeding get discouraged and stop breastfeeding and often turn to using other milk products (non human) such as condensed milk and prepare this under unsanitary conditions which often causes children to get diarrhea, become malnourished and get sick easily.

4 ways to help increase amount of breast milk.

a) drink extra liquids (such as chinese tea).
b) eat nourishing diet (more than normal-supplemental food).
c) get enough rest and relaxation.

BEST AVAILABLE DOCUMENT

d) increase the frequency of feeding.

8 ways to prevent breastfeeding problems.

a) put baby to breast as soon as possible.
b) follow good health habits when pregnant.
c) massage nipples to help extend and toughen them.
d) have baby suck from both breasts.
e) feed small feeds frequently.
f) make sure that baby's mouth is in correct position.
g) do not clean nipples with soap or alcohol which dries out the skin and but use plain, clean water.

4 ways to treat cracked/sore nipples

a) treat cracked nipples with (food) oil.
b) allow a few drops of milk to dry on nipple after breastfeeding to prevent infection.
c) put infant to each breast about 5 min, every 2-3 hours until nipples heal and then increase feeding time.
d) express milk by hand for one or two days while nipples heal and give milk to baby using a clean cup and spoon.

2 ways to treat short/flat nipples

a) massage nipples daily.
b) make sure that infant's mouth is in correct position - gums should be biting dark area of breast around the nipple.

2 ways to help re-establish breastfeeding

a) put infant to each breast for about 5 min, at least every 2 or 3 hours to help stimulate milk flow even if there is just a little milk.

b) be confident that breastfeeding can be re-established

Sometimes a mother or a baby may get ill. It is very important to remember that the baby must still be fed. Even when babies get,

BEST AVAILABLE DOCUMENT

diarrhea, a mother must continue to breast feed the child. Feeding the child will help him to get well again. If the mother gets sick she should continue to breastfeed her infant. If she is given a medication for her illness that will be dangerous to the infant she may have to discontinue temporarily and use some safe alternatives described below. She should continue to breast feed if she has mastitis if possible.

Most women can adequately nurse their children. However, there are rare cases, such as when a woman cannot make milk or if a mother dies, that the a family must find an alternative way to feed the infant. Keeping in mind the "breast is best" the family can look for another woman who can nurse the baby (wet nurse). This can be any woman who has delivered a child in the past. Her milk will reestablish itself sufficiently within 2-3 days to feed the infant if she places it to her breast to suck. If another woman cannot b found to breast feed the infant, then most families will often try to use a bottle.

It is important to stop this practice, because almost half of the babies given bottles will die from diarrhea. It is not possible to keep the bottle clean enough. The child should be fed from a cup with a spoon. Both the cup and spoon must be very clean. They should be boiled in water each time before they are used for the baby.

A baby may be fed from a cup by giving him powdered milk with water and sugar added, or fresh milk with sugar. It is important that the mother should not add too much water to the powdered milk because it will thin it out and the baby will not be getting enough milk or food. Skim milk, which is milk with some of the fat content removed, is not a good food for infants unless oil and sugar are added. Fresh milk after it is boiled and cooled and a small amount of sugar is added. A formula for feeding infants may be made according to the directions for fortified milk solution given below. The most valuable thing for a mother to know, however, is that the best food she can give her infant is breast milk.

BEST AVAILABLE DOCUMENT

What to feed the young child from four months until he is weaned?

When a child reaches four months of life, he starts to be more active and needs more food than what he can get through his mother's breast milk. The child needs other foods but still needs breast milk. The young child should not be weaned from the breast until he is 2 to 3 years old if possible.

This process of going from breast food to other foods must be gradually accomplished. The food child is weaned onto is especially critical. The food must be clean and soft and a mixed diet. If the child is not given a mixed diet, malnutrition will result and the child may become sick and die.

The young child is still growing fast and is now becoming more active. So he has a greater need for food. The foods that are given to the young child must be soft, clean and a mixed diet. In addition to breast milk we recommend that a child in this phase of life receive these other foods.

Safe Weaning Practices:

1. After the age of 4-6 months breastmilk alone is not sufficient food. If no other foods are introduced, the baby will start to become malnourished, and later on weaning will become more dangerous.

2. Recipe for first food (super Porridge - or KITCHRI): The first food given is usually traditional, and is usually based on wheat flour in Afghanistan. This first food should contain flour, ghee, sugar, salt and water. There are many ways to make it. Here is one good way:

Take two handfuls of flour and put it in a pan. Then add a small amount of .....

Heat it until it starts to bubble.
Then add a small spoon of sugar and a few grains of salt.
Give it to the baby on a spoon while it is st ll warm and fresh.
Don't keep and reuse it after bacteria have had a chance to grow in it.

BEST AVAILABLE DOCUMENT

Give this once daily for the first week, then twice daily then three times daily.

After one month, introduce a vegetable that has been cooked fresh with a little ghee added to it. A green leafy vegetable is best, and it can be added to the first food described i bed above by mixing it together, after they have both been cooked. At first mix one part of vegetable to 3 parts of cereal, then after the baby is used to the new food (1 or 2 weeks) add more vegetable, so that the mix is 1 part vegetable and 2 parts cereal.

4. At the age of 6-8 months other foods can be introduced: one new food each week. By the age of one year the baby should still be breastfeeding a lot, but he should also be eating many foods.

Good foods for babies are boiled milk, yogurt, cheese, ghee, eggs, all soft vegetables, mashed beans, clean or cooked fruit, and cooked meat that has been m ed or chewed by the mother. Rice and nan are fine as long as they are not the only foods the baby eats.

Safe Weaning: Points to Remember and Teach

- Start "first food" at 4-6 months of age, not older.
- always cook the foods and give them fresh.
- the baby should be taking many different foods by one year of age.
- continue regular breastfeeding until 2 years of age.
- if the baby gets diarrhea, add ORS, but always continue clean food and breastmilk.
- all babies get some diarrhea with weaning. the frequency and severity of diarrhea can only be helped by giving clean foods, not by giving a lot of medicine.

Remember: safe weaning practices will save more lives than all your medicines put together! Teach your people!

After the age of two years, everyone can eat the same food. Many people in Afghanistan are poorly nourished because they are eating only rice, nan and tea. Teach them to plant many crops and to eat a large variety of food. In this way they will be well nourished and healthier.

 BEST AVAILABLE DOCUMENT

A young child needs to eat six times a day. The child has high needs for food because he is growing fast and becoming active. In order to have enough foods to meet his needs, the young child must have frequent, small meals.

When teaching mothers, it should be emphasized that the regular family diet can easily be modified to meet the nutritional requirements of the young child, if enough is given to him. Also encourage mothers to buy cheap nutritious foods like roasted grain, peanuts, bananas, etc. which should be given in addition to the basic family diet, rather than buying expensive prestige foods.

To help mothers understand the recommended diet, you should prepare large posters and display them in a location where they can be seen.

The most important things to remember about feeding the child are:

1. Breast feeding should be continued until two to three years of age.
2. Super porridge and mashed fruits and vegetables should be introduced when the baby is four months old.
3. When the child is two to three years old, he should be slowly weaned from the breast while being given other foods which are soft, clean and a mixed diet.
4. Young children must be fed even if they become ill. Only if sick children eat will they be able to recover from an illness.

What foods do older children and adults need to eat?

Older children and adults have similar needs for food. The amount of food they need to eat may differ, but the types of food are the same.

It is important that adults and older children eat a mixed diet. Neither the child nor the adult is receiving breast milk so they must depend totally on their diet for energy food, body building foods and protective foods. Foods from each of the three groups should be eaten every day. An adult can be healthy with 2

 BEST AVAILABLE DOCUMENT

meals a day. However, the child may need as many as 4 smaller meals.

Super porridge, which is good for young children, is also very good for older children and adults. It provides both energy foods as well as body-building foods. With a vegetable added it can meet the three needs of the body for food. This is very good for adults who may have lost many of their teeth and cannot chew hard foods.

Older children and adults should eat when they are ill. Taking away food from a person who is ill will only make him worse. All people should eat when they are ill.

Prenatal Nutrition and Lactation

Good nutrition starts before birth with a healthy well nourished mother who gains 8-12 kg, during her pregnancy. The mother needs to "eat for two". This means that she must eat more, and also a good variety of foods, including more fruits, vegetables, oil and animal products (milk, eggs, meat), not just more rice, nan and tea.

Many babies are born underweight and/or premature (born before 9 months). The risk of dying is higher for babies who are born small especially when they are less than 2.5 kg. The birth weight of a baby is related to the mother's weight gain during pregnancy. Many mothers do not gain enough weight during pregnancy resulting in delivering small or premature babies. Low birth weight babies have more difficulties than normal birth weight babies such as:

a) Higher risk of dying in the first year.
b) More susceptible to illness.
c) Breathing problems.
d) Feeding problems - poorly developed digestive tract results in inability to digest foods properly.

Tell the village elders that if they want strong sons they must have strong wives, and if they want strong grandsons they must have strong daughters.

 BEST AVAILABLE DOCUMENT

Practical objectives to insure good nutrition during pregnancy.

1) For pregnant woman to gain between 1-2 kgs per month after the first 3 months of pregnancy.
2) For women to have their weight regularly checked during pregnancy to follow weight gain.
3) The medic should provide the woman (and her family) with instruction regarding the importance of nutrition and the specifics of a good diet.

Many women are anemic and should take ferrous sulfate (iron pills) while they are pregnant and breastfeeding. This is generally the only medicine they need during pregnancy.
[See obstetrics chapter on guidelines for supplements pregnancy]

Why is diet important in disease and illness?

When a child or an adult is malnourished, it is easier for them to get sick. Their illness will be more severe because they are not strong enough to protect themselves from the illness.

When a person is ill, he may not want to eat. The person may have diarrhea or nausea and may not be hungry. When a person is ill, it is important that he eat good food and enough of it even if he is not hungry. Super Porridge is a good food for children and adults while they are ill.

The sick person should be eating a mixed diet. If the sick person does not eat enough of the good foods, his illness will lead to diarrhea. The diarrhea will cause the patient to become malnourished and the patient becomes even more ill. This continues all too often until the patient dies. To stop this from happening, the patient must eat a mixed diet and eat only clean foods.

Making sure that the person eats only clean foods is very important. Since the feeding bottle cannot be kept clean, it is almost a sure death for infants who are bottle fed. Using a cup and spoon which have been boiled to feed a child is a good way to avoid illness. Cooking foods until they are very hot and boiling water are two ways to make sure the food one eats is not dirty.

 BEST AVAILABLE DOCUMENT

Breastfeeding is an easy way to avoid illness with infants and at the same time provides the best food possible for the infant.

Always Remember:

1. The foods that make people well nourished are different at different ages.
2. The practice of withholding food from the sick, which is often done, is almost always dangerous. Sick people need to eat good food even more than healthy people.

CHECK YOUR UNDERSTANDING

1. Name the best food for an infant from birth until 4 months old. _____.

2. A child should be breast fed until he is _____ year(s) old.

Read the following statements. If the statement is true write a "T" in front of it. If the statement is false put an "F" in front of it.

3. _____ When a child's mother cannot breast feed him, he should be bottle fed.

4. _____ At age four months, infants begin to need other foods in addition to breast milk.

5. _____ When a child or adult is ill, he should not eat or drink.

6. _____ A person who eats a good diet is less likely to get sick than a person who is malnourished.

7. List 4 reasons why mothers should breast feed their children.

1. _____

2. _____

BEST AVAILABLE DOCUMENT

3. _____

4. _____

8. Give 3 reasons why pregnant women need to eat a good diet.

1. _____

2. _____

3. _____

9. Describe the best diet for an infant that is 2 months old.

_____

10. Describe a good diet for a child who is 18 months old. Explain why it is good.

_____

_____

11. What is Super Porridge? _____

_____

Give 2 reasons why it is a good food.

1. _____

2. _____

12. Discuss how the diet needs of a pregnant or lactating woman differ from adult diet needs in general. _____

_____

Nasir's family lives in your village. Mrs. Ajmal told you that she had a baby which died when she weaned it from the breast. She said she had weaned the baby when it was 10 months old because she was pregnant again. She fed the baby maize four times a day. At first, the child looked fat because his face and legs were swollen. Then he got very weak and miserable and could not eat at all. He soon died.

 BEST AVAILABLE DOCUMENT

13. Discuss why the diet that the baby was fed after weaning was not good.

_____

_____

14. Explain why early weaning of a child from the breast may be dangerous.

_____

STUDENT GUIDE

Local Foods

I. ENTRY LEVEL KNOWLEDGE AND SKILLS

Before starting this unit you should be able to:

1. Name the common locally available foods in your area and place them correctly in one of the 3 basic groups.

II. OBJECTIVES

Using the information and experiences provided by the instructor and module text, you will be able to:

1. Identify locally available foods.

2. identify the benefits of locally available foods.

3. Identify and differentiate between the different types of milk available.

III. EVALUATION

Upon completion of this module you will be rated on your attainment of the above objectives.

Knowledge: Written test based upon module content.

BEST AVAILABLE DOCUMENT

UNIT III

Local Foods

Unit III deals with the following concepts:

1. Locally available foods

2. Types of milk available

What are locally available foods?

Locally available foods are those which people in your community can produce or buy. Foods which are grown in the community are usually better than those which are from far off places and must be shipped to the community. Food that is grown in the community will also be less costly than food which must come from far away places.

How can locally available foods best be used?

Grain cereals locally produced are frequently much better and less costly than grains shipped to your community. If the cereal shipped in is ground into a flour, it is frequently milled. This milling removes the outer part of the grain as well as the kernel in which all the protective food parts are located. What is left in a milled cereal is usually only the energy food. While this milling is making the cereal less nutritious, it is also making it more costly. The villagers will have to pay more for it and actually get less food value. When a woman grinds cereal into flour for her family with the traditional grinding stone, she does not lose the protective portions of the grain.

Foods may best be used by eating them in combination with others. A body building food should be eaten with grains or other energy foods and a protective food. In making breads or porridge, two different grains should be used rather than just one.

BEST AVAILABLE DOCUMENT

If they are available, animal products such as meat or eggs should be eaten rather than sold for cash. Animal and fish products are excellent sources of body-building foods.

Any fruits or vegetables which are grown in the community should be included in the diet. One should not overlook sources of vegetables. Vegetables ar very important to the total diet and tend to be expensive to purchase. Any gardening of vegetables would be a wise use of land and recommended for improving the health of the community.

What are the locally available sources of food?

Each community is different in what it can produce, what people want, and what is available. It is important to know this information about your community. Take the time to consider the items in the following lists and determine if the foods are available in your community.

Protective Foods

papaya, lemon, orange, mango melon, tangerines, pumpkin leaves. sweet potato leaves, tomatoes, cauliflower, unmilled maize, carrots, brown rice, whole wheat, other fruits and vegetables.

Body-Building Foods

meat, fish, eggs, poultry, legumes (dried beans, peas, pulse, lentils, peanuts, monkey nut), oil seeds (sesame and sunflower), milk, cheese, lassi.

Energy Foods

Wheat, maize, rice, millet, potatoes, banana, butter and ghee.

Consider the lists of food to determine if some of the foods are more economical than others in the lists.

What types of milk are locally available?

Milk is a source of body-building food, energy food and protective food. It is available in many different forms for people to use. They are not the same and costs may vary widely.

BEST AVAILABLE COPY

Some of the varieties may be present in your community while others may not. The varieties you may encounter include: breast milk, fresh milk, powdered whole milk, evaporated milk, skim and dried skim milk, condensed milk and commercial infant formulas.

Fresh milk, if available, is a good food for young and old. However, it must be kept in clean containers and refrigerated to avoid contamination. When a child is weaned from his mother's breast, fresh milk is a very good food.

Powdered whole milk is fresh milk which has had the water removed and is now in powder form. To use it, water must be added back according to directions. With sugar added powdered whole milk may be used for infant feeding when no breast milk is available.

Evaporated milk is milk from which part of the water has been removed. When added to an equal quantity of water, this milk is the same as whole milk. This is sometimes an expensive source of milk.

Skim milk and dried skim milk are products from which the fat content has been removed. Dried skim milk is skim milk which has had the water removed, and it is in powder form. Both are a good source of body-building food and protective food that is needed by pregnant women, lactating women and child. This is a good food for young infants only when it is mixed with sugar and oil.

Condensed milk, which usually comes in cans, has had much of the water removed and extra sugar added. This milk is very expensive. it is not suitable food for infants because it has had too much sugar added.

All milk is a source of possible contamination and disease. the use of milk in the diet is advisable only if a safe, clean source of milk is available. All milk except breast milk should be boiled and then cooled before it is given to infants.

BEST AVAILABLE COPY

Commercial infant formulas such as "Infamil" "Similac" and others are available in Pakistan, but they are generally very expensive. And, they are no better than less costly sources of milk. The money saved can be used to buy more milk or other nutritious local foods.

The most important points to remember concerning milk are:

1. Breast-feeding the infants and children up to age 2-3 years is far superior in every way to give them milk from other sources.

2. When cow or buffalo milk is given to small children, it should be fed with a cup and spoon. Bottle feeding is very dangerous, because it is very difficult to keep bottles and nipples clean enough to avoid contamination with microbes which cause diarrhea and other illnesses in infants and small children.

CHICK YOUR UNDERSTANDING

1. Define locally available foods.

_____

_____

BEST AVAILABLE COPY

Read the following statements. If the statement is true, put a "T" in front of it. If the statement is false put an "F" in front of it.

2. _____ Milled cereal is more nutritious than unmilled cereal.

3. _____ Eggs produced by the family's chickens should all be sold for cash, since they are fairly low in food value.

4. _____ All milk other than breast milk should be boiled and cooled before it is given to infants.

5. _____ Animal products such as meat are excellent sources of body-building foods.

6. In order to make skim milk an acceptable food for infants we must add _____ and _____.

7. Mr. Akmal has come to see you and is very upset. His wife died last week. Until she died she was breast feeding their son who is 3 weeks old. Mr. Akmal knows of no other woman who could nurse the baby and wants to know what and how to feed the child. What would you tell him? _____

_____

_____

8. Mr. Javid and Mr. Afzal are two men living in the same village. Each owns 5 chickens which lay 5 eggs per day. On market day, Mr Javid takes three of his eggs to trade with a local farmer. For his 3 eggs, he gets a bag of rice. His family eats the remaining eggs. Mr. Afzal takes all 5 eggs and trades them at the market for one bag of rice that comes from a far away city. Discuss which is wiser.

_____

BEST AVAILABLE COPY

IMMUNIZATION MODULE

Without your help the children of Afghanistan who need vaccination will not be reached.

LEARNING OBJECTIVES FOR IMMUNIZATION MODULE

After completion of the module each student should:

1. Know which diseases are prevented by which vaccines.
2. Know the symptoms, treatment and prevention of the disease;
3. Know the recommended age for each vaccination to be given;
4. Recognize and know the principles about record keeping; (road to health cards)
5. Be able to plan/conduct health education activities for immunization;

IMMUNIZATION MODULE

I Learning Objectives
II Immunity
III Target population (WHO should be vaccinated)
IV Vaccines
V Target diseases

BEST AVAILABLE COPY

VI Record Keeping
VII Community Education

IMMUNITY:

General Points
A microbe is foreign element which attacks the body. It is either a virus or a bacteria. Microbes harm the body directly or by making a poison to harm the body. The poison is called toxin.

When a microbe enters the body it starts a system of defense called the immune system. This system will send cells which:

- identify the microbe
- make antibodies which are proteins to attack microbes.

The Antibodies stick to the microbe and kill it; or stick to the toxins and stop them from being harmful. Then the antibodies are called antitoxins (for example, tetanus antitoxin).

For each microbe there is a specific antibody. For example, the measles antibodies destroy only the measles virus and are not efficient against the polio virus or another microbe.

When someone has antibodies which allow him to struggle against a disease, he is said to be immune against that disease or that he has an immunity against that disease.

Immunity and Immunization

Immunity may be defined as the ability of a person to resist the invasion of disease germs. Most persons are born with a high level of immunity which is derived form their mothers; but this immunity is lost within a few months after birth. The immunity which adults possess is usually acquired after birth through vaccination or disease, natural or acquired immunity.

After the initial immunization series, booster dose are given from time to time to ensure the maintenance of a protective degree of immunity. Special immunizations may also be given to personnel, depending upon the circumstances.

BEST AVAILABLE COPY

The customary body site for immunization injections for adults is the outer surface of the upper arm. (For babies and children under 2 years mid outer thigh). The surrounding area can become red, swollen and painful

All immunizations are recorded on the individual's immunization record which becomes a part of his permanent health record.

Different kinds of immunity
There are different kinds of immunity, according to the different ways the antibodies can be gained.

A microbe which has the same shape as the natural microbe but has lost its ability to cause disease, is injected into the body.

The defense cells cannot tell the difference between the natural microbe and the harmless artificial one, because both have the same shape.

The antibodies made against the artificial microbe are effective against the natural harmful microbe.

This is the principle of immunization.

A vaccine is a liquid containing the harmless artificial microbe.

The mechanism of action of a vaccine:

a. The vaccine is injected into a person's body with a syringe and a needle, or given through the mouth COPY.

b. The defense cells locate and identify it (according to its shape).

c. The defense cells make specific antibodies against the artificial microbe of the vaccine.

These antibodies stay in the person's blood for several years or for the person's entire life.

BEST AVAILABLE COPY

When a person is vaccinated he is protected against the disease.

If the natural microbe, which has the same shape as the microbe of the vaccine, enters the body, the antibodies already made because of the vaccine are going to surround it immediately and kill it. the antibodies don't know the difference between these 2 microbes (natural microbe and the artificial microbe of the vaccine) because their shape is the same.

1. The microbe is surrounded by antibodies.
2. The microbe is destroyed in a few hours.

This phenomena will occur each time the natural microbe enters the body, as long as the antibodies are present in the persons's body.

During pregnancy the mother gives to her child (fetus=child not yet born), the antibodies which will protect him for a while after birth.

1. The mother has in her blood a certain amount of antibodies she made either by immunization or because she had the disease.

2. After the 6th month of pregnancy, some of these antibodies can travel through the placenta and arrive in the blood of the fetus where they remain after birth.

3. These antibodies stay in the infant's blood for months. As long as they stay in his blood, the infant is protected.

If the mother has had measles during her childhood or if she has been immunized against measles during her chil
will pass antibodies to her infant, this provides good protection until the age of 6 months.

The duration of protection provided by antibodies varies according to each disease.

BEST AVAILABLE COPY

When a microbe enters someone's body for the first time:

1. The microbe enters the body: through food, water, air, skin, injury, etc.
2. It is located by the special defense cells of the body and identified.
3. the defense cells make specific antibodies against this microbe.
4. The microbe is surrounded by these antibodies.
5. the microbe is destroyed (or immobilized), the antibodies stay in the blood for a long time.

When it occurs for the first time, this phenomena is completed in an average of 10 days. During this time, the microbe has time enough to multiply and to infect the body, therefore to be harmful: the person becomes sick. The immune system leads to recover.

When a microbe enters some's body for the second time:

1. There is already a large amount of antibodies in the blood of the person. They immediately recognize the microbe.

2. The microbe is destroyed.

This phenomena lasts only a few hours: the person is not sick, because he is immune against that disease (but not against the other diseases).

TARGET POPULATION

You should vaccinate the child:

- before he is exposed to the target diseases as soon as possible during the first year of life.

- after he has lost the protection (immunity) given by the mother at about 6 months, (if you vaccinate the child who still has immunity given by the maternal antibodies, these antibodies can attack the vaccine and make it useless).

 BEST AVAILABLE COPY

THE TARGET POPULATION:

The target population is the part of the population (according to age and to sex) which is mostly attacked by the disease. It is also part of the population (by age, and general health conditions) among whom the vaccine is the most efficient.

Measles is frequent and dangerous, especially between 6 months and 5 years old. Measles vaccine is efficient at any age after 9 months (before that the maternal antibodies are still present). The target population for the measles vaccine will be children from 9 months to 5 years old. (During an outbreak of measles you are allowed to start immunizing infants after 6 months of age).

Neonatal Tetanus attacks the newborns before the age of the vaccine against tetanus can be given. During pregnancy if the mother makes antibodies, these antibodies will get through the placenta and arrive in the fetal blood.

The target population for the prevention of neonatal tetanus will be:

- pregnant women
- women of child bearing age

The vaccine against tetanus is not effective if it is given to the baby at birth.

THE VACCINES

1. List of existing vaccine currently used in Afghanistan.

The EPI Vaccine (Expanded Program on Immunization)

- Measles
- Tetanus
- Pertussis DPT
- Diphtheria
- Polio "OPV" Oral Polio Vaccine
- T.B. (B.C.G.)

BEST AVAILABLE COPY

2. Demonstrate the various vaccines - vials, syringes, needles etc.

3. Explain about dosage and boosters

Starting dose and boosters

A vaccine needs to be administered at a certain dose to be efficient.

- for some vaccines, the whole dose can be given by a single injection.
- for some others, it is necessary to divide this dose into a series of injections given at certain times.

If you give the whole dose of the vaccine at once, the side effects would be too severe and dangerous. Giving one or more other injections, 1 or 6 months after the first one helps to make a larger amount of antibodies.

Once the starting dose is given (by one or more injections) it is sometimes necessary to strengthen the immunity, by giving a new injection 1 year or 5 years later. It is what we call a "Booster". Vaccine schedules change as new vaccines are developed. The schedule listed below is general information and always subject to change.

* vaccine against measles:
  - Single dose
  - No booster

* B.C.G.
  - Single dose
  - Eventually booster 5 to 10 years later.

* Vaccine against tetanus
  - 2 primary doses given at least one month apart
  - No booster except for pregnant women (one booster during the next pregnancy until a maximum of 5 injections)

 BEST AVAILABLE COPY

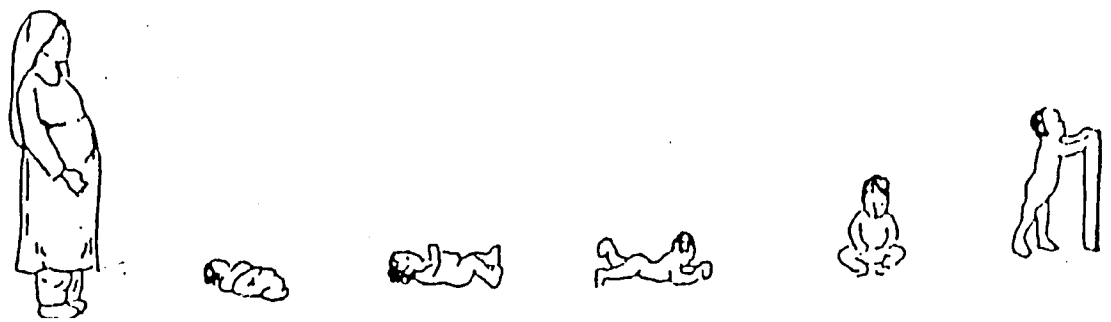
* D.P.T. Polio
    - 2 primary doses given 2 to 3 months apart
    - No booster

* D.P.T. + OPV
    - at least 3 primary doses given at least on month apart
    - Booster after one year

In Afghanistan it is easier to use vaccines given as a single dose, or vaccines which need the smaller number of doses, for the primary injections when immunization teams have difficulty getting to communities easily for more frequent doses.

It is much more difficult to use the vaccines which need 3 primary doses or a booster because in these cases you need to go to some place 3 times.

The efficiency of an uncompleted schedule of vaccination is not zero but is much weaker than the efficiency of a completed vaccination schedule.



BEFORE BIRTH AFTER BIRTH

Pakistan Immunization Schedule:

Birth	BCG AND OPV
6 wks	DPT 1 and OPV 1
>10 wks	DPT 2 and OPV 2
>14 wks	DPT 3 and OPV 3
>9 mo.	Measles Vaccine

BEST AVAILABLE COPY

1 year after DPT and OPV #3 - DPT and OPV booster

Between age 2-5 children are given DT in Pakistan.

Afghanistan Immunization Schedule:

Birth	BCG
>3 mo	DPTP1
>9 mo	DPTP 2 + measles vaccine

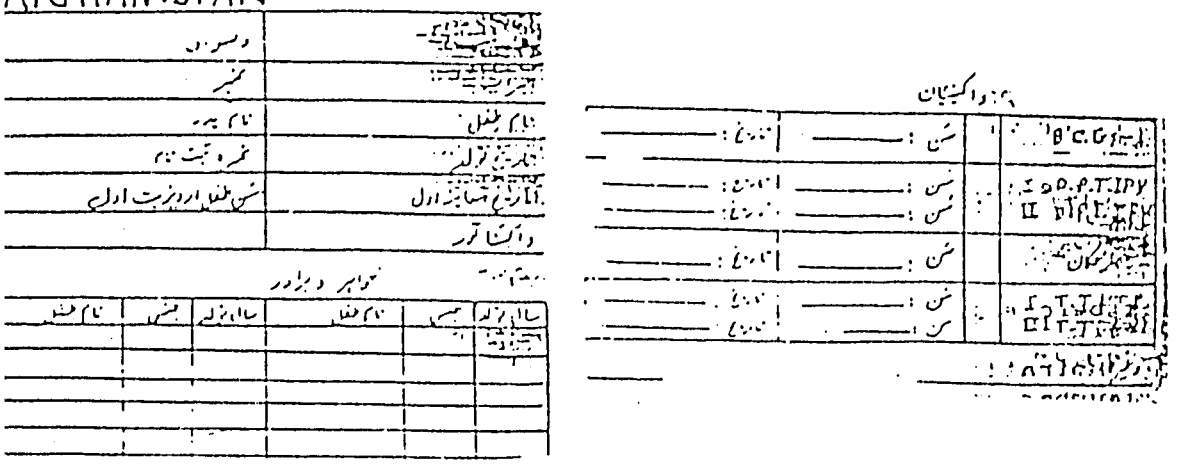
BCG should be given to all children who do not have a scar.

After age 6 years it is better to give tetanus toxoid

VII. Record Keeping

this is an example of an immunization card:

AFGHANISTAN



TARGET DISEASE OF THE E.P.I (Expanded Program on Immunization)

Introduction

Every year in the world, more than 3.5 million children die or suffer from mental or physical handicap, due to 6 diseases:

- measles
- pertussis (whooping cough)
- tetanus
- poliomyelitis
- diphtheria

BEST AVAILABLE COPY

- tuberculosis (T.B.)

These diseases represent the targets we have to hit if we want to reduce the under-5 mortality (death of children under 5 years old) so we will call them the "target diseases".

Therefore, before studying vaccinations which are the best way to reduce the under-5 mortality, it will be important for you to review these childhood diseases in the pediatric section.

At this time in Afghanistan, all immunizations are being given by Special Vaccinator Teams. However, it is important for the medic to be very knowledgeable about immunizations to be able to encourage the people in his community to be vaccinated, and also to care for any side effects.

DISEASES WHICH CAN BE PREVENTED BY VACCINES:

There are six important infectious disease that are very serious, and which can kill or cripple children even though other children survive and become immune. These six disease are:

- Poliomyelitis
- Measles
- Diphtheria
- Pertussis (whooping cough)
- Tetanus
- Tuberculosis (T.B.)

The special thing about these infections is that we can prevent them by immunization. We give a child a vaccine - that is a weakened form of the microorganism which causes the diseases. We give either a small injection, or a few drops by mouth. The vaccine makes the child's body produce antibodies, but it does not give him the disease. So, he becomes immune without becoming ill.

What are the signs and symptoms of these diseases?

Measles is a sickness of children. The signs are fever and a rash, and the children are usually, very sick for a couple of weeks. They may have diarrhoea, sore eyes, cough or ear pain.

 BEST AVAILABLE COPY

Tetanus causes spasms (all the muscles go tight for a few minutes). It is very painful and the person cannot breath or eat or drink normally during these spasms. People can die if they cut themselves on a dirty instrument, or if the umbilical cord after birth is cut with an instrument which is not kept clean.

Tuberculosis (TB) is a chronic sickness: it lasts a long time and people get very thin and often die without treatment. TB patients usually have a chronic cough, sometimes they have blood in their sputum, and a fever and feel generally ill. It is spread by sputum and coughing over other people.

Polio causes a short sickness with fever and weakness, after which one or more limb becomes permanently weak and thin. Usually this happens in the leg, it becomes deformed and the person develops a limp.

Whooping cough is another sickness of the children. They get a fever and a special cough. After a while the cough comes in bouts and they make a special sound (cough-cough-cough-cough-whoop). Sometimes the child goes blue and stops breathing during these bouts and sometimes he dies. If they live, the lungs of young children are often permanently damaged by the severe coughing.

Diphtheria is a serious type of sore throat. They child gets very sick and sometimes the neck gets very swollen. Children can die quickly when they have this sickness because they cannot breath and sometimes they die a week or two later when the sickness can spread to the heart and damage it.

COMMUNITY EDUCATION REGARDING IMMUNIZATION

People in the community who should be informed when you want to initiate health education activities:

> The chiefs, commanders, mollahs, village elders and other people who decide the life of the community.

They need to be told when the session is going to take place and where. They also need to be reminded of the importance of immunization campaigns. Many of the older people will remember

BEST AVAILABLE COPY

the campaign to eradicate smallpox. It is especially important to eradicate measles in Afghanistan as one child in four die having measles.

The community needs to know that:

1. It is not necessary to immunize against a disease when the child has already had the illness.

2. If there is any doubt: vaccinate the child

3. There is not a vaccine for every disease (e.g. no vaccine against bronchitis)

4. Usually one vaccine protects against one disease and not against all diseases.

5. Vaccines <u>don't</u> cure disease.

6. Several vaccines need to be boosted by a second shot or they are not effective.

7. It is necessary to have cards and registers to know whether children have been immunized. It is necessary to have correct information before performing the immunizations.

You should explain simply <u>how</u> the vaccine is effective and also briefly explain the side effects so people won't be surprised and will come back for the second immunization.

The health educations activity should be based on the following information:

a. Why it is important to vaccinate children and women
b. How we will do it
c. What they (the parents) should do?

BEST AVAILABLE COPY

MICROBES AND HANDWASHING. Time: 1 session

Objectives. Final Draft 4.89

1. For BHW's to find out the Dai's traditional beliefs about sickness and the traditional treatments they use.

2. For the Dai's to learn about how microbes cause disease and handwashing at the 6 important times.

3. For the Dai's to understand how they should set an example of cleanliness and healthy living in their community and teach this at home visits.

Preparation for this session.

The Dai's should each have a kit for this session so that they can use it for the handwashing procedure. The BHWs should have short nails and clean hands.

Teaching materials.

Pictures on the 6 important times for handwashing and the 6 Fs.
Kit. (soap, nail brush and nail clippers)
Bowl, jug and water
Two glasses.
Cotton wool and spirit.
magnifying glass
Sal.

Intoduction.
Ask Dais about their work and families.

Main Points.
I. Traditional health beliefs. May Afghans think that most sickness is due to one of these 4 causes.

1. God will.
2. Balance between hot and cold (foods, medicines etc.)

 BEST AVAILABLE COPY

3. Jinn (spirits.)
4. The evil eye.

How to teach this.

Ask each Dais to talk about one person in their family who became sick, what they think this sickness was caused by, and how the person was treated. Discuss this. Show an interest in their traditional treatments. Some are dangerous. You should decide which is which.

Discuss belief that sickness is God's will, use Islamic books and other good books to diprove this. For example the quote "The Prophet (PBUH) said God did not create any disease without creating a treatment for it."

II. Microbes cause many sicknesses.

1. There are tiny worms, we cannot see, that get into our bodies and make us sick. They are called microbes.

2. These microbes live everywhere, especially in dirty things.

3. If we eat, drink or breathe in these microbes or let them ge in a skin wound, we will become sick if our body is not protected.

How to teach this:

Show picture of microbes and microscope.
Afghans think "shinjay" make teeth bad. use this as an example to explain microbes. Explain that microbes cannot be seen yet cause sickness, rather like jinn.
Explain that microbes live everywhere. Point to hair, nose, skin, hands, nails, feeding bottles, soothers, clothes, household items etc.
Put a pinch of salt in a glass of water, and ask Dais to taste it. Explain that the salt is like microbes, we are unable to see them in water, food air but they are there.

III. How to protect body from being attacked by microbes.

1. Cleanliness: keeping hands, food, water, wounds clean.

 BEST AVAILABLE COPY

2. Good diet.
3. Vaccination.
4. Clinic visits.

How to teach this:

How can you protect your family from sickness?
Discuss some traditional protections like tawiz, khol, special prayers.
Explain that some of these are good and can be combined with new protections Dai's can teach like cleanliness, good diet, vaccinations and clinic visits.

IV. <u>The importance of hand washing.</u>

Soap kills these microbes. We must wash our hands with soap and water

The Dai's kit contains soap and a nail brush. The Dai must do the following to keep her hands clean.
1. Cut nails short.
2. Scrub hands and nails with brush. Wash hands with soap and water.

They must also keep the hands and face and bottom of children clean.

How to teach this:

Quote from Koran on handwashing and cleanliness. Tell Hassan's story.
Explain that soap kills microbes.

Ask one Dai with clean looking hands, if she thinks they are clean.
Rub cotton wool soaked in spirit over her hand and show all the Dais the dirt.
Lood at the Dais hands. Use a magnifying glass to look at the dirt under the nails.
Choose a Dai with dirty hands, wash her hands in water then pour it into a glass. Compare with a glass of clean water and ask Dais

 BEST AVAILABLE COPY

which would they drink. Explain the dirt from our hands will contaminate anything we touch.

Show the Dais how to cut nails, brush and wash their hands.
Divide Dais into pairs and get them to repeat this using their own kits.
Check that all the Dais have short nails and clean hands.

Ask one Dai to wash the hands and face of a child.

V. Important times for handwashing.

We must wash our hands with soap and water at these times:

1. Before preparing food.
2. Before feeding children.
3. Before eating.
4. After working.
5. After passing stool.
6. Before delivering a baby.

How to teach this:

When are the most important times to wash hands to protect us from microbes?

Explain the 6 times. Get the Dais to repeat these.

Role play each of these.

Discuss the handwashing before prayers. Explain this does not kill all the microbes because soap is not used. They can use Friday (jumma) prayers as a good time for cutting the nails of all their family.

TOPIC. TETANUS/STERILE DELIVERIES — Time: 1 session
Objective. — Final Draft 4.89

1. For the BHWs to find out if the Dais have seen cases of tetanus and how big a problem it is in their communities, both in Afghanistan and as refugees.

BEST AVAILABLE COPY

2. For the Dais to know the cause of tetanus and the 2 protections against it, cleanliness (4 Cleans) and vaccinations.

3. for the Dais to use this knowledge at home visits to send women for vaccinations and to practice clean deliveries. The BHWs to check to Dais are doing this during the course.

Preparation for this session.

Each Dai should have their own kit for this session. Dirty hands before session for when you demonstrate unclean cutting the cord. Organise for Dais to see a vaccination clinic as a follow on from this session bringing women of childbearing age and children under 2 years.

Teaching materials.

Picture (baby with tetanus, women and baby being vaccinated.)
Kit. (soap, nail brush, nail clippers, plastic sheet, metal container with lid razor blade and cotton thread.)
Doll, cord and placenta.
Dirty cloth, dirty knife, dirty dressing, dirty hands and khol.
Stove, fuel, water and matches.
Vaccination card.

Introduction.
Ask Dais about their work and their families.

Main points.
A. The signs of tetanus.

The following are sings of tetanus in the newborn:
1. Baby stops sucking at about 3 days of age.
2. The face and body becomes stiff.
3. Arms or legs make jerky movements.
4. The back arches in spasms.

The baby usually dies about a week after the sings develop.

BEST AVAILABLE COPY

How to teach this.

What sicknesses do babies die from in the first 2 weeks of life in your community?
Discuss this.
Describe the sign of tetanus to the Dais. Show picture and use your body to help. Find the local name they use. Have you seen this sickness in Pakistan or Afghanistan?

B. Traditional beliefs on tetanus.

Newborn babies dying from tetanus is fairly common in Afghan communities. It is thought to be caused by jinn or God's will.

How to teach this:

What do you think is the cause of tetanus?
Discuss this. Show an interest in their answers and use them for explaining microbes later.

C. How tetanus is caused.

Tetanus in newborn babies is caused by a special tetanus microbe in dirt getting into the baby's body through the cord in 4 ways:

1. Woman delivering on a dirty surface.
2. Cutting the cord with dirty hands.
3. Cutting the cord with a dirty instrument.
4. Putting dirty things like khol ash and dirty dressing on cord.

D. The 2 protections against tetanus.

The 2 protections against tetanus are:

1. Cleanliness: 4 Cleans to stop cut cord becoming dirty.
2. Vaccinations of women and children.

A newborn baby can be protected from getting tetanus by these 4 cleans:

BEST AVAILABLE COPY

1. Doing delivery on a clean surface using clean plastic sheet in kit.
2. Doing special handwashing just before the delivery.
3. Cutting and tying cord with a blade and thread that has been boiled for 20 minutes.
4. Not putting anything dirty on cord.

A new born baby can be protected against tetanus if their is a good vaccination programme in the community. Dais can help make this a good programme by sending the following 3 groups for vaccination.

1. All newborn babies.
2. All children under 2 years.
3. All females of childbearing age.

How to teach this:

Can you remember what I told you was the cause of many sicknesses?
Microbes in dirty things.

At birth microbes in dirt get into the baby's body. Can you think how this happens.

Show Dais how the microbes get in through the cut cord using the model baby and cord, a dirty hands a dirty knife, khol and a dirty dressing.

How to teach this:

Do you remember 4 protections from last session? Discuss.

Two of these protections prevent tetanus: cleanliness and vaccinations.

Explain that the cut cord is like a wound. Remind them how microbes get into a wound.
Ask the Dais to divide into pairs, and discuss how they could use the items in their kits to prevent the cut cord becoming dirty.
Discuss this as a group.

 BEST AVAILABLE COPY

Show them how to do the 4 cleans using a kit.
Get a Dai to repeat this.
Get Dai to repeat this is pairs, using their own kit.

Explain that vaccinations help the body fight microbes. If both the mother and the baby is vaccinated, this will give baby double protection against tetanus microbes.

Ask to see the vaccination cards of women and children in the house, to check that they have been vaccinated.

Tell the story of Fameeda and Nasreen to the Dais and ask them questions.

TOPIC: DIARRHOEA. Time: 2-3 sessions

Objectives.

1. For the BHWs to find out what DAis know and do about diarrhoea.

2. For Dais to learn the cause, prevention, danger signs and treatment of diarrhoea.

3. For Dais to know how to treat a diarrhoea patient at home and when to refer the patient to the clinic. For the trainers to check they do this during the training.

Preparation for the session.
Find a child with diarrhoea to take to the session.

Teaching materials.
Pictures (flows, dehydrated baby, spread of diseases 6 Fs.)
Equipment for Salt and Sugar Syrup (water, salt, sugar, half litre container, cup and spoon) enough for each pair of Dais.
Range of foods for sick people, oil, fork for mashing, cup and spoon.
Transparent container with hole to demonstrate water loss.
Spange doll to demonstrate water loss.
Doll, enough for each pair of Dais.

BEST AVAILABLE COPY

Introduction.

Ask Dais about their work and families.

Ask about 2-3 home visits from the last session and revise the main points.

How to teach this.

Introduction to diarrhoea.

Is ther a problem with diarrhoea in you community? Who gets it? Who dies from it?

Discuss this. It is commonest cause of death in Afghan children.

Explain that the children die form becoming very dry, like a plant. Show picture of flower. Fill pot with water and let it leak out. Quote from Quran. "We made from water every living thing." Surat xxi, (Anbiyaa), Verse 30. Also breath of life.

What happens to child after having diarrhoea?

Explain they often become thin and weak with frequent sicknesses. Thin children are more at risk of getting diarrhoea.

Main points.

Diarrhoea is dangerous and kills children quickly. It is the main cause of death in Afghan children. They die from losing lots of water in the stools, like a plant dying from lack of water. Children often become thin after diarrhoea and get frequent sicknesses. Diarrhoea is more common in thin children who are not vaccinated and live in communities with poor cleanliness.

Cause of diarrhoea.

Can you remember what causes sicknesses? They should remember microbes.

Explain sickness is caused by eating microbes in dirty things. What dirty things do you know?

Discuss the 6 Fs (fluids, food, feeding bottles, fingers, flies, faeces) and soothers.

BEST AVAILABLE COPY

How do these things become dirty? Discuss faecal contamination (faeces on hands, on flies legs near water sources.)

Do you remember the story of Hassan and the flies? Ask a Dai to tell the story. Explain that if these dirty things are eaten by a weak child they are more likely to get diarrhoea than a healthy child.

Diarrhoea is due to eating dirty things containing microbes like the following.

1. Dirty water.
2. Dirty food.
3. Feeding bottles and soothers.
4. Dirty fingers.

These things have been made dirty by direct contact or via faeces and flies. remember 6 Fs.

If these dirty things are used by children who are weak from a poor diet or not being, vaccinated they are more likely to get sick with diarrhoea than healthy children. All children are in danger of getting diarrhoea, but the weak, thin and unvaccinated ones are in more danger.

3. <u>Actions to protect children against diarrhoea.</u>

Explain that children can be protected from getting diarrhoea by making their surroundings safer and making their bodies stronger.

How can you make the community and house safer for children remembering the 6 Fs and the spread of disease?

Go through each F in turn and ask what can be done to prevent diarrhoea in each case.

Can you remember now we can make children strong enough to protect them from sickness? Discuss this. They should know [illegible] good diet and vaccinations protect children.

Explain that children need protection on the outside (clean community) and on the inside (vaccinations and good diet), to prevent them getting diarrhoea.

BEST AVAILABLE COPY

There are 2 actions for protecting children from attack by diarrhoea microbes:

1. Protecting them on the outside by making community and home safe.
2. Protecting them on the inside by making children stronger.

These actions make things safer for children on the outside in the home and community:
Remember the 6 Fs.

1. FLUID. Laterines away from water. Good wells. Lids on water pots.
2. FOOD. Cover food, clean hands when preparing food.
3. FEEDING BOTTLES. The sale and use of these should be forbidden.
4. FINGERS, Washing hands before preparing food or feeding child.
5. FAECES. Every house should have and use a latrine properly. Wash hands after using latrine.
6. FLIES. Cover food. use latrines so faeces on the ground.

These are actions for making children strong on the inside:

1. Breast feeding for 2 years.
2. Not giving any other fluids in the first 4 months unless sick.
3. Introducing, foods at 4 months.
4. Giving food when sick.
5. Vaccinating babies from birth.

6. <u>The 3 steps to the treatment of diarrhoea.</u>

What do you do for a child with diarrhoea?
Discuss this. Afghan tradition is to withhold or limit food and fluids (parhaiz). Diarrhoea is so common in Afghan children as it is not considered as an illness and not treated.

Do you give any medicines?
Discuss this. Herbal mixtures in water are often given. This is good if lots of water is used. They often buy medicines from the bazaar which can be danagerous.

BEST AVAILABLE COPY

When do you take children with diarrhoea to the clinic? Discuss this.'
Can you remember what is the treatment for all sick children? They should remember 3 steps, food, fluids and referral of danger signs. If they do not then explain the 3 steps.

The treatment of diarrhoea follows the same steps as for any other sickness. These 3 steps are:

1. If 8 danger sings present take child to the clinic.
2. Give more fluids.
3. Give food.
   Modern medicines are not usually needed and should only be given by the clinic staff.

7. <u>The 8 danger signs of diarrhoea.</u>

What are the sings that a child is very sick with diarrhoea? Discuss. Some Afghans recognise sunken fontanelle as a sign and try to pull it up or fill it in.

Explain the signs of dehydration using the picture of dry flowe and dehydrated baby. Use pot water dropping. Explain this is the level of fontanele and eyes sinking. Show pot when all water has leaked out. Explain this is like when urine stops.

Explain that fever and blood are always danger signs that need referral. Remind them that these 2 are also danger signs in pregnancy and after delivery.

Show Dais how to assess a child with diarrhea for danger signs. To help them remember assessment start at top of body and work down: fontanelle, forehead (fever) eyes, mouth (not drinking or eating), lower body (urine and faeces.
Get 2 Dais to do a role, play of hot typed examining a child with diarrhoea and explaining to the mother the 3 steps to treatment.

Explain the first sign is thirst and this sign should warn mother to start giving extra fluids until child is no longer thirsty.

If any of these 7 danger sing is present child should be

 BEST AVAILABLE COPY

taken to clinic straight away and given fluid on the way.

1. Not getting better with extra fluids and food at home.
2. Not drinking and eating.
3. Drowsy.
4. Sunken fontanelle (soft spot).
5. Fever.
6. Sunken eyes.
7. Not passing urine.
8. Blood in the faeces.

The Dai should visit the child every few hours to look for these 7 danger signs by asking 5 questions:

1. Is the child getting better?
2. Is the child drinking and eating?
3. Does the child have a fever?
4. Is the child passing urine?
5. Is there any blood in the stool?

She should examine for 5 things:

1. Look to see if the child is getting more drowsy.
2. Ask mother to give the child drink and see what happens.
3. Look at fontanelle.
4. Feel forehead for fever.
5. Lood at eyes.

These are all later signs when child is very dry. Thirst is an early warning sign. When a mother sees that her child is thirsty she should start giving extra fluids.

6. <u>Treatment with more fluids.</u>

What fluids would you give to a child with diarrhoea?
Discuss this. The traditional rice water, herbal drinks, tea and soups are very good.
Quote from Quran given above in introduction to diarrhoea.

Explain child rally needs extra fluids as soon as diarrhoea starts to stop him drying up. Explain all different types of fluids can be used. Breastmilk is good because it is food.

The 2 home made syrups are good because they work very fast.

BEST AVAILABLE COPY

Role play a dia telling a mother how to give fluids to her baby with diarrhoea. How much, How often, How long? Get 2 Dais to repeat the role play using child or doll.

Demonstrate how to make salt and sugar syrup and give it to a child or doll with a cup and spoon.

1. Fill half litre measure in kit with clean water. Wash hands.

2. Add 3 finger pinch of salt to water and mix with clean spoon.

3. Let all Dais taste it. It Should be not more salty than tears.

4. Add 4 finger scoop of sugar to water and mix it well.

5. Give sips to the child every few minutes with a cup and spoon.

Get one Dai to repeat this infront of the others using her kit and a doll.
Get all dais to repeat this in pairs with their own kits.

Explain to the Dais that they should teach mothers how to make this special syrup, and then visit every few hours to check child for 7 danger signs.

These fluids can be all of the following:

1. Breastmilk.
2. Traditional drinks like ricewater, soups, herbal drinks tea.
3. Home made salt and sugar syrup.
4. Home made salt and rice syrup.
5. Packets Oral Rehydration Solution(ORS).

The home made salt and rice/sugar syrups are very good at replacing the lost fluid quickly.

These fluids should be given as soon as diarrhoea starts, with a clean glass and spoon.

BEST AVAILABLE COPY

They should not be given in a feeding bottle.

How to give? 1-2 spoons How often? Every few mins. Until child is no longer thirsty or passing urine (then give 1-2 glasses after stool) How long? Until diarrhoea stops.

The Dais must show mothers how to make the special syrups if find any children with diarrhea at a home visit. Even children with milk diarrhoea should start fluids.

The Dais can use the half litre metal measure in their kits to mark a half litre line on a metal container in the mothers house. The mother can then sue this measure whenever her children ge dirrhoea. The dais should visit the child every few hours to check for the 7 danger signs and send child to clinic if she finds any.

7. <u>Treatment with food.</u>

What foods would you give to a child with diarrhoea?
Discuss this. Traditionally food is withheld completely or limited to bread and tea or milk (parhaiz) for fear of increasing diarrhoea or unbalancing child's system. Home traditional foods given to sick people like kijiri (rice and lentils) and porridge.

The child with diarrhoea should be given food. The traditional foods are good.

How often? 6 times a day. How prepared? Mashed soft with fluid and oil.
How long? Extra meal every day until 1-2 weeks after diarrhoea stop very good. They should be encouraged in treatment of diarrhoea.

Quoute from Quran on food. Explain the child needs energy from food to fight sickness and to stop him becoming thin. Explain that tawiz is in Quran but parhaiz is not.

Explain that food and fluids will not reduce amount of diarrhoea but will make the child better.

BEST AVAILABLE COPY

Role play explaining to mother how to give food to her child with diarrhea using dai as the mother (How often, How prepared, How long?)

Let 2 dais to repeat this role play, but with a mother-in-law who insists tawiz and parhaiz are good treatments.

Tell Shaheeda's story.

The Dai should visit child every few hours to check 7 danger signs and send child to clinic if they find any.

Giving fluids and food often makes child pass more stools. Mothers get very worried about this. The dai must reassure the woman that by giving these she is stopping her child getting sicker.

REMEMBER FOR TREATMENT OF DIARRHOEA:

- SEND DANGER SINGS TO CLINIC.
- GIVE FOOD AND LOTS OF FLUIDS.

B. PREGNANCY:

NORMAL PRENATAL RECOMMENDATIONS

- Do a good physical exam.
- Every pregnant woman should be instructed on the following topics:

<u>Diet</u>

- Eat a good diet of meat, eggs, milk, vegetables, nan and rice.

<u>Diet Supplement</u>

- Multivitamin tablets every day during pregnancy if available.
- FERROUS SULFATE 200 mg and FOLIC ACID 0.1 mg combination tablets every day if available. If anaemic treat according to anaemia protocol.

BEST AVAILABLE COPY

- If you are in an area with endemic goiter, if available, give iodine supplement. 1 drop in glass of water every day, or iodine in oil capsules or injections.
- if available, two injections of TETANUS toxoid should be given, separated by at least one month. The second injection must be given at least two months prior to delivery to protect the mother and child against tetanus.

Avoid Medicines

Avoid medicines during pregnancy except those which are safe (see formulary) and necessary. Many medicines are harmful to the fetus.

Caution: Ask all women of childbearing age if they are pregnant before recommending any medication.

PREPARATION FOR DELIVERY

Discuss the importance of cleanliness in delivery with the local Dai. If possible, provide delivery equipment: clean razor blade, clean cloth for umbilical ties, antiseptic for cord care.

NORMAL SYMPTOMS OF PREGNANCY

Pregnancy is not an illness. There are common minor discomforts of pregnancy which can be anticipated. Instruction of the patient regarding these problems may prevent possible complications. Following are some of the more common complaints.

Morning Sickness

This is more common in the early months of pregnancy and tends to subside as pregnancy progresses. Sometimes it helps to eat something dry, like nan. The mother may feel better if she eats small meals several times a day. If nausea and vomiting is severe or prolonged, use of ORS and PROMETHAZINE (at normal doses) may be necessary.

The danger sings of pregnancy as follows:

- vaginal bleeding
- swelling of face, fingers, or marked swelling of ankles.
- high blood pressure.
- severe or continuous headache.
- dimness or blurring of vision.
- abdominal pain.
- persistent vomiting.
- chills and fever

Preparation for delivery

Provide delivery equipment - clean razor blade, clean cloth for umbilical ties, antiseptic for cord care if available. May instruct the patient on procurement of these materials and necessity for hygienic measures or speak with local Dai.

Advice about weaning. See nutrition chapter.

Avoidance of medicines during pregnancy except those recommended to assist pregnancy listed below. Many medications may be harmful to either the woman or the fetus during pregnancy. Always check to be sure a particular medication is safe for pregnant women before prescribing in the formulary. Caution: Ask all women of childbearing age if they are pregnant before recommending any medication.

Obstetrics and Gynecology

Supplements:

Multivitamin tablets every day during pregnancy and lactation if possible depending on availability.

Ferrous Sulfate 200 mg and folic acid 0.1 mg combination tablets every day if available. If anemic treat according to anemia protocol.

Iodine supplementation. Either iodized salt or Lugols iodine 1 drop in glass of water every day if available.

Tetanus toxoid 0.5 ml IM during seventh month followed by another dose during eighth month (injections 1 month apart) if available.

Previous Page Blank

The visits and examinations must be recorded accurately to give a picture of the progress of the pregnancy. It is the changes in the mother's condition which are significant, and these can only be found by comparing the results of each examination with the records of the previous visits. It is essential that any abnormalities detected be treated and that the treatment given be effective. For instance, a mother with anemia treated with iron supplements should show an increase in her haemoglobin index.

DRUG THERAPY DURING PREGNANCY AND LACTATION

Illness during pregnancy and lactation requires special consideration due to the potential dangerous effects of certain drugs to the developing fetus and the nursing infant. Drugs pass through the placenta usually unchanged and can cause malformations in development. They may also be transferred to the infant through the mother's milk. Some drugs do not cause negative effects and so are better choices for women of child-bearing age, especially when the medic and/or woman is unsure about pregnancy.

BEST AVAILABLE COPY

Please see the table below:

DISEASE

Asthma bronchitis:

Ventolin - only if necessary until near labor, then contraindicated.

Aminophyllin, if indicated, but use with caution due to side effects of nausea and vomiting.

Severe Allergic Reaction

Epinephrine, only in emergency. May cause abortion or premature delivery.

Itching/Cough suppressant.

Chlorpheniramine, but avoid in first trimester.

Edema/Hypertension

Do not give diazide!

Analgesia

Aspirin-avoid in pregnancy

indomethacin-avoid in pregnancy and lactation.

Paracetamol-safe, but not more than 8 tabs/day.

Pentazocine-only for extreme pain and not in the last month of pregnancy.

Temgesic-not safe in pregnancy.

BEST AVAILABLE COPY

Acute Respiratory Infection Bronchitis

Ampicillin is the drug of choice. Do not use tetracycline in pregnancy and lactation.

Pneumonia

Penicillin V or Ampicillin high dose

Skin Infection or Impetigo

Penicillin V.

Penicillin V.

Erythromycin or Pen V.

Giardia/Amoebiasis/Trichomoniasis

Metronidazole should be avoided unless acutely ill especially not during the first trimester. Do not use during lactation.

Worms

Do not use vermox.

Tinea capitis or fungal infection

Gentian violet. Do not use grisiofulvin

Lice/scabies

Do not use benzyl benzoate 25% Never expose newborns to this medication.

Malaria

Chloroquine, if necessary.
Do not use primaquine or Fansidar.

BEST AVAILABLE COPY

Typhoid fever

Chloramphenicol is contraindicated in pregnancy and lactation. Ampicillin is the drug of choice in pregnancy high doses x 10 days.

Trachoma

Erythromycin 250 mg po qid for three weeks.

Constipation

Persennid-safe in pregnancy. Avoid in lactation.

Nausea/vomiting

Promethazine, only if severe. Very useful when vomiting causes dehydration.

Anaesthesia

Atropine, only if necessary. Xylocaine is safe. Avoid Ketamine and Diazepam.

UTI/Pyelonephritis

Ampicillin drug of choice. Do not use Bactrim.

Vaginitis

Nystatin, miconazole and clotrimazole all OK for yeast. Ampicillin OK. Metronidazole only during the third trimester.

DANGER SIGNS OF PREGNANCY

A pregnant woman with any of these signs should be followed more closely and possible referred. The specific conditions will be discussed later.

- vaginal bleeding.
- swelling of face or fingers or marked swelling of ankles.

BEST AVAILABLE COPY

- sever, continuous headache.
- dimness or blurring of the vision.
- abdominal pain.
- persistent vomiting.
- chills and fever.
- burning with urination and flank pain.

Urinary tract infections/Pyelonephritis

This is very common in pregnancy and postpartum for many reasons. The expansion of the uterus results in poor emptying of the bladder. After delivery the trauma to the tissues and resulting tenderness contribute to urine stasis with increased risk of infection to bladder and kidney. The risk to the woman is not only from the infection but the relationship of infection to premature delivery.

Refer to Genitourinary chapter for diagnosis and treatment. In pregnancy, single dose therapy of urinary tract infection is not very effective, and ampicillin 500 mg po qid for 7 days is preferred; sometimes if a woman is very sick with pyelonephritis, she will be unable to take po because of vomiting, and IV ampicillin will be necessary.

Anemia in pregnancy

This is a very common condition in pregnancy with estimates of 2/3 of pregnant women having Iron deficiency anemia. The presence of anemia in pregnancy results in increased risk for an from hemorrhage as well as increased susceptibility to disease. Refer to prenatal guidelines for prevention of anemia. Refer to section on anemia in Hematology for diagnosis and treatment.

General Considerations

Anemia is a condition of reduced hemoglobin content in the blood. In pregnancy, anemia is caused by a lack of sufficient Iron and folic acid in the food eaten by the woman. Because of the growing fetus, the amount of iron and folic acid needed is increased above normal. Frequent pregnancies and bleeding related to abortions and delivery process lead to an even greater need for

BEST AVAILABLE COPY

iron and folic acid.

Anemia in pregnancy is a very common condition. Some culturally related food taboos may lead the pregnant or lactation woman away from eating foods with high iron and folic acid content.

Clinical Picture

The anemic pregnant woman usually presents with tiredness and weakness. She is often unable to do her regular work. If the condition progresses, she may become short of breath while doing physical labor. She looks pale. her conjunctive and buccal mucosa are pale. If the condition progresses, she may begin to have the signs and symptoms of congestive heart failure.

Management

If the woman is anemic but does not have Congestive cardiac failure:

1. Start iron and folic acid daily supplements and continue ferrous sulfate 200 mg with folic acid 0.1 mg combination tablet tid.

2. Treat any commonly associated condition, such as hookworm however, mebendazole is contraindicated in pregnancy.

If the woman has signs of shortness of breath at rest, prominent neck vein and ankle edema, refer to physician.

If the woman cannot be referred, treat heart failure as directed in Disease module. Treat anemia with iron and folic acid as above.

Prevention

All pregnant women should be seen in a prenatal clinic to follow for progression of pregnancy and development of the problems.

BEST AVAILABLE COPY

Diabetes in Pregnancy

Some women will develop diabetes during their pregnancy (gestational diabetes) and some women will have had diabetes prior to their pregnancy. Diabetes in pregnancy significantly raises both maternal, fetal, and neonatal morbidity and mortality. In the mother eclampsia and hypertension are much more common, in the fetus, stillbirths and death in uterus are more common, and in the newborn, problems with hypoglycemia, lung immaturity (hyaline membrane disease), and traumatic birth injuries are more common.

In the history, excessive weight gain, past history of still births, and excessively large babies at birth should alert the medic to the possibility of diabetes during pregnancy. A pregnant woman with a past history of gestational diabetes or diabetes mellitus is more likely to have recurrent problems with the next pregnancy.

The diagnosis can be confirmed by checking the urine for glucose. Frequently in pregnancy, dipsticks may reveal trace glucose in the urine, but values of 1 + or 2 + are abnormal and indicate diabetes. If serum glucose dextrosticks are available, a value 2 hours postprandially of greater than 140 confirms a diagnosis of diabetes. If possible, all patients with trace glucose in the urine should have serum dextrosticks performed.

Pregnant women with diabetes should be referred for prenatal care and delivery to an obstetrics facility if at all possible, as medications and diets are available to help control glucose levels in pregnancy.

Toxemia (Preeclampsia and Eclampsia)

This is a serious disease of unknown cause that occurs only in the last 3 months of pregnancy. It is related to a decreased maternal blood volume, decreased placental blood supply, and characteristic symptoms. It can endanger the life of the mother and the child. If a woman has a history of toxemia with previous pregnancy, she should be considered a high risk for recurrence

BEST AVAILABLE COPY

and followed for likely referral. you must always ask about this if seeing a pregnant woman. Eclampsia refers to severe toxemia, with seizures or strokes. Preeclampsia refers to the period prior to seizures and strokes when proteinuria, hypertension, and edema are present.

MILD: Signs and Symptoms

- High blood pressure but diastolic under 105
- Edema of the legs.
- Protein in the urine.

Treatment:

- Bedrest on left side to maximize placental blood flow.
- Have family help relieve woman of responsibilities home so that bedrest can be maintained. Keep in quiet dark room.
- If no improvement refer to hospital if available.

SEVERE: Signs and Symptoms

- High blood pressure with diastolic greater than 105.
- increased edema that involves legs, hands, and face.
- Protein in the urine or decreased urine production.
- Headache
- Blurred vision or spots in visual field.
- Nausea and vomiting with abdominal pain.
- Progression of these symptoms results in seizures which is called eclampsia.

Treatment:

- Refer to seizure management section
- The only cure is delivery and must be done by physician if referral available.
- Keep at bed rest on their left side
- For diastolic BP greater than 110, if hydralazine is available, give 5-10 mg po or IM qid. DO NOT GIVE

BEST AVAILABLE COPY

DIAZIDE.

VAGINAL BLEEDING IN PREGNANCY

Bleeding during pregnancy is a sign that something is wrong with the pregnancy. In early pregnancy, this may be due to an abnormality in the fetus or with the uterine environment. In later pregnancy it may be due to a placental problem. This very often signifies a serious threat to the fetus and possibly the mother.

FIRST AND SECOND TRIMESTER BLEEDING

Bleeding in the first and second three months of pregnancy is usually a sign of threatened abortion (miscarriage). There is usually no pain associated and bleeding is light. If this progresses, cramping lower abdominal pain and back pain may be followed by expulsion of the fetus (spontaneous abortion) Spontaneous abortion is divided into 2 types.

1) Complete Abortion is more common in the second three months. It involves the complete expulsion of fetus and all placental tissue. Bleeding may continue and presents the major risk to the mother.

2) Incomplete Abortion occurs more often in the first 3 months of pregnancy. The woman has missed at least 1 menstrual period and had uterine cramping with bleeding. The fetus comes out and the placenta or part of it remains inside. These retained products serve as a source of continued bleeding and possibly infection.

Treatment:

Initial:

- At the first sign of bleeding, the woman should be kept at strict bedrest until the bleeding stops.
- Sexual intercourse should be forbidden.
- Instruct the woman or family to report the amount of bleeding and if any tissue is passed - For incomplete

BEST AVAILABLE COPY

abortion see below.

Complications:

- If the bleeding is prolonged and/or incomplete abortion is diagnosed the woman should be referred if possible.
- For prolonged bleeding refer to postpartum hemorrhage.
- If incomplete abortion is suspected either based on current diagnosis or recent past history refer to puerperal sepsis.

Ectopic Pregnancy

Ectopic pregnancy occurs when the ovum implants itself outside the uterus. This usually occurs in the fallopian tubes (95% of the time). As the placenta and fetus grow, eventually it will invade through the tube and cause hemorrhage and acute abdomen. Ectopic pregnancy is much more likely to occur in a pregnant women with a past history of PID. Signs and symptoms of ectopic pregnancy include normal symptoms of pregnancy (breast swelling, morning nausea, etc.), and later cause vaginal bleeding, lower abdominal pain without uterine contractions (as seen with abortions), with a positive pregnancy test. Late signs of a ruptured tube include acute abdomen, fever, and shock.

Signs usually develop in the late 1st trimester or early 2nd trimester during pregnancy. Treatment requires surgical removal of the tube in a hospital. If possible, when ectopic pregnancy is suspected, refer the patient for evaluation. Miscarriages usually cause vaginal bleeding with crampy pain associated with contractions which helps distinguish it from ectopic pregnancy.

THIRD TRIMESTER BLEEDING

Commonly when labor begins a mucous plug from the cervix will be passes which is mixed lightly with blood. This is called a mucous plug. Any other 3rd trimester bleeding that is not associated with early labor and mucous passage should be taken seriously and the women transferred to a hospital for delivery.

Bleeding in the third trimester can be life threatening or only a

BEST AVAILABLE COPY

mild cervical irritation.

Two types of third trimester bleeding are serious: abruptio placenta and placenta previa.

In placenta previa, the placenta is located over the cervical os. When labor starts, maternal and fetal death usually results from severe hemorrhage. Symptoms are normal contractions with heavy, vaginal bleeding with bright red blood. No extra uterine pain is noted. Treatment requires referral for C section.

In abruptio placenta, the placenta separates from the uterus, and the space between fills with blood. Hemorrhage is also a severe problem, and frequently the placental separation kills the baby. Symptoms are a painful uterus, which is constantly contracted. If there is vaginal bleeding, the blood is usually dark. In severe cases, heavy vaginal bleeding occurs, and even problems with systemic coagulation can occur (DIC) which leads to body wide bleeding problems.

PROBLEMS DURING PREGNANCY

A pregnant woman may have any of the following problems:

- Vaginal bleeding
- Swelling of face, fingers or marked swelling of ankles.
- Severe, continuous headache.
- Dimness or blurring of visions.
- Abdominal pain.
- Persistent vomiting.
- chills and fever.
- Burning with urination and flank pain.

These signs and symptoms may be associated with the following diseases:

URINARY TRACT INFECTION

Urinary tract infection is common during pregnancy. It can lead to premature delivery. Refer to Genitourinary chapter for diagnosis and treatment.

BEST AVAILABLE COPY

VAGINAL BLEEDING

Bleeding is common during pregnancy and may be a sign of potential miscarriage.

MISCARRIAGE

Signs and Symptoms

- Vaginal bleeding, often with clots. (see Abortion)
- +/1 cramping abdominal pain or low back pain.
- +/- passage of tissue from the vagina.
- +/- fever-if present this is serious (see pelvic infection).

Treatment

- At the first sign of bleeding, the woman should be kept at strict bedrest until the bleeding stops.
- Sexual intercourse should be forbidden.
- Return if heavy bleeding, pain or fever.

Complications

- For prolonged or very heavy bleeding refer to postpartum hemorrhage.
  NOTE: don't give METHERGINE unless the fetus has been passed.
- If the patient develops fever, treat as postpartum infection.

ANEMIA

This is a very common condition in pregnancy but can usually be prevented. Refer to prenatal guidelines for prevention of anemia. Refer to section on anemia for treatment.

TOXEMIA

This is a rare but serious complication that only occurs during

BEST AVAILABLE COPY

the last 3 months of pregnancy.

Signs and Symptoms

- High blood pressure (if diastolic > 110 this is severe)
- Swelling of the feet, hands or face
- +/- headache or blurred vision
  +/- nausea and vomiting
- severe toxemia can cause convulsions.

Treatment

- Bedrest on left side. Have family help relieve woman of responsibilities at home so that bedrest can be maintained. Keep in quiet dark room.
- Reduce salt in the diet.
- If diastolic blood pressure > 110 or if the patient is getting worse, refer as soon as possible.

ABORTION

Abortion is the expulsion of the fertilized egg from the uterus within the first 24 weeks of pregnancy. There are several TERMS related to abortion that you should know.

- Threatened abortion (see below)
- Inevitable abortion - Can not be prevented
- Incomplete abortion (see below)
- Complete abortion (see below)
- missed abortion - fetus has died, but uterus does not expel it.
- Habitual abortion - repeated loss of pregnancy. Sometimes this can be treated by a specialist.
- Septic abortion - loss or pregnancy due to infection.
- Therapeutic abortion - ending of pregnancy by medical or surgical means.

CAUSES

- Abnormalities of the fetus
- Abnormalities of the placenta or membranes
- General infection or disease in the mother
- Local abnormality or deformity of uterus

 BEST AVAILABLE DOCUMENT

- Drugs
- Injury
- Hormonal disturbance
- Psychological problems

You should understand the following types of abortion and know the appropriate care that can be given in each situation. All complicated cases, or when fever or hemorrhage are present, need to be referred to a hospital immediately.

THREATENED ABORTION

Sometimes pain and hemorrage occur during early pregnancy without leading to opening of the cervix and loss of the fetus. It is possible that bleeding in early pregnancy could be from other causes, such as cancer, infection, erosion of the cervix.

Treatment

Any bleeding in the first three months of pregnancy should be treated with:

- Absolute bedrest
- Easily digested but highly nutritious diet
- Avoidance of very hot drinks
- No medications

If bleeding or pain increases, or fever develops, refer to doctor.

INCOMPLETE ABORTION

This is a most dangerous condition for the mother. The fetus has died and part of the contents of the uterus have been expelled, but not all. Continued bleeding and enlargement of the uterus are the major signs. Infection is a serious complication. Severe hemorrhage is also possible.

Treatment

- The only treatment is surgical cleaning of the uterus (curettage). Refer immediately.

BEST AVAILABLE DOCUMENT

COMPLETE ABORTION

This condition describes the spontaneous resolution of a defective pregnancy. There will be cramping and bleeding and the fetus, placenta and membranes will be expelled with blood clots and fluid. If the abortion is complete, bleeding will slow down and stop after a few days and in a few weeks normal menstrual cycle will return.

Treatment

- No medical treatment is needed.
- Give advice re: good nutrition
- Treat anemia if present
- Treat any infection or disease
- If having repeated abortion, refer to doctor.

REVIEW QUESTIONS

1. What is the cause of toxemia of pregnancy?

2. Mark (4) important signs and symptoms of toxemia

   a. bleeding

   b. blood pressure of 140/90 or above

   c. fever

   d. protein in the urine

   e. headache

   f. swelling of the leg

3. Eclapsia is the serious complication of toxemia. What is eclampsia and how should it be managed?

BEST AVAILABLE DOCUMENT

NORMAL LABOR AND DELIVERY

Labor is the process of pushing the baby out of the body. The woman normally goes into labor after 9 months of pregnancy. A few days before she goes into labor the baby's head drops into the pelvis, a lump of mucus may come down from the vagina and small irregular painful contractions of the uterus may occur. These are all signs that labor will begin soon.

Labor

- This is divided into 3 parts:

First Stage

- This is from the beginning of strong regular contractions until the door of the uterus is fully open and the baby drops into the vagina.

Second Stage

- The baby is pushed down the vagina and out of the body.

Third Stage

- The placenta is pushed down the vagina and out of the body.

THE FIRST STAGE OF LABOR

This usually takes 10-20 hours with the first baby and 7-12 hours with later pregnancies. If the woman has good strong contractions but the baby is not born within 24 hours, it usually means there is a problem, and something is stopping the baby's head coming

BEST AVAILABLE DOCUMENT

down.

During this first stage of labor, the bag of waters break and the baby's head is pushed down by the strong contractions of the uterus muscles. The head presses on the door of the uterus so that it starts to open. A full bladder or rectum can stop the baby's head coming down, so the woman must empty her bladder frequently and open her bowels. Sometimes she needs to have an enema if she has not opened her bowels for a long time.

She should walk around and squat which helps the head come down. She should do what ever she feels like at this stage as moving around will take her mind off of the pain. she should drink fluids with sugar to give her and the baby energy. If the labor is going on for a long time she should also eat small amounts of food. Not enough fluids or sugar in the body will low the contractions and delay the delivery of the baby.

If the mother is frightened or has a lot of pain with contractions it helps if she takes slow deep breaths during each contraction. She should then breath normally when the contraction stops. This will help control the pain and make her less frightened. Rubbing the back will also help the pain.

THE SECOND STAGE OF LABOR

This starts when the woman feels she wants to push down with each contraction. It is the same sensation as being constipated and wanting to open your bowels. the baby comes through the open door and is pushed down the vagina and then born. this stage usually

BEST AVAILABLE DOCUMENT

lasts from 30 minutes to 1 hour and is longer in women having their first baby.

She should take a deep breath in and push down with each contraction. this helps to push the head down. Between contractions the woman is very tired and falls asleep. The woman squats or lies down, whichever she finds more comfortable. She is not able to walk around at this stage because mother must stop pushing when the head first appears and instead take short, fast breaths. This stops her pushing out the baby too quickly and causing the baby to have brain damage. A slow delivery also stops tearing of the vagina.

THINGS THAT CAN GO WRONG IN LABOR AND DELIVERY

Things go wrong more commonly in the high risk mothers. These women should have their babies in a hospital or clinic with trained staff and extra equipment.

Women as high risk of a bad labor or delivery

- First pregnancy
- Women with more than 5 previous pregnancies
- Women with less than 2-3 years between each pregnancy
- Girls under 15 years.
- Women over 40 years
- Malnourished women
- Anaemic women
- Women who have had problems with previous pregnancies
- Women with heart or kidney disease

Things that go wrong in the first stage of labor

Sometimes the labor goes on for more than 24 hours even though there are good strong contractions of the uterus. There are many different reasons of slow labor. Below are some of them.

- Women is tired, hungry and dehydrated. the uterine muscles do not push as efficiently because they lack energy. Give the mother ORS and small amounts of food.
- The rectum is full and stops the head coming down. Give an enema.

BEST AVAILABLE DOCUMENT

Below are some more serious causes of slow labor and the women must be sent to a hospital because they may need a Caesarian Section.

- The baby's head is too big to pass through the ring of bone called the pelvis. This happens when the baby is abnormal and has water on his brain. The mother goes into obstructed labor and will need a Caesarian Section.
- The woman's pelvis is too small. this is more common in short or malnourished women. The woman goes into obstructed labor and will need a Caesarian Section.
- The baby lies in a transverse rather than a vertical position and the head is not pushed down. This is more common in women who have had many children making their uterus floppy. Sometimes the baby goes into the right position, but often the woman goes into obstructed labor and needs a Caesarian Section.

<u>Things that can go wrong when the baby is delivered.</u>

Many things can go wrong in the second stage of labor when the baby is being pushed down the vagina and then out.

- Sometimes the bottom comes out first. this is more dangerous then the head coming first. With the bottom coming out first the head sometimes gets stuck and stays inside the uterus, while the rest of the body hangs outside the mother. this can cause permanent brain damage.

  Twins. This is when 2 eggs are fertilized giving 2 babies. The uterus is bigger than the dates of the last period suggests and the woman has more problems of pregnancy like vomiting, edema and high blood pressure. The woman often goes into labor too early at 7-8 months. The babies are smaller and often one or both of them are delivered bottom first, so twins are more likely to have brain damage.

  You must NOT give METHERGINE after the birth of the first twin because this will cut off the blood supply to the second twin. You must give METHERGINE 0.2mg tab one tab T.I.D. for 5 days after the birth of

BEST AVAILABLE DOCUMENT

the second twin to stop too much blood loss, because the uterus is big and floppy and will not contract well.

- Sometimes the arm or leg comes out first, and the baby gets stuck. The woman needs an urgent Caesarian Section.
- Sometimes the baby comes out too soon at 7 or 8 months. The baby has a softer skull and the brain is less protected during delivery. The lungs, kidney and nerves are immature and the baby cannot breathe or suck as easily and gets very cold. Wrap the baby up well to keep it warm. If the baby cannot suck express the milk by hand and feed it to the baby on a spoon with some extra sugar.
- Sometimes there is tearing of the vagina. The vagina must stretch a lot when the baby's head comes out. Sometimes it tears because it cannot stretch quickly enough. This is more common with the first baby.

Tearing can be prevented by these different methods:

- The mother must not push the baby's head out too quickly. She must stop pushing when the baby's head first appears by taking short, shallow breaths. This gives the vagina time to stretch.
- The midwife can support the vagina with one hand and stop the head coming too quickly with the other hand.

A small tear can be left open, but a larger tear should be stitched after the placenta has come out. The area should be washed every day to prevent infection.

<u>Things that can go wrong with delivery of the placenta.</u>

Sometimes the placenta sticks to the inside of the uterus and will not come out. You must do these things:

- Advise woman to empty her bladder.
- Put the baby to the breast. This makes the uterus go hard.
- Massage the uterus
- Give METHERGINE 0.2mg I tablet TID x 5

If the placenta still does not come out give AMPICILLIN are

BEST AVAILABLE DOCUMENT

METRONIDAZOLE tablets for 10 days and send to hospital. the woman may need an operation to empty her uterus.

Heavy bleeding after the baby is born.

If there is very heavy bleeding and the woman is already anaemic then she may die. you must prevent anaemia by giving iron tablets during pregnancy. There will be heavy bleeding if the uterus does not contract and close off the arteries in the uterus.

Treatment

- Look for sings of shock.
- Elevate legs.
- Give ORS.
- Massage uterus and put the baby to the breast.
- Put a cold compres on mothers abdomen.
- Give METHERGINE 0.2mg one tablet TID x 5 day. Give 2 PARACETAMOL tablets with each METHERGINE 0.2mg tablet because they help lower abdominal pain.
- Put up a drip and give SODIUM CHLORIDE 0.9% 1 liter quickly.
- Send to hospital.

Care of the baby at birth

After the baby is born put its head down so that the mucus comes out of its mouth and throat. Keep the baby below the level of the placenta until the cord is tied. This helps the baby get more blood from the placenta.

If the baby does not breathe, then rub his back or slap his bottom. If he still does not breathe. Then clean his mouth with a cloth and start mouth-to-mouth breathing, gently blowing into the lungs 20 times per minute.

Wrap the baby in a warm cloth especially the head which can lose a lot of heat. Put the baby to the mother's breast. The contact with the mother will keep the baby warm and send a message to the mothers brain to start producing milk in the breasts.

BEST AVAILABLE DOCUMENT

RUPTURE OF UTERUS.

Rupture of the uterus is the most serious condition. It usually occurs during labor, although it can occasionally happen during the later weeks of pregnancy.

CAUSES.

1. During pregnancy:
   a. Weak scar due to pervious cesarean section. this is common cause.
   b. Abdominal trauma and perforating wound in abdominal wall.

2. During labor:
   a. Obstructed labor is caused by contracted pelvis, large fetus and malposition or malpresentation of the fetus.
   b. Improper use of oxytocic drug.
   c. A weak scar in the uterus after CS.
   d. In woman who have had numerous pregnancies, uterine rupture occasionally occurs without any evident preceding abnormality.

SYMPTOMS AND SIGNS.

Prior to the onset of labor, a beginning rupture may produce local pain and tenderness, in some cases a small amount of vaginal bleeding. As the extent of the rupture increases, there will be more pain, more bleeding and perhaps signs of hypovolemic shock. the classic finding of spontaneous rupture during labor are suprapubic pain and tenderness, cessation of uterine contraction, disappearance of fetal heart sound and vaginal bleeding, followed by the signs and symptoms of hypovolemic shock.

TREATMENT:

Start IV and refer the patient as soon as possible.

BEST AVAILABLE DOCUMENT

POST PARTUM PHYSIOLOGY

The puerperium (post partum period) is a period of 4-5 weeks that starts immediately after delivery and is completed when the reproductive tract has returned to its non-pregnant condition.

A. Involution of the uterus. the uterus regains its usual non-pregnant size within 5 - 6 weeks. Nursing accelerates involution of the uterus due to stimulation of the nipples, which induces releasing of oxytocin from the neurohypophysis and leading to increased contraction of the myometrium.

1) After delivery pain: the uterus contracts throughout the period of involution, which produces after pain, aspecially in multiparous and nursing mothers.

2) Lochia: is the uterine discharge that follows delivery and lasts for 3 or 4 weeks. Foul smelling lochia suggests infection.

B. Menstruation.

1) Non-lactating women: The first menstrual flow usually returns within 6 - 8 weeks after delivery with ovulation occurring at 2 - 4 weeks post partum.

2) Lactating women: The first period may occur as early as the second, or as late as the 18th month after delivery.

C. Psych phase.

It is fairly common for a mother to exhibit some degree of depression a few days after delivery. The depression or "post partum blues: most likely is the consequence of a number of factors. Prominent in its genesis are:

1) Excitement and fear which most women experience during

BEST AVAILABLE DOCUMENT

pregnancy nd delivery.

2) The discomfort or the early puerperium.

3) Fatigue from loss of sleep during labour.

In the great majority or cases effective treatment needs to be nothing more than anticipation, recognition and re-assurance.

PROBLEMS AFTER DELIVERY

POSTPARTUM HEMORRHAGE

Can occur up to 2 weeks after delivery, but is most common just after delivery. Hemorrhage is the leading cause of death in women after delivery.

Signs and Symptoms

- Continual heavy bleeding with clots.
- Bulky uterus.
- +/- shock.
- No fever.

Treatment

- Massage the uterus through the abdomen.
- Put the baby to the breast to feed.
- Give METHERGINE, 2 tablets (0.2 mg) by mouth, repeat if necessary in 30 minutes, and then every 4 hours as needed for heavy bleeding.
- If there has been much bleeding, check for sings of shock (heart rate> 100, blood pressure <90/60, pallor, sweating) begin treatment:
  a. Using the largest IV catheter you can place, begin a liter of NORMAL SALINE, and run it in as fast as possible.
  b. Then administer NORMAL SALINE at rate of 1 liter/30 minutes until the patient begins to urinate. Check the heart rate and blood pressure at this time; the pulse should have decreased and the pressure increased (record the values).

BEST AVAILABLE DOCUMENT

c. Slow the IV down to 200 cc/hour. Recheck has decreased or stopped, the vital signs should be stable. If the bleeding continues, the IV rate may have to be increased.

d. Remove the IV when the patient is drinking fluids well and the vital signs have been stable for 24 hours.

POSTPARTUM INFECTION

Infection of the reproductive tract after birth.

This is a very dangerous infection which may result in septic shock and death. It is primarily due to lack of sterile conditions during delivery (especially if it was a complicated or prolonged deliver) or retained products of conception (placental or fetal tissue). The patient may present with symptoms from 24 hours to 4 weeks after delivery. The patient may not admit to recent delivery or abdominal pain.

Signs and Symptoms

- fever is often present and may be high.
- vaginal discharge may be foul smelling.
- vaginal bleeding may be present, varying from spotting to heavy bleeding
- pain and tenderness in lower abdomen
- headache
- low back pain

Treatment

- If the woman does not appear acutely ill:
  AMPICILLIN 500mg. by mouth every 6 hours for 10 days (normal dose).
- if the women looks very ill:
- admit to clinic
- AMPICILLIN by mouth as tolerated or injectable in high dose range.
- if no better in 24-48 hours switch to CHLORAMPHENICOL oral or injectable at high dose.
- continue antibiotics 10-14 days.
- because CHLORAMPHENICOL is passed in breastmilk and can

BEST AVAILABLE DOCUMENT

be harmful to young babies, it is better if mother requires CHLORAMPHENICOL, to have another woman breastfeed the infant.

* "A SPECIAL SERIOUS CAUSE OF INFECTION IS IF THE MEMBRANES SURROUNDING THE BABY RUPTURED MORE THAN 12 HOURS BEFORE DELIVERY ("WATER BROKE"). THIS IS CONSIDERED PREMATURE RUPTURE OF MEMBRANES. IN THIS CIRCUMSTANCE, ASSUME INFECTION IS PRESENT. TREAT WITH AMPICILLIN 500MG EVERY 6 HOURS X 10 DAYS.

Women's Care

Menstrual period:

1. Each month or so, a woman who is old enough to have a baby but who is not pregnant, will pass blood from the vagina for several days. This is called the monthly period or menstruation, and occurs because of hormone changes in the body that cause the uterine lining to shed.

2. Menstruation usually begins at the age of 11-13 years, but sometimes as early 10 or as late as 16 years of age. During the first monthly periods, ovulation does not occur (no egg is passed into the fallopian tube). Ovulation may hot begin for 1-2 years after menstruation starts. As a result, during this time, a young woman may not be able to get pregnant.

3. The length of bleeding each month and the time between the monthly periods depends on the age, health and environment of the woman. The interval between periods is usually 28 days, but may be 25 to 30 days. The number of days she bleeds is usually 3-7 and the amount of blood passed about 75 milliliters. This amount may increase till age 35, then decrease.

4. In girls age 11-18 years, menstruation may be painful (cramps in the abdomen and back pain). Discomfort may be helped by increased physical exercise, warm liquids, aspirin and sitting in a basin of warm water.

BEST AVAILABLE DOCUMENT

5. Irregular monthly periods (long or short intervals between periods or irregular amounts of bleeding) may be normal variations; or may be caused by malnutrition or chronic sicknesses like tuberculosis, infection or tumors.

6. Menstruation usually stops between ages 45 and 55. This is called menopause. During those years the woman may have an irregular monthly period with partial bleeding occurring several times a month. She my have not flashes (suddenly feeling very hot), feel very nervous of depressed. This is caused by the changes in the female hormones. If her periods stop for six months and start again, she should see a doctor, since bleeding after menopause may be due to cancer or other disease.

DYSMENORRHEA

Pain with menstruation is a common complaint during adolescence but may occur at any age. there is no known cause or prevention.

Signs and Symptoms

- Lower abdominal cramping or low back ache which begins 1-2 days before menses, lasting 1-2 days after onset of menses.
- Headache and nausea may be present.
- Swollen breasts and abdominal bloating.

Treatment

- Reassurance of woman is important.
- ASPIRIN for 3 days.
- Encourage to continue normal activities as tolerated.

ABNORMAL VAGINAL BLEEDING

This is a very common problem especially in adolescents and older women entering menopause. It is not usually a sign of serious disease. In all cases, pregnancy with possible miscarriage should be considered. Rarely tumors (usually benign) tuberculosis or other diseases may be the cause.

BEST AVAILABLE DOCUMENT

Signs and Symptoms

- Vaginal bleeding occurring outside of the normal pattern.
- Often painless.
- May be heavy, with passage of clots.

Treatment

- FERROUS SULFATE, normal dose 3-6 months after the abnormal bleeding has stopped. If bleeding is profuse, give triple normal dose.
- Bedrest as needed.
- Avoid ASPIRIN.

VAGINAL DISCHARGE

Vaginal discharge is a frequent complaint in women. All women normally have a small amount of vaginal discharge which is clear, milky or slightly yellow and varies with the menstrual cycle. If there is no fever, itching and bad smell, it is usually normal. Always check for the following.

No Fever:

- Bloody discharge: see VAGINAL BLEEDING.
- Genital itching with increased or foul discharge: see VAGINAL INFECTIONS.

If Fever:

- See PELVIC INFECTION.

VAGINAL INFECTIONS

CANDIDA (monilia)
TRICHOMONIASIS

Infections that are confined to the vagina are not serious. However, they are often a source of much discomfort.

CANDIDA (monilia):

BEST AVAILABLE DOCUMENT

There is a common infection caused by overgrowth of yeast (fungus). This problem occurs more often in pregnant women and women on antibiotics or with chronic disease.

Signs and Symptoms

- Vaginal irritation, intense itching and burning.
- White vaginal discharge that looks like curd or buttermilk and smells like molds.
- Genital area may be bright red and excoriated. There may be bright red rash on adjacent skin.
- Burning on urination is common.
- No fever (check).
- No abdominal pain or tenderness.

Treatment

- Stop antibiotics if possible.
- Vaginal douche with VINEGAR solution, LASSIE or GENTIAN VIOLET 2 times/day for 7 days.
  If available, NYSTATION vaginal suppositories 1 time/day for 7 days. Preparation of VINEGAR douche: Add 4 tsp of VINEGAR to one liter of clean water (lemon juice can be substituted). Preparation of GENTIAN VIOLET douche: One tsp of GENTIAN VIOLET solution in one liter of clean water.

TRICHOMONIASIS

Trichomoniasis is a vaginal infection which is spread by sexual contact. Both husband and wife must be treated even if male has no symptoms. the main difference between trichomoniasis and candida is the type of discharge.

Signs and Symptoms

- Thin, foamy, greenish-yellow vaginal discharge.
- Genital itching with tenderness or swelling.
- Foul smelling discharge.
- No fever (check).

BEST AVAILABLE DOCUMENT

Treatment

- If patient is not pregnant, give 8 tablets of METRONIDAZOLE 250 mg (2 grams) in single dose. Must also treat husband with same dose.
- If the patient is pregnant, do not use METRONIDAZOLE. instead use vaginal douches (see treatment of candidia).
- If patient does not improve, treat with AMPICILLIN normal dose for one week.

PELVIC INFECTION

This is a painful infection of the reproductive organs that may be caused by a variety of bacteria.

Signs and Symptoms

- Pain in lower abdomen.
- Fever and possibly chills.
- Vaginal discharge is variable, but often is a large amount.
- May be associated with menstrual period.
- Tender abdomen on exam.
- If the problem is chronic, infertility may result.

Treatment

- If pregnant, high dose AMPICILLIN.
- If not pregnant, high dose TETRACYCLEINE for 10-15 days.
- Also treat husband.
- if no improvement after 3 days, add METRONIDAZOLE, 400 or 500 mg 3 times daily for 10 days.

NONSPECIFIC VAGINAL INFECTION

This is a bacterial infection that is also transmitted [illegible] sexual intercourse. It is a common problem. Symptoms and signs vary somewhat with the type of bacteria causing the problem

Signs and symptoms

BEST AVAILABLE DOCUMENT

- Yellow or graying foul vaginal discharge.
- Fishy odor to the discharge.
- Genital burning and itching may be severe
- No fever

Treatment:

- metronidazole single dose if not pregnant as described for trichomonas.
- Ampicillin normal dose for 7 days.

ATROPHIC VAGINITIS

This is a condition in postmenopausal women in which the vaginal lining thins and cracks. Symptoms are vaginal discharge, itching and/or pain, without foul odor. this is a common problem that occurs several years after menopause. The treatment is vaginal estrogen cream application several times per week; however, estrogen cream is very expensive and may not be available in parts of Afghanistan. The diagnosis is often made when a postmenopausal women fails to improve with standard vaginitis therapy. Untreated, it causes discomfort and itching, but the patient can be reassured that this is not a serious condition.

INFERTILITY (sterility)

Infertility is the inability for a man and woman to have children. It can be caused by many things. Some can be treated and some cannot. Things which can be treated include:

- Severe anaemia.
- Malnutrition.
- Iodine (goiter).
- Infection
- Tuberculosis (At TB Center).
- Man: prostatitis, epididymitis, urethritis.
- Woman: pelvic infection, vaginal discharge.

Talk to and examine both the husband and wife.

<u>Treatment</u>

BEST AVAILABLE DOCUMENT

- Treat, or refer, if above conditions are found.
- Education - tell wife that most fertile time is midway between periods.
- Teach good nutrition.

MASTITIS

This is a bacterial infection of the breast. It commonly occurs 2 weeks to 3 months after childbirth. Risk factors include cracked nipples, bruised tissues due to rough handling, stasis of milk in breast.

Signs and Symptoms

- Painful breast.
- Fever may be present
- Wedge shaped section of breast which is red, hard and tender.
- Axillary lymph node enlargement and tenderness (located under the arm).

Treatment

- PENICILLIN tablets normal dose for 10 days.
- ASPIRIN normal dose for pain.
- Cool compresses to ease pain.
- Return in 3 days for re-evaluation, if not better, suspect breast abscess.

Prevention

Wash breast with mild soap to keep clean. If a sore nipple or painful crack develops, breast feed for shorter periods, more often. Put vegetable oil on the nipples after each feeding. Continue to have infant feed from breast or express milk by hand whichever is less painful.

BREAST ABSCESS

This is a preventable problem seen in neglected mastitis.

Signs nd Symptoms

- Fluctuant swelling under red area.
  Symptoms of mastitis.

BEST AVAILABLE DOCUMENT

Treatment

- Incision and drainage under local anesthesia Note: the incision for breast abscess should be straight, not a cruciate (x - shaped).
- Antibiotics as per mastitis.
- Pain control with ASPIRIN.
- Warm compresses.

FAMILY PLANNING

Family planning means having the number of children you want, when you want them. It is healthier both for the mother and the children to space pregnancies every 3 years. This allows every baby to get enough milk and the mother to recover between pregnancies. A woman who has had many babies produces less milk and her babies will be malnourished and may die. After many pregnancies childbirth becomes more dangerous and a mother may die leaving many motherless children. With many children in a family it becomes more difficult to feed, cloth and educate them all well.

When a man and woman decide to plan their family size they can choose several different methods to prevent the woman becoming pregnant. It is your duty as a health worker to be able to advise them on these different methods.

The different family planning methods available:

- Withdrawal method
- Breastfeeding
- Rhythm method
- Condom
- Cap
- Interuterine device (Coil)
- Depo-provera injection
- Family planning pill
- Male and female sterilization

THE WITHDRAWAL METHOD

The man pulls his penis out of the vagina before the sperm comes. This is not a very effective method because some sperm leaks out

BEST AVAILABLE DOCUMENT

into the vagina without the man knowing. If there is no other method of family planning available then this method is better then nothing.

BREASTFEEDING

When a woman is breastfeeding she is less likely to become pregnant, because a message is sent to the brain to stop the egg comin every month. After 4-6 months when the baby is eating other food, less messages are sent to the brain and the woman starts making eggs again. The more she puts the baby to the breast, the less likely she is to become pregnant.

THE RHYTHM METHOD

Usually a woman only makes an egg during 8 days of her monthly cycle. these 8 days come midway between her periods, beginning 10 days after the first day of period. To avoid pregnancy she should not have sex with her husband during these 8 days. During the rest of the month it is safe to have sex because the egg is not coming. This is a very good way of not becoming pregnant especially if the man also wears a condom. This method works very well for women who have their periods regularly every 28 days and can record them on a calendar. This is more difficult for illiterate people to record dates but they can follow the phases of the moon.

THE CONDOM

The condom is a rubber balloon that the man wears over his penis during sex to stop the sperm going into the vagina. It also protects against venereal disease. It is one of the commonest and safest methods of family planning. condoms can be washed with soap and water and used again. Before re-using a condom fill it with water to check it does not leak.

BEST AVAILABLE DOCUMENT

METHODS USED BY THE WOMAN

There are several methods that can be used by the woman herself to stop her becoming pregnant.

THE CAP

The woman can insert a rubber cup into her vagina and over the door to her uterus before sex and then take it out the next day. The cap stops the sperm going up into the uterus. This method is commonly used in England and is very safe.

THE INTERUTERIN DEVICE

A trained health worker can put a plastic coil in the uterus using a sterile technique. This can be left in for 1-2 years and it works by stopping the fertilized egg attaching to the lining of the uterus.

DEPO-PROVERA

This is a female hormone given by intramuscular injection every 3 months and can be stopped when the woman wants to become pregnant again. this is best given to a woman who has already had a few children. DEPO-PROVERA can be used when breastfeeding.

Injections 50mg/ml. give 150mg I.M. during the monthly period or 6 weeks after the baby is born. Repeat every 3 months.

Side Effects

- Irregular periods
- Periods stop sometimes, but they usually come back so

BEST AVAILABLE DOCUMENT

tell woman not to worry.

THE FAMILY PLANNING PILL

This pill contains 2 female hormones called progesterone and estrogen which stop the woman making eggs every month. Estrogen can cause dangerous side effects so it is best to take a contraceptive pill with the lowest dose of estrogen possible. In England this is 30mg but in Pakistan you can only get 50mg tablets. The tablets have to be taken every day. Packets contain either 21 or 28 taolets and they last for 1 month.

How to take the packet with 21 tablets.

- Counting the first day of the period as day 1, take the first pill on day 5.
- Take one pill at the same time every day until the packet is finished.
- Do not take any pills for 7 days. during this time there will be some vaginal bleeding.
- Start a new packet.

How to take the packet with 28 tablet.

- Start taking the tablets on day 5. Take 1 tablet every day.
- 7 tablets may be a different colour from the other tablets. These tablets must be taken at the end. When taking these there should be some vaginal bleeding like a period.
- As soon as you finish 1 packet start a new packet. (If

BEST AVAILABLE DOCUMENT

the woman forgets to take a pill one day tell her to take 2 the next day. If she does not do this she may become pregnant).

The pill can reduce breast milk so it is best to delay giving the pill until the baby is 6 months old. Depoprovera can be given during breastfeeding.

Side - Effects of the Family Planning Pill

- Increased blood pressure
- Headaches
- Weight gain
- Painful swollen breasts
- Change in the amount of bleeding during the period.

All these problems usually go away after 2-3 months so reassure the women that they will get better and to keep taking the tablets.

More serious side-effects

- High blood pressure
  Blood clots.
- Heart Disease
- Kidney Disease

These are more serious problems and the woman should stop taking the tablets.

For most women these pills are very safe especially if the woman goes to the clinic regularly to get her blood pressure checked. She should examine her breasts for lumps.

STERILIZATION

For a man and woman who do not want any more babies there are operations available.

The man has a tube tied that takes the sperm from the tests to the penis. This is very simple and safe and can be done under local anaesthetic in the clinic. This operation will not affect the man's masculinity or hormones and he still makes sperm but

 BEST AVAILABLE DOCUMENT

they cannot go to the penis.

The woman can also have an operation to have her tubes tied to stop the eggs going from the ovaries to the uterus. This is a more difficult operation because she needs to have a general anaesthetic and her abdomen cut upon.

Both these operations are permanent so the man and woman must be certain that they do not want any more children.

CLOTH OR SPONGE IN THE VAGINA

If there is no other method of family planning available the woman can use a clean cloth or sponge soaked in:

- 2 tablespoons of vinegar and 1 cup of water.
  OR
- 1 teaspoon of lemon juice and 1 cup of water
  OR
- 1 spoon of salt in 4 spoons of water.

The woman must push the cloth or sponge deep into the vagina before having sex. She must leave the sponge in for at least 6 hours after having sex, then take it out. It helps to tie a ribbon the cloth to help pull it out. The cloth or sponge can be washed carefully and then used again.

NEW BORN CARE

OPHTHALMIA NEONATORUM:

Discharge from eye in newborn. Diagnose by day of appearance
First or 2nd day: chemical reaction to silver nitrate, if used.
Sticky, no frank pus. Irrigate or wipe off.
2-5th day: frank yellow pus, often profuse and under pressure:
Gonorrhea
Urgent treatment to prevent corneal injury
Penicillin injection 50,000 u /kg daily x 7
Irrigate eyes with normal saline.
Days 3-14: smaller amounts of discharge:chlamydia

BEST AVAILABLE DOCUMENT

Rx: erytromycin 50 my/kg/day in 2 doses - 14 DAYS. if not available, use tetracycline or erythromycin or sulfacetamide eye ointment 4 x/day

How to cut the cord

After the baby has been delivered you must cut the cord. do not do this until the cord has stopped pulsating and gone thin and white. When the baby is first born the cord is fat and blue with blood and pulsates. The blood then empties into baby and the cord becomes thin and white. Before cutting the cord first tie the cord in 2 places with a clean dry thread. then cut in between these threads with a new unopened razor blade, leaving 2 cms of cord attached to the baby. if left open to the air the cord will, dry up and fall off in a few days. Apply GENTIAN VIOLET to the cord every day.

At birth the baby is at risk of tetanus infection. This can be prevented in these ways:

- Give TETANUS TOXOID to the mother. 2 injections 1 months apart.
- Deliver baby on a clean cloth.
- Cut cord with a sterile blade.
- Leave cord open to the air and apply GENTIAN VIOLET.

AFTER THE BABY IS BORN

There are some important things that must be done after the baby is born.

- Dry the baby and wrap it in a cloth. You must cover the baby's head because he loses about half his body heat from the head.
- Put the baby to the mother's breast straight away. This

BEST AVAILABLE DOCUMENT

helps the uterus go hard and stop bleeding. It helps the colostrum come through and keeps the baby warm. The touching will help the mother and baby bond.

- Encourage the mother to drink and eat. If the mother does not drink enough fluids the milk will not come through.
- Let the mother rest for a few days.
- Advise the mother to wash around the vagina every day. Give her clean cloths and a wash after the baby is born.
- Advise the mother to keep the nipples clean with water. do not use soap because the baby will not like it. rub VASELINE into the nipple to keep them soft.
- Put baby to the breast often, at least 6 times a day. The more often the baby sucks, the more easily the milk will come through because whenever the baby suck a message is sent to the brain telling it to make more milk.
- If a baby cannot suck because it is small or sick, not enough milk is made and the breast will empty. If the baby is not sucking the mother must express the milk and give it to the baby on a spoon.
- If the breasts become full and painful, apply not compressed to the breasts and express the milk gently.

Normal body changes after the baby is born.

2 days after the baby is born.

- Uterus hard and above the umbilicus.
- vaginal bleeding, bright red in colour and slightly more than a normal period.
- Breasts are filling with colostrum. They may become heavy and painful so treat with hot compresses and a well supporting bra.

7 days after the baby is born.

- Uterus is hard and below the umbilicus but above the bladder.
- Vaginal bleeding is brown and very slight.
- Baby is sucking well and mother has lots of milk.

BEST AVAILABLE DOCUMENT

- Baby s cord dries and may fall off.

4-6 weeks after baby is born.

- Uterus is not felt in the abdomen because it has gone back into the pelvis.
- No vaginal discharge. The womans periods will not come back for a few months especially if she continues breastfeeding.
- Baby first smiles.

NORMAL POSTPARTUM CARE

Instructions for the mother:

- put the baby to the breast within one hour of birth, and continue feeding breastmilk every two hours.
- Keep uterus firm by massage.
- Cover vulva with a clean pad (spotting or small amount of blood similar to menstruation is normal).
- Soak vagina area n warm bath 2-3 times per day to aid comfort and healing.
- Keep nipples clean.
- Drink fluids, eat good food.
- Out of bed 6-12 hours after delivery.
- If fever develops, come to clinic.

INITIAL WEIGHT LOSS

The newborn loses a considerable amount of fluid through feces, urine and sweat during the first days of life and looses weight (100-250 grams). However, by the 10th day of life, it usually regains the weight it had at birth. The infant then gains 25 grams per day during the first few months and the birth weight is doubled by 5 months of age.

JAUNDICE

Newborn jaundice is often a normal finding in infants due to increased bilirubin formation from PBC destruction and an immature liver which is slow to process bilirubin in the blood.

BEST AVAILABLE DOCUMENT

It usually appears at 3-4 days of life. The best way to check for jaundice is to lightly press your thumb at the level of the infant's sternum and when you see blanching. look for jaundice.

If jaundice appears in the first 24 hours of life, this is not normal and the clinician should be suspicious of sepsis and maternal-fetal blood incompatibilities.

Remind Parents to have newborn immunized with BCG vaccine as soon as it is available to them. this is to prevent tuberculosis.

INFECTIONS IN THE NEWBORN

Diseases that take days or weeks to kill adults can kill a newborn in hours.

1. Infection of the cord:

   if there is pus draining from the cord (umbilicus) or it smells bad this is a danger sign. Soak the cord in hydrogen peroxide, paint with gentian violet and leave open to the air.

   If skin around the cord becomes hot and red, treat baby with ampicillin IM (or by mouth if taking it well) 50-100 mg/kg/day every 12 hours for 7-10 days.

2. Tetanus

   Tetanus is caused by a toxin released by Clostridium tetani, a gram positive bacillus. Tetanus spores are able to remain viable for years and are mostly found in soil and animal feces. They only grow in tissue that lacks oxygen. The toxin blocks nerve synapses (where one neuron connects to another) causing a generalized tonic spacticity. Greater than 60% of tetanus cases die, even in the USA. Death occurs from body wide muscle spasm.

Signs and symptoms include:

1) Fever, usually low grade, not more than 39.
2) In the newborn, it often presents at 3-10 days of age.

BEST AVAILABLE DOCUMENT

3) Progressive difficulty sucking and swallowing.
4) Excessive crying
5) Body stiffens
6) Tetanic seizures
7) Hyperreflexia
8) Facial muscle spasm
9) Strismus (locking of jaw)

Treatment and Supporttive care:

1) Cleanse and debride wound and leave open to air.
2) Place patient in a quiet, non-stimulating environment.
3) Place baby on its side or stomach at all times to prevent aspiration.
4) To reduce spasms and hypertonicity that cause respiratory problems: diazepam (Valium) 0.1-0.2 mg/kg q 3-6 hours IV or IM.
5) Procaine penicillin 50,000 unit/kg/day, qd IM for 10 days. This drug will not cure tetanus as the toxin causes the disease symptoms, But will remove any other Clostridium tetani bacili that remain in tissue with poor blood supply.

Keeping young infants warm

Young infants must be kept warm, especially if they are small or ill.

Even in tropical climates, hypothermia is a major cause of sickness and death in young infants (babies less than two months old). It is a common reason for failure to gain enough weight. Even when hypothermia is not severe, there is evidence that it can increase the risk of bacterial infections, such as pneumonia and meningitis. In one teaching hospital in Africa, in a random check of premature infants, over 50 percent were very cold on admission, with unrecordable body temperatures (less than 35°C). It is especially difficult for sick infants, whether of normal or low birth weight, to maintain normal body temperature. The problem is even worse if they are hypoxic (suffering from oxygen deficiency) because of a respiratory problem. Hypothermia can develop at home but very often also happens in the hospital or health centre.

BEST AVAILABLE DOCUMENT

Why do young infants get cold?

Babies born at home can become quite cold, especially if they are given a bath soon after delivery. Furthermore, birth attendants in their anxiety to get a very small or sick baby to the hospital or health centre, may forget the importance of keeping them well-wraped and warm for the journey. One of the problems in hospitals is that the staff often do not realise the importance of keeping young infants warm. Another is the shortage of laundry services, with no facility for drying blankets and linen in the rainy season. It is common for mothers to have to provide linen for their babies, and if they are unable to do this, their babies may be left wet and cold. Furthermore, hospital rooms are often not warm enough and can be very draughty. The tend to be kept at a comfortable heat for the hospital staff but may be too cold for young infants. Even in hot climates, the air temperature can fall dramatically at night, especially at high altitude.

How to tell if a young infant is too cold.

When a baby has a fever, she can be very irritable and usually cries a lot. But there are no obvious signs of hypothermia. A cold baby may refuse to feed or may be unusually quiet. In mildly stressed babies the hands and feel may appear pale or blue and feel cold. In severly stressed babies the calves and thighs feel cold and body temperature is low or unrecordable. The body temperature should be 36.5°C to 37.5°C, whatever the baby's weight. If it is less than 35.5°C the baby is too cold, or hypothermic. It is not necessary to take the rectal temperature - the axillary temperature is enough. Put the bulb of the thermometer in the axilla under the baby's arm. Hold the arm close to the baby's chest, and take the reading after at least two minutes.

How to prevent hypothermia

Mothers and health workers need to be taught the importance of keeping small or sick babies warm at all times.

BEST AVAILABLE DOCUMENT

- Keep the baby loosely wrapped in several layers of blankets. This helps to trap air in layers and to insulate the baby. Tight clothes and swadding should not be used as they increase heat loss.

- Cover the baby's head (because the head is a large part of a baby's surface area and a lot of heat can be lost from the head if it is left exposed).

- Feel the baby's hands and feet often, to make sure that they are warm. Immediately after birth, dry the baby and wrap him or her in warm, clean towels or cloths. You can wipe the baby's face but do not give a bath for at least 24 hours. Cover the baby's head to reduce heat loss. If the baby is low birth weight, keep him or her close to the mother or in the 'kangaroo' position - upright between the mother's breasts. Keeping the baby in skin to skin contact with the mother is an effective way to warm up a cold baby or to keep a small or sick baby warm. Whenever possible, the room temperature should be kept at 25 to 26°C. If there are frequent power cuts or no electricity or other reliable source of heat, then using the mother's body heat is the ideal way to keep the baby warm.

How to treat hypothermia

Babies admitted to a health centre or hospital with hypothermia are in great danger unless their body temperature can be raised to a normal level. Extra local heat must be provided by an electric heater, heat lamp or even a single light bulb, but you must be careful not to burn or overheat the baby. If there is no electricity, you can use hot water bottles, but cover them well and make sure that they do not touch the baby directly.l make sure that the bay is not restless and sweating - these may be signs of overhealing. Frequent breastfeeding is an important part of care as the baby needs calories to maintain his or her body temperature. If the baby cannot suckle, let the mother express her milk which she can feed to the baby with a cup or spoon.

Hypothermia: body temperature less than 35.5°C, when the body is too cold to function normally. (Normal body temperature is

 BEST AVAILABLE DOCUMENT

between 36.5°C and 37.5°C).

Congenital Abnormalities:

Babies often have some unusual appearance of part of their bodies. Some of these can be recognized and some may need treatment.

Large head:

If it is VERY large and the fontanelle very big and full, this may be due to too much fluid inside the head. Some of these babies will be retarded. Complicated operations can sometimes correct this.

A defect may be visible in the upper lip. This HARE LIP may be associated with another defect of the palate:

The palate can be split with a wide open space in the middle. this CLEFT PALATE interferes with feeding. It can be repaired later. If baby cannot suck from breast, feed with spoon.

Green vomiting in a newborn can be a sign of obstruction of the intestine. This will need repair within a few days.

Cyanosis means lack of oxygen in the tissues. Try to give oxygen. If this continues, it can be due to a lung or heart problem You may hear a loud sound over the heart. This indicates that the heart is not formed normally.

On the back, in the midline over the spine, a cyst or bulge may be seen. Check the movement of the legs. If the legs are paralyzed or weak, this shows a defect of the spinal cord and the nervous system. Operations for repair are very difficult. Keeping baby fed and clean is the immediate care.

Hands or feet can be deformed. If the foot is turned in but can be held in a normal position by use of your hands it is not serious. Ask the mother to straighten it into the normal position several times every days.

If it CANNOT be pushed into a normal position, try to refer for

BEST AVAILABLE DOCUMENT

treatment. A CLUB FOOT which turns in and downward, should be put in plaster within a few days after birth. (SEE Manual?)

The opening for urine may be under the penis. This can be corrected by surgery later. As long as the baby is passing urine regularly, there is no urgency.

Down Syndrome: The face looks flat, nose flat, extra fold of upper eye lid (epicanthal fold), tongue may appear too big for mouth. The limbs are all soft and can be moved very easily. Small finger is short and curves inward. Space between big and next too is wide. There may be a heart murmur. These infants will be retarded but their care is not difficult.

Un descended Testes:

Whenever you fue causes in your physical exam both test

1

1

1

1

1

DIAPER RASH

Rashes under the diaper are very common and usually due to urine irritation, seborrhoeic dermatitis, or yeast infections. The ammonia in urine is very irritating to skin, and if diapers are not changed skin irritation and erythema occurs. The surface area under the diaper is involved, and the skin creases are usually spared.

Simply changing the diaper more often is the most important form of therapy and prevention. When the skin is very irritated, vaseline or zinc oxide can be put on the skin to form a protective layer between the skin and wet, urine soaked diaper. Also, letting the infant be naked with skin exposure to air is an effective way of healing up the irritated skin.

Candida often causes a secondary infection in a process that

BEST AVAILABLE DOCUMENT

started as urine irritation. Since the yeast grows well in a moist environment it covers the perineal area and is especially involved in the skin creases. The borders have a sharply demarcated line of infection, the lesions are usually plaque like erythema, and satellite small red dots are common outside the line of erythema. Treatment again involves keeping the skin dry. Use of nystatin ointment twice daily for 5-7 days is also beneficial. Recurrent infections are common, and retreatment is often necessary.

Characteristics of seborrhoeic dermatitis and therapy have already been discussed.

PEDIATRIC HISTORY

A. Source of history From person responsible for the child. Also information from the child

B. Interpretation of history Chief complaint may not be the main problem Focus on the correct concerns

C. Direction of questioning After presentation of problem, fill in with necessary past history, family history

D. Recorded history Should be clear, detailed, in chronologic order Include the parents interpretation of the problem and their expectations

E. Beneficial Effects First stage of management of the patient. Avoid being hurried. Make parents feel you are listening to them and giving them your time and attention.

History Outline

Record the name, age and sex of the child, date, case number.

Chief Complaint: the patient's or parent's own brief account of the complaint and its duration.

<u>Present Illness:</u>

BEST AVAILABLE DOCUMENT

1. When was the patient last well?
2. How and when did illness start?
3. Health immediately before illness.
4. Progress of disease - order and date of onset of symptoms.
5. Specific symptoms and physical signs.
6. Pertinent negative data by direct questioning.
7. Aggravating and alleviating factors.
8. Medications given or other treatments used.
9. In acute infections, exposure and interval since exposure.
10. Examiners opinion about reliability of the informant.

Past History:

1. Before birth - health of mother during pregnancy - medical attention, surgery, infections.
2. At birth - duration of pregnancy, kind of labor, problems at birth.
3. After birth - birth injury, convulsions, fever, bleeding, jaundice, cyanosis, pallor, feeding difficulties.

Development

1. First raised head, rolled over, sat alone, pulled up, walked with help, walked alone, talked.
2. Urinary continence during night; during day.
3. Control of stool.
4. comparison of development with that of siblings and parents.
5. Any period of failure to grow or unusual growth.

Nutrition

1. Breast or bottle: type, duration, changes in milk time of weaning, difficulties.
2. Supplemental vitamins: type, amount duration.
3. Solid food: when introduced, how taken, types, family diet.
4. Appetite: food likes and dislikes, allergies,

Illnesses

1. Infections: age, types, number, severity
2. contagious diseases: age, complications following measles,

BEST AVAILABLE DOCUMENT

chickenpox, mumps, pertussis, etc.

3. Others

Immunizations

Type, number, when given

Operation

Type, age, complication, reasons for operations.

Medications

Chronic use, allergies to medications.

Family History

1. Father and mother (age and condition of heath).
2. Siblings: age, condition of health, significant previous illnesses and problems.
3. Stillbirths, miscarriages. Age at death and cause of death of members of immediate family.
4. Tuberculosis, allergy, diabetes, cardiovascular diseases, rheumatic fever, congenital abnormalities, other.
5. Health of contacts.

Personality History

Relations with other children, other family members. Separates from parents, submissive, shy, negative, easy or difficult to get along with.

Social History

1. Family: Income. Living situation. Who takes care of the patient. Support systems.
2. School

habits

1. Eating: appetite, food dislikes, how fed.

BEST AVAILABLE DOCUMENT

2. Sleeping: hours, disturbances, restlessness, nightmares
3. Elimination: urinary and bowel.

4. Disturbances: Excessive bed-wetting, temper tantrums, breathholding, nervousness, thumbsucking, others.
5. Dental hygiene
6. Safety habits: fires, hot water, toxic substances, avoiding traffic.

Review of Systems

1. Ears, nose, and throat: Frequent colds, sore throat, sneezing, stuffy nose, discharge, postnasal drip, mouth breathing, snoring, otitis, hearing, adenitis, allergies.

2. Teeth: Number at age 1. Comparison with siblings. Caries.

3. Cardiorespiratory System: Frequency and nature of disturbances. Dyspnea,, chest pain, cough, sputum, wheeze, expectoration, cyanosis, edema, fainting, tachycardia.

4. Gastrointestinal: vomiting, diarrhea, constipation, type of stools, abdominal pain or discomfort, jaundice.

5. Genitourinary System: urinary incontinence, dysuria, frequency, polyuria, pus or blood in urine, character of urinary stream, vaginal discharge, menstrual history, abnormalities of penis or testes.

6. neuromuscular System: Headache, nervousness, dizziness, tingling, convulsions, ataxia, muscle or joints pains, postural deformities, exercise tolerance, gait, scoliosis in adolescents.

7. Special Senses

8. General Review: Unusual weight gain or loss, fatigue, skin color and texture, abnormalities of skin, temperature sensitivity, mentality, bleeding tendency, pattern of growth. time and pattern of puberty. Hyperactivity. Attention span.

BEST AVAILABLE DOCUMENT

PHYSICAL EXAM OF THE NEWBORN

The examination of the newborn infant requires patience, gentleness, and flexibility in routines of procedures. If the infant is quiet and relaxed when first approached, palpation of the abdomen or auscultation of the heart should be performed before other, more disturbing procedures.

Physical activity may be absent if the newborn is sleeping, or decreased by illness. The infant may be lying still if he is conserving energy for the effort of difficult breathing. Both active and passive tone should be observed. Trembling and coarse movements are more common in newborn infants. Such movements tend to occur when the infant is active. Nutritional status is observed by weight and length and by wrinkling or smoothness of the body surfaces. Edema may mask the fact that an infant is malnourished. A term newborn has the following characteristics at birth and shortly thereafter:

A. Resting posture:

The extremities are flexed and somewhat hypertonic (determined to some extent by the intrauterine position. Fists are clenched. Asymmetries of skull, face, jaw, or extremities may result from intrauterine pressures.

B. Skin:

Skin is usually red and often wrinkled. Cyanosis of hands and feet is common and disappears after several days except when the infant is cool. Subcutaneous tissues may feel full and slightly swollen in the term newborn; skin may appear dry and peeling in the post-term newborn.

1. Lanugo (fine downy growth of hair) may be present over the shoulders and back.

2. Vernix (whitish or clay-colored, cheesy, greasy material) may cover the body but is usually on the back

 BEST AVAILABLE DOCUMENT

and scalp and in the creases of the term infant. Vernix helps prevent infection in the womb.

3. Milia of the face (distended tiny whitish papules) are especially prominent over the nose, chin, or cheeks.

4. Mongolian spots (benign bluish pigmentation over the lower back, buttocks, or extensor surfaces) may be found in infants of dark-skinned races.

5. Petechiae (small red non-blanching spots) are sometimes present on the head, neck, and back, especially in association with a wrapped, compressing cord at birth.

6. newborn acne: Many newborns develop small, white, occasionally vesiculopustular papules on red base 1-3 days after birth. this is a benign rash and may persist for as long as 1 week.

Head:

The head is large in relation to the rest of the body; it may have a distorted shape with cranial bones that overlie one another.

1. Caput is a tissue swelling that may be present over the scalp or other presenting parts. It usually extends over a suture line.

2. Cephalhematoma is an accumulation of blood between the periosteum and a skull bone. The blood does not cross a suture line. the mass is soft, fluctuating, and does not decrease with pressure. It does not pulsate or increase in size with crying. During the first days of life, it may be obscured by a caput overlying it. If it is large it may cause jaundice from the increased breakdown of red blood cells. the condition generally clears within a few weeks or months.

3. Anterior and posterior fontanelle may measure 1/2 - 3 1/2 cm and are soft.

BEST AVAILABLE DOCUMENT

4. Slight indentation and rebound of parietal bones by lightly pressing with the thumb is normal in newborns.

Face:

1. Eyes: Tears may or may not be present. Most term infants look toward a light source nd intermittently focus on a face. Hemorrhages in the eye may be abnormal. the pupillary light reflex is present. When you look into the eyes with an opnthalmoscope, it normal to see red; this is called the red reflex and suggests that there are no cataracts or eye problems.

2. Mouth: Small cysts on the gums and the palate are common and normal. the tonsils are usually quite small. The sort and hard palates should be inspected for a cleft (an open slit premature eruption of teeth may sometimes occur.

3. Nose: The newborn prefers to breath through his nose. If there is obstruction for any reason, this may cause respiratory distress. Passing an NG tube will confirm that the nose passageway is open.

4. Ears: Eardrums may be difficult to see but have a whitish appearance. Severe malformation of the external ear may be associated with abnormalities of the genitourinary tract. Normal newborns respond to sounds with a startle, blink, head turning, or cry.

5. Cheeks: The cheeks are full because of the sucking pads.

6. neck: Abnormalities are not common. Palpate both clavicles for fractures.

E. Chest:

1. Breasts: Breasts are palpable in most mature males and females; size is determined by gestational age and adequacy of nutrition.
2. Lungs: Breathing is abdominal and may be shallow and irregular; rate is usually 40-60 breaths per minute, with a range of 30-100. Breath sounds are harsh and bronchial.

BEST AVAILABLE DOCUMENT

Faint rales may be heard immediately following birth and normally clear in several hours.

3. Heart: Rate averages 130 beats per minute, but rates from 90-180 may be present for brief periods in normal infants. Transient murmurs are common.

E. Abdomen:

The abdomen is normally flat at birth but soon becomes more distended. Two arteries and one vein are usually present in the umbilical cord. The liver is palpable; the tip of the spleen can be felt in 10% of newborns. Both kidneys can and should be palpated. Bowel sounds are heard shortly after birth.

G. Genitalia:

Appearance in both sexes is dependent on gestational age. Edema is common.

1. Females: The labia minora and clitoris are covered by labia major in term neonates. A mucoid secretion from the vagina is a normal finding. Sometimes a newborn girl can have minimal menstruation, this is normal.

2. Males: Testes are in the scrotum normally.

3. Anus: Patency should be checked. Some passage of meconium usually occurs within the first 12 hours after birth.

I. Hips:

Dislocation is suspected if abduction of the thighs is limited. Test for dislocation as follows:

(1) Place the middle fingers over the outer thigh at the hip joint and the thumbs over the inner thigh the hip joint. Apply pressure against the joints and bring the thighs into abduction. A snap felt in abduction is

BEST AVAILABLE DOCUMENT

suggestive of dislocation, although a faint click is not uncommon during the first 24 hours after birth.

(2) With one hand, fix the pelvis, with the thighs abducted. Apply pressure with the thumb against the inner thigh, and feel for a snap as the head of the femur slips over the joint. (*3) Hold the femur and pull forward and push backward to see if it way pushed up past the hip joint.

J. Feet:
Many apparent abnormalities may be only the temporary result of intrauterine position. Clubfoot requires referral promptly.

K. Pulses:
These should be palpated in both the upper and lower extremities.

L. Neurologic Examination:
1. Neurologic development is dependent on gestational age.
2. Reflexes include: Moro, grasp, sucking, rooting, stepping, Babinski, deep tendon, and several others. These are all present at birth, and all except the deep tendon reflex disappear with time. These reflexes will be demonstrated in lecture.

MEASLES

Measles is a common viral disease. When it occurs in malnourished children, it can cause pneumonia or death.

The incubation period is about 10 days, and the first symptoms are universally runny nose, cough, and conjunctivitis. General adenopathy is common. After about 3-5 days of these cold symptoms the rash occurs, as a fine maculopapular, erythematous rash. It usually starts over the head and neck, and spreads over the whole body.

At first, the lesions are small and isolated, but over a few days tend to blend together (become confluent). The rash usually last about 3-5 days and disappears.

BEST AVAILABLE DOCUMENT

An unusual feature with the measles rash is the presence of Koplik spots inside the mouth. These are tiny white spots, over a bright red background present on the buccal mucosa. They occur 1-2 days before the rash appears, and usually disappear within the first one or two days of the rash. They occur only with measles.

Complications of measles include pneumonia, otitis media, and in severe cases encephalitis (infection of the brain tissue). Malnutrition is related to the severity of these problems. As measles is caused by a virus, no antibiotics will be helpful in treatment. The infection can occur in epidemics. The best prevention is vaccination. Unlike many illnesses, just one vaccination is sufficient to prevent measles.

RUBELLA (GERMAN MEASLES)

Rubella usually is a mild illness, and often is not even diagnosed in children. This disease is important because if it occurs in a pregnant woman it can cause severe malformation or death to the fetus. The incubation period is about 2 weeks.

The symptoms are usually low grade fever, malaise, mild URI symptoms, general lymphadenopathy, and a pink macular rash which lasts about 3-4 days. The adenopathy is usually postoccipital, and posterior cervical. Prevention is possible with a single vaccine, usually given at age 14 or 15.

6. Pertussis - Whooping Cough

Pertussis is caused by a bacteria transmitted by droplets from one person who is infected, to another who is susceptible. It is contagious from 1 week before to 3 weeks after the onset of the cough. It occurs in epidemics. It begins slowly as a mild URI with runny nose, sneezing, tearing, slight fever, and irritating cough. Within 2 weeks the cough becomes spasmodic and the child has difficulty breathing. Sometimes he coughs to the point of vomiting. He has a series of coughs during one expiration followed by a sudden keep inspiration with a characteristic sound, the whoop. Extensive secretions are common. The spasmodic stage may last 2 to 3 weeks and overall the duration may be 6 to 10 weeks. infants may not have the "whoop" but have the highest

BEST AVAILABLE DOCUMENT

mortality rate. Seventy percent of cases are under the age of 5 years.

Diagnosis is made by clinical course with paroxysmal cough. the WBC may by very high (20,000 - 60,000) with predominance of lymphocytes (often not in infants)

Treatment consists of nursing care and fluids (may need and IV). Erythromycin will be helpful only in the 1st week of illness but is used at 50 mg/kg/day in 4 divided doses to decrease the transmission to others.

Prevention is by the DPT series. The pertussis vaccine is a toxoid.

SCARLET FEVER

Scarlet fever is caused by a toxin released from Group A streptococci. Usually tonsillitis, or another strep infection, occurs about 2-7 days before the rash occurs. The rash is fine, with tiny papules which feel like sandpaper to the touch. The rash usually begins in the axilla, groin, and neck but becomes generalized within 24 hours. The face is not normally involved, but the cheeks are often scarlet red, hence the name. The tongue also has characteristic findings with a white coating and strawberry red dots (called white strawberry tongue). After the 5 days, the tongue often peels, leaving a strawberry appearance (called red strawberry tongue). The skin rash usually lasts a few days.

Treatment with Penicillin for 10 days is necessary to prevent rheumatic fever or glomerulonephritis.

TETANUS

Cause

- Bacteria in the soil that comes from animal faeces and enters the body through broken skin.
- Symptoms are caused by a toxin.
- Common in new born babies and sometimes mothers.

 BEST AVAILABLE DOCUMENT

Symptoms

-Initially - stiffness of the jaw: difficulty with swallowing

-Later - spasms of the face and neck and then the rest of the body.

-No loss of consciousness.

Signs

-No fever.

-Spasms that are easily provoked.

-Normal between spasms.

Investigations

-Take pulse, temperature and weight.

Treatment

-Clean all wounds very carefully, especially those contaminated by soil.

-Scrub tetanus prone wounds with HYDROGEN PEROXIDE and a soft brush.

-Debride away all dead tissue.

-PENICILLIN 500 mg for 10 days for dirty wounds or wounds more then 24 hours old.
Give A.T.S.

-For established tetanus:

-admit the patient

-DIAZEPAM 5-10 mg as necessary for spasms.

-Pay careful attention to the airway.

Complications

-Often fatal; pneumonia.

Prevention

-Clean all wounds thoroughly

-Cut the umbilical cord with a clean blade and dress it carefully every day.

-Show mothers how to care for wounds at home.

-Vaccinate all pregnant and children.

-Continue to feed sick children.

BEST AVAILABLE DOCUMENT

POLIOMYELITIS

Cause

-Virus spread mostly by coughing and sneezing, but also faecal contamination of food and water.

-Endemic in poor countries where everyone has had it by the age of 5.

-A mild disease in children; serious in adults.

Symptoms

-Has 4 different presentations;

-a URT infection

-GIT upset

-Fever with painful muscles and cramps

-Meningitis

Signs

-Fever with signs of the above.

Investigations

-Take pulse, temperature and weight.

-Monitor all children for malnutrition.

Treatment

-Rest in bed and move as little as possible for 2 weeks.

-ASPIRIN for pain and fever.

-Eat plenty of nutritious foods.

-DIAZEPAM to encourage rest.

-When the paralysis has stopped progressing, start gentle physiotherapy.

Prevention

-Cover the mouth when coughing and sneezing.

-Use spittoons for spitting.

-Wash hands with soap before eating and cooking.

-Use latrines and wash hands with soap afterwards.

-Vaccinate all children.

-Keep fingernails cut short.

-Continue to feed sick children.

BEST AVAILABLE DOCUMENT

MUMPS

Cause

-Virus spread by coughing and sneezing.

-Epidemic disease that is mild in children, but serious in adult males.

Symptoms

-Chills: headache, loss of appetite;

-Pain on chewing and swallowing; swelling of the face.

Signs

-Fever; tachycardia.

-Swelling of salivary glands in front of the ear and under the jaw.

Investigations

-Take pulse, temperature and weight.

Treatment

-As for all viruses:

-Rest in bed.

-Drink plenty of fluids and ORS

-ASPIRIN for pain and fever.

-Continue eating a soft diet.

-Keep breastfeeding babies.

-Show mothers how to sponge babies with high fever.

Complications

-Testicle pain and swelling in adult men.

-Meningitis.

-Abdomen pain with nausea and vomiting.

-Kidney, heart and joint pains.

-Sterility.

Prevention

-Cover the mouth when coughing and sneezing.

-Use a spittoon for spitting.

-Continue to feed sick children.

BEST AVAILABLE DOCUMENT

P.H.C.

Environmental Health

ENVIRONMENTAL HEALTH

Environment means all the effect and event which the human being is going to face.

Then: Environment includes all the external events which effect the human body growth and development, and behavior

It include four important parts:

1. Physical environment: which includes Water, Air, Food, Place, Weather and etc.

2. Biological-environment: which includes human being, animal, insects, parasites and etc.

3. Social environment: which includes social groups, families etc, and affect the behavior and psycological activities of the human

4. Economical - environment: which includes the life facilities and economic condition. The illnesses can also be included in this environments, because it is due to poverty that the illnesses are not able to be prevented or treated.

Environmental hygiene is part of public health, which studies the physical factors of the environment which affect the physical and psychological conditions of the society.

Essential needs of environmental Health:-

These include clean water, waste, and human exert appropriate disposal, control of human of diseases vectors, food hygiene, clean air, occupational and accidents prevention.

BEST AVAILABLE DOCUMENT

Relation of Health with Environment.

Health is related to environment:-

- Absence of adequate and clean water can causes many diseases like gastroenteritis disease etc.

- Inappropriate disposal of waste increase the number of mice, insects and flies.

- Migration from rural areas to urban areas and crowdness in the cities cause inappropriate collection of waste which increase the risk of infectious diseases.

Present condition of environmental health:-

Todays environment is faced with dirt extension and increasing. Due to increase in population and economical problems in the city the appropriate waste disposal is not enough, and this gives opportunity for infections and gatrointestinal diseases to increase.

A cooperation and heavy work of health responsibles and society leaders is needed to decrease this problem.

The environmental dirt problems which threatened life includes:-

1. natural sources: Like increase in population, and decrease of natural sources especially the increasing needs of people for water and natural sources like benzen etc.

2. Dangers of dirt:- This makes the air and water un-clean.

3. Dangers of smoke:
tubacco smoking directly, factories and vehicles smoke indirectly due to air pollution damage human health. these factors some times even cause animals and plants death.

4. Water population:- It is caused by different factors:

- Rapid increase in number of people (inhabitants).

BEST AVAILABLE DOCUMENT

- Water pollution by biological materials.
- Water pollution by chemical materials.
- Some materials like carbonydrates, faty materials and so on can absorb oxigen (O2) from water and cause water to be spoiled.

PRINCIPLES OF HEALTH AND DISEASE

WATER SUPPLY

Every society is in need of safe and uncontaminated water. Water-work technologists must be skilled and must know about the society and social conditions. The clean water which is provided must be cheap and accepted by the society.

USE OF WATER

Water is required for many purposes. On the domestic front, it is required for drinking, cooking, washing, bathing, public cleansing, firefighting, maintenance of public gardens, industrial and agricultural purposes.

SOURCES OF WATER

Sources of water are rain, surface water (rivers and streams, impounding reservoirs, ponds and lakes), and ground water (wells and springs).

RAIN WATER

Rain water is the cleanest water. It tends to become impure as it passes through the atmosphere. it may get contaminated on roofs or in storage places and tanks.

SURFACE WATER

The source of surface water becomes contaminated with human and animal feces. Before use, this water must be cleaned and purified.

Five to 10 gallons of water is required by every person daily. In developed and industrial, 40-100 gallons of water or more is necessary.

BEST AVAILABLE DOCUMENT

SAFE WATER

Water should be cleaned of harmful chemical and biological matter. Water should be transparent and soft; everyone should like it.

There are 5 categories of water based on its relationship to disease:

GROUP I: Water has a very important role in the transmission of such diseases as cholera, typhoid, viral hepatitis.

GROUP II: Diseases which are present in the water temporarily, e.g. trachoma and skin diseases.

GROUP III Diseases of surrounding of water, e.g. schistosomiasis, guinea worm (dracunculus medinensis).

GROUP IV: Diseases carried by water orthnopodes, e.g. malaria.

GROUP V: Increased or decreased amount of fluoride as a basic chemical entity.

WATER HYGIENE

Protection of the water supply, especially from contamination from human feces, is vital. Human feces is an important source of pathogenic microorganisms. Carriers of parasites and the ova of worms should not come in contact with water.

WATER STORAGE

Human and animal wastes and feces must be kept away from the water storage tanks. Certain microorganisms, pathogenic to human beings can live in water for a short time and then are destroyed. Cysts of amoeba histolytica can live for a long time in water.

WATER PURIFICATION

Water can be purified by different methods: coagulation and sedimentation, filtration, chemical disinfection, and boil[illegible]

Coagulation and sedimentation: By [illegible] substance called alum, the suspended substances coagulate and, due to their heaviness, sedimentation occurs. In the upper portion, clean and transparent water remains.

BEST AVAILABLE DOCUMENT

Filtration: There are many methods of filtration of water. for this purpose, a thick cotton cloth can be used. Cyclops, a parasite in water, can be removed in this manner.

Sand Filter: In the structure of this filter, there is a bed of graded sand below which are small stones. The suspended matter remains in the sand, and water drains out from below. The simple filter which is used for domestic purposes is called candy's filter, which is made of clay.

With the help of filtration, bacteria, parasitic cysts and relatively larger particles are removed from water. Only viruses remain, which have the ability to pass through the filter by virtue of their small size. To make the best use of filters, they must be kept clean and under medical supervision.

Persons lifting water from a well themselves contaminate the water. it is necessary for them to receive health education so that their conduct improves.

Chemical disinfection: Chlorination is a good method, and in medicine, its use is vast. Chlorine as gas is used in large cities. Solid salt ($CaCl_2$) calcium chloride (bleaching powder), in liquid from bleach or hypochlorite are used. Super-chlorination is also used for disinfection of water.

Super-chlorination followed by dechlorination comprises the addition of large doses and removal of excess chlorine after disinfection. This method is applicable to heavily polluted water whose quality fluctuates greatly.

Uses of chlorine: Chlorine has the property of killing germs. It is a germicidal, and it is used to destroy algae in dirty ponds. After adding chlorine, some amount remains in the water which kills bacteria. 0.5 mg. is the dosage of chlorine in one liter of water.

Selection of chlorine as a disinfecting agent: Liquid chlorine is supplied in watery solution. bleaching powder whose crystals are of a relatively bigger size and stable. Bleaching powder must be kept in a metal box which does not rust and is

BEST AVAILABLE DOCUMENT

resistant to corrosive material. The place should be cold and dark. The available chlorine from this compound is 25%. This should be freshly prepared at the time of use.

Strong hypochlorite: This substance is more stable than bleaching powder. The available chlorine is 60-70%. It is used in emergencies when large amounts of chlorine are required.

Before chlorination, the instrument utilized for this purpose must be disinfected.

Contaminated well-surroundings should be washed with a solution of calcium chloride made of 50 gm, in 100 liters of water. the area must be properly scrubbed. Before chlorination, the quantity of water in a well is calculated, and then solution of calcium chloride is added. The solution which is added to the water must be 50 mgs, in 100 liters of water. The contact period should be 12 hours, Then by means of a pump, the whole quantity of water is removed from the well. The water of this well is suitable for use.

Boiling: This is a sure method for the destruction of pathogens. this is used for individual and home purposes. When an apidemic of infection erupts, boiled water is used. Children should always be given boiled water. For their feeding, boiled water must be used.

HARMFUL CHEMICAL SUBSTANCES:

Chemical substances harmful to the body must not be present in the water. Following is the concentration of substances which are not harmful to the body.

If the concentration of fluoride in water is more than the normal concentration (i.e. 1.5 mg. in one liter of water), it will cause fluorosis of the teeth and the skeleton. if the concentration of fluoride in the water is less than a minimum of 0.5 mg. per liter, dental caries will occur. To avoid both these extremes, 1 mg. of fluoride in one liter of water is regarded as safe.

BEST AVAILABLE DOCUMENT

Getting rid of waste

Every household produces waste (or rubbish) from cooking, eating, sweeping, cleaning, and other work. It this rubbish is left lying around the house it becomes dangerous. In hot climates it should be removed daily.

To stay healthy, a household must get rid of its waste safely.

Learning objectives

After studying this unit you should be able to:

1. Tell the people which main health problems are caused by unsafe ways of getting rid of waste,

2. Find out how families get rid of their household waste.

3. Discuss with them whether what they do is safe and how to make it safer.

4. Propose to the village chief or committee what might be done by the whole community and by individual households to get rid of household waste properly.

Main health problems caused by waste:

When waste is left lying around it makes the area look dirty and it produces a bad smell. It also attracts flies and rats and other animals which can carry disease germs to the people. For example, if flies that have been sitting on dirty waste sit on food, the people who eat the food can become ill.

If waste is left to rot near a river, pond, well or spring there is the danger that it will come into contact with the drinking-water and make it dirty. When people drink this dirty water they can get diarrhoea and other diseases.

BEST AVAILABLE DOCUMENT

If children get hurt when playing with waste or near it, their wounds can become badly infected.

Therefore, waste must never be left lying around. It should be got rid of safely. Find out where people throw their waste, discuss with them what they do, and suggest what action to take.

Dumping waste in a common pit:

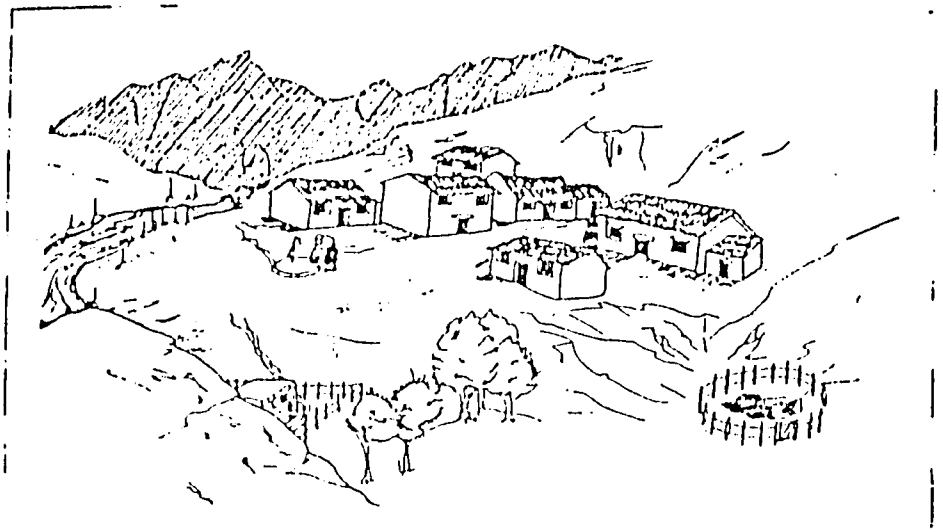
In most villages there is a common pit where people throw their waste. This pit should be properly protected from animals and flies in order to prevent disease in the community. A common pit is properly placed and protected if:

- It is outside the village and at least 20 metres away from the nearest house
- It is in a hollow and not on a hill
- It is at least 100 metres away from any river, well or spring
- There is a fence around it
- The waste is piled up in a hole and not scattered around
- The waste is kept covered with earth at least 2 or 3 cm deep
- Surface water cannot run into it.

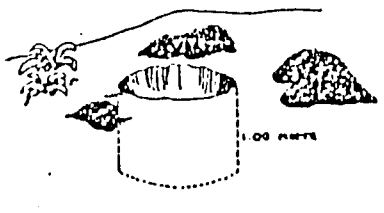
If the pit is not being properly used, discuss with the chief how the village can have a good common pit. once proper arrangements are made, see whether it is being properly used by visiting it regularly.

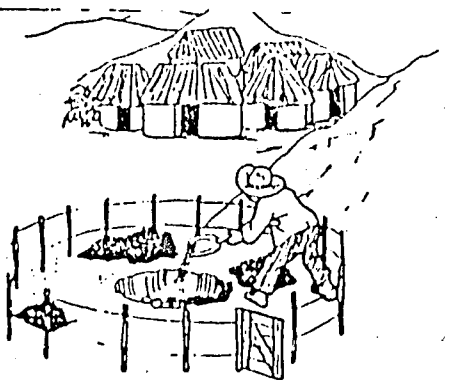
Promoting a healthy environment in the community.

BEST AVAILABLE DOCUMENT



A well-placed common pit: a common pit should be at least 20 metres from the nearest house and 100 metres from any river. well or suing





Dig the hole 1 metre deep

Fill hole with waste

Dig the hole 1 metre deep

Fill hole with waste

Cover with earth

Then cover with leaves

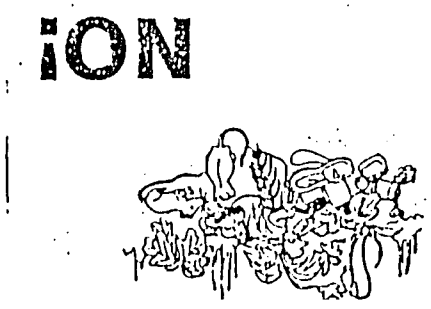
Cover with earth

Then cover with leaves

BEST AVAILABLE DOCUMENT

When there is no common pit:

(1) If people throw waste around their house, this can be dangerous. People can get diarrhoea and other diseases if the waste is left rotting round the house. You should discuss this matter with the people and the village chief, and try to get a common pit ready as soon as possible. Make sure that the common pit is safe and well protected (see previous sections on dumping of waste in a common pit). It will be useful to ask you supervisor to come and advise on how to dig a pit or on other ways of disposing of and burning waste.



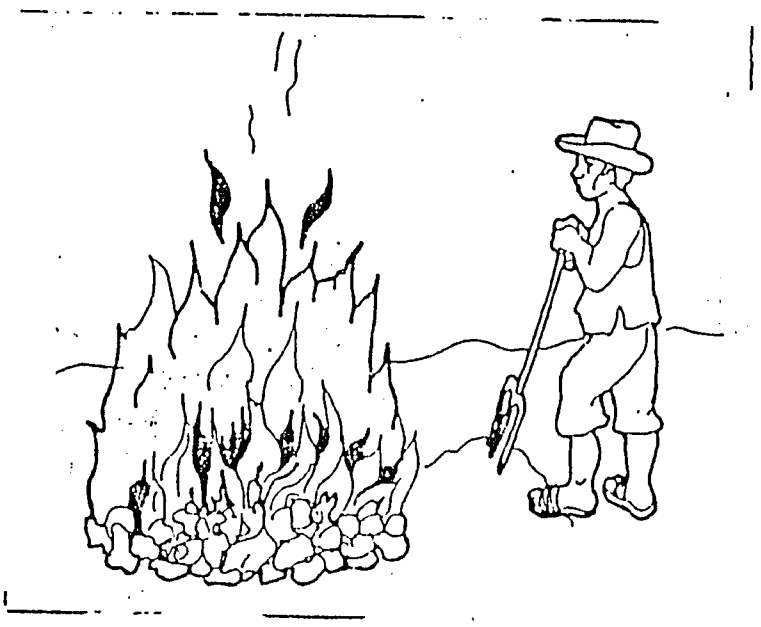
(2) If people through waste near a river, well or spring or near a drain that flows into the river, there is a danger that the water may become dirty. If people drink such dirty water they may become ill. Discuss this problem with the village chief and your supervisor. Try to get a common pit dug. Make sure it is used properly,

BEST AVAILABLE DOCUMENT

Other suggestions you can make for getting rid of waste

(1) Bury the waste in a hole at a safe distance from the houses and from sources of drinking-water.

(2) Collect the waste in a container or make a neat heap of it and burn it once a week away from the village to avoid problems of smoke and smell.



(3) If the waste that comes from plants (leaves, vegetable, fruit, roots) is put into a separate hole or heap (and if possible mixed with soil), it will soon become compost, which can be used as fertilizer for growing vegetables and other plants. If there is an agricultural extension worker in the community, discuss with him how to make compost and how he can help you in persuading households to make it.

BEST AVAILABLE DOCUMENT

Disposal of excreta: latrines

People who have diarrhoea, cholera, or worms pass these diseases on through their faeces. Like waste, faeces attract flies and animals. Flies that land on faeces that contain germs can carry these germs to food, and people who eat such food may fall ill. Therefore, people should not be careless about where they defecate.

If people defecate near a river or spring there is a danger that the water can become dirty, and that people drinking this water may then fall ill.

To prevent the diseases that are spread through faeces, people should not defecate in places where other people, flies, animals and birds can touch the faeces, or where water can be contaminated.

Every household should have a latrine of its own.

If human excreta is left in a pit for 2-3 months it turns into fertilizer. This can be used in the fields to grow plants. If you want to know more about this, ask your supervisor.

Learning objectives

After studying this unit you should be able to:

1. Find out where the village people go to defecate.

2. Discuss with the people why it is dangerous to defecate just anywhere, why a household should build a latrine, and how to do so.

3. Help households to build their own latrines and make sure they use and maintain them properly.

4. Show the people how a latrine should be properly used and maintained.

BEST AVAILABLE DOCUMENT

The problem

Some people in your community defecate carelessly in the open. Other do not keep their latrines clean. Many children and other people are suffering from diseases that are carried by faeces. the people do not know that the way they defecate causes diseases to spread. What do you do?

First find out where the villagers go to defecate, then discuss why it is dangerous to defecate just anywhere. The following actions can be taken depending upon the situation in your community.

When people have no latrines

If people defecate around their houses

There is a danger of disease from faeces, particularly when people defecate less than 20 metres away from the house or on the paths that lead to the house.

- Advise the head of the household to tell the family to defecate in a latrine or, if they have no latrine, to defecate in the fields away from the house.

- Ask for the help of the village chief. He may speak to the people about the problem. If he wants the people to build latrines, ask your supervisor for help. Afterwards make sure that the latrine are being used properly.

If people defecate in the river:

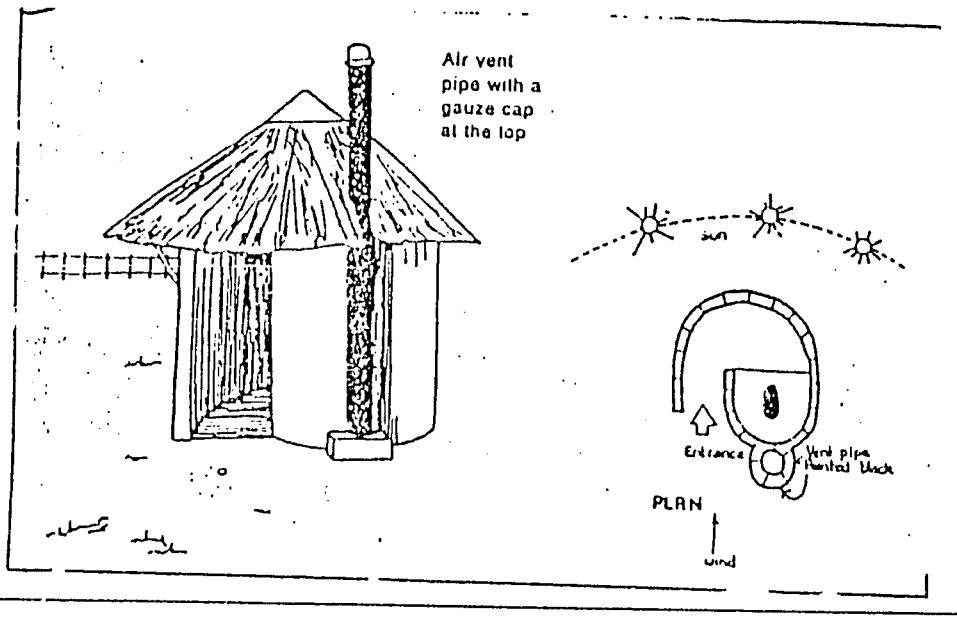
The river water becomes dirty and dangerous when people defecate in it. Tell the people not to defecate.

- in the river
- within 20 metres of the river
- on the path leading to the river.

If people continue to do so in spite of your telling them not to, ask the village chief to help in persuading the people to build latrines and not to defecate in or around the river.

BEST AVAILABLE DOCUMENT

Air vent pipe with a gauze cap at the top



<u>If people defecate in the fields or the forest:</u>

There is not much danger of disease if people defecate in the fields or the forest, provided that:

- people defecate at least 20 metres away from any house, spring, well, river, etc.

- people defecate far away from any path or track.

In the open, it is better to defecate in sunny places rather than in the shade. the sun can kill the germs in the faeces. People should not defecate in agricultural fields.

Remember, it is always best to use a latrine, if possible.

When you, is have latrines but do not use them properly.

Advise the head of the household to:

- make sure that no faeces ar left on the slab (cover) of the latrines

BEST AVAILABLE DOCUMENT

- have the latrine scrubbed and cleaned regularly with water.

Check from time to time to see whether the people are keeping their latrines clean.

<u>When people use latrines properly:</u>

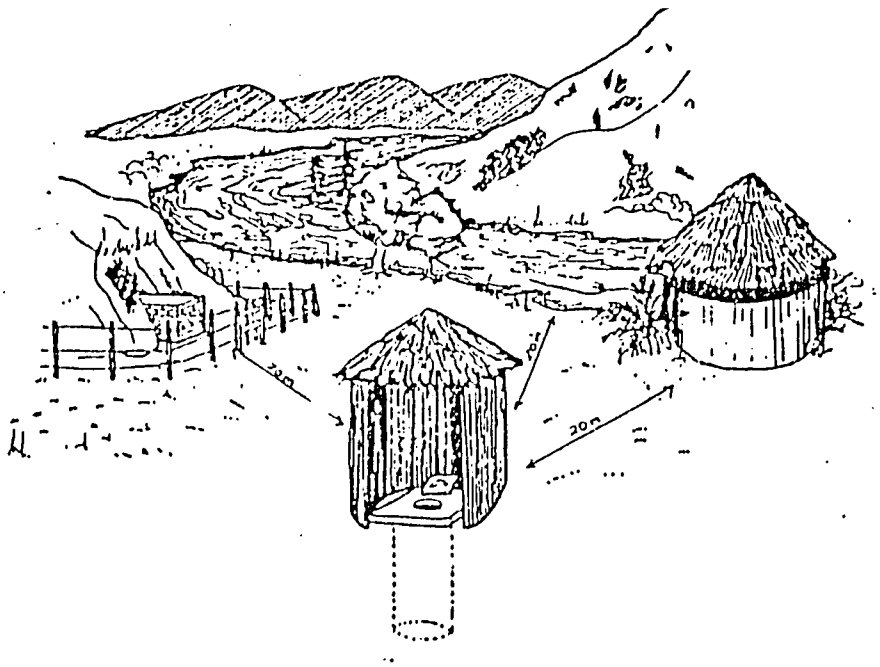
Even when people are careful and use their latrines properly, their children may suffer from diseases spread by faeces because other people defecate carelessly. People who use latrines properly may be able to help you in showing other people how to make latrines and use them properly.

When is a latrine properly built?

A proper latrine has the following features:

- It is downhill and more than 20 metres away from the water supply (well, river, borehole, spring, pond).

- It is at least 20 metres away from the house.



BEST AVAILABLE DOCUMENT

* It has a pit at least 1 metre deep.

* It has a slab (cover) over the pit made of concrete (best) or wood ; the slab has a hole through which faeces and urine can drop. The hole should be small enough so that children too can use the latrine,but it should be large enough for faeces and urine to fall through it. The hole should have a cover.

* It has walls and a roof made of materials that are easy to get and cheap to buy and repair

* It is kept clean (A separate broom and water bucket should be kept for cleaning the latrine. water for washing or leaves or paper for cleaning oneself should also be kept in the latrine.

Other types of latrines can also be built , depending on local conditions. You should discuss this with your supervisor.

When is a latrine properly used

A latrine is properly used when

* everyone in the household uses it
* It is kept clean and the floor and the slab are washed often
* the pit is kept covered when the latrine is not being used
* materials for personal cleaning are always available (Water,leaves, paper)
* the pit ia emptied or a new one is dug when the pit is full.

When a new pit is dug , the latrine is moved to the new site. The earth from the new pit is used to cover the old one ,but the same slab is used to keep the new pit covered.

BEST AVAILABLE DOCUMENT

Always remember!

1 TO avoid diseases carried by faeces, people should defecate in a latrine.

2 When there are no latrines, people may defecate in a hole for away from the house and from the water supply (village well, river spring or pond). Cover the hole with earth after defecating.

3 Always wash hands with soap and water after defecating.

PERSONAL HYGIENE

Personal hygiene means the things we do for ourselves that project our health and the health of others. Keeping ourselves clean one of the important thing we do for good personal hygiene.

Good personal hygiene helps us to be healthy in many ways-

A. It protects the individual from disease microbes that are around us in the things we do daily.

B It stops sickness from being passed from one person to another.

C It improves the strength of a person physically and mentally

Some of the things the individual can do to prevent sickness and stay strong physically are.

A Personal cleanliness
B Care of the mouth and teeth
C Care of the feet
D Clean food and drink
E Exercise

 BEST AVAILABLE DOCUMENT

F Rest and activities for relaxation
G Protection against disease-carrying insects
H Protection against the elements.
I Avoidance of the sources of disease.
J Special protective measures.
K Cultivation of a healthy mind.
L Rules for avoiding illness i n the field.

Personal Cleanliness:

Before people knew of the existence of microbes, people themselves clean for their own reasons or to be attractive to other people. Now we know the medical reasons for keeping clean. The microbes that cause disease and dirtiness go together, hand-in hand . Keeping the body clean is one of the easiest ways to prevent disease.

1 Skin -The body should be frequently washed with soap and water . If a tub or shower is not available ,the body should be correctly washed with a cloth and soapy water. Correct washing means that the face, the ears, the hands the feet and the sexual organs are carefully cleaned. Skin problems such as cuts abrasions, and infections should be treated quickly and correctly.

2 Hair - The hair and scalp should be carefully washed with soap and water at least once a week. Combs, brushes and razors should not be shared with other persons.

3. Hands - Fingernails should be kept closely cut and clean. The hands should be washed with soap and water after any dirty work, after each visit to the latrine and before touching food or those things we use for preparing food. The habits of nose-picking, nail-biting and unnecessary scratching will cause contamination of the hands and of the things later touched by the hands. These habits, which are unpleasant to see and unhealthy for the individual, should be controlled. Fingers and other contaminated objects should be kept out of to mouth. Coughs and sneezes should be smothered in a tissue or handkerchief, or at least directed away from other persons.

BEST AVAILABLE DOCUMENT

4. Care of the Mouth and the Teeth - Regular and proper cleaning of the mouth and the teeth prevent tooth decay and gum disease, both of these problems cause the individual severe pain and loss of teeth. The most healthful oral hygiene, which should be practiced whenever possible, is to cleanse the mouth and teeth carefully after each meal with a toothbrush to remove food which has stuck between the teeth.

In the absence of a toothbrush, twigs cut from a tree and chewed on the end to resemble a toothbrush can be used. Twigs can also be cut in the form of toothpicks for use in removing material caught between the teeth. If necessary, pieces of clean cloth can be used to wipe away food debris which has collected on the teeth. Rubbing the gum tissues vigorously with a clean finger cause them to be more healthy.

5. Care of the Feet - Care of the feet is important to health and to be physically fit. The feet should be washed daily and dried carefully, especially between the toes. If the feet are wet from sweating, foot powder can help prevent problems if it is changed often enough that the powder stays dry.

Common Foot Troubles. blisters, painful areas, ingrown toenails and fungus infections are the most common causes of foot trouble.

a. Blisters can usually be prevented by wearing properly fitted shoes and socks.

b. Ingrown toenails are infections of the toes which develop when nails are improperly cut. A person should trim his toenails straight across rather than following the shape of his toes. If tenderness develops in the nailbed or along the edge of the nail, he should get medical help without waiting too long.

c. Athlete's foot (fungal infection) is the most common infection of the feet. It can be prevented by proper care of the feet.

BEST AVAILABLE DOCUMENT

Clothing and Bedding:

Clothing easily becomes contaminated with any disease germs that may be present in the stool, in the urine, or in fluids of the nose and throat. outer clothing should be washed or cleaned when it becomes dirty. Shaking of clothing followed by a 2-hour airing and sunning will greatly reduce the number of disease germs on it. The shaking should always be done out of doors. At least once a week the bed sheets should be washed and changed; and the blankets, pillows and mattresses should be aired and shunned.

Food and Drink:

For good health. the body needs different kinds of food. these include protein for strong muscles, fat and sugars (carbohydrates) for energy, minerals for blood and bone, vitamins and water. A person has all they need of these things with normal meals. Sometimes in special circumstances it is necessary to add salt or vitamins. Fluids such as milk and fruit juices are also good for health.

for more information on how to make sure your food and drink are pure and safe, see the Sanitation Section.

Rest and Recreation:

We must rest at night to return to full physical and mental strength. Seven or eight hours of sleep each night is good. In difficult times and places it is also important to try to obtain rest whenever possible.

BEST AVAILABLE DOCUMENT

PRINCIPLES OF HEALTH AND DISEASE

INSECT/RODENT CONTROL

INDIRECT DISEASE TRANSMISSION

Before discussing vector control, we will speak of disease transmission by indirect means as a general topic. four things play a very important role in disease transmission, i.e. water, milk, food items, fecal matter and urine, etc.

PREVENTION OF WATER-BORNE DISEASES:

Disinfection of water and access to safe drinking water in places where there is danger of infection will prevent water born disease.

CONTROL OF WATER-BORNE DISEASES:

Control of water-borne illnesses in easy. We can prevent transmission of these diseases if we keep in mind the following points:

- High level control of food hygiene.
- Not permitting ill individuals to carry food items.
- Special attention to the personal hygiene of people engaged in the processing and handling of food articles.
- Handwashing with soap and water.
- Care of food substances - not to come in contact with flies, mice, vermin, and other living creatures.
- Proper disposal of excreta will stop disease transmission by the fecal-oral route. These substances are vomitus, feces, urine, etc.

BEST AVAILABLE DOCUMENT

In short, control of vehicle transmission implies control of the physical environment of human beings.

INSECT CONTROL

The most important vectors which transmit diseases are mosquitoes, flies, fleas, lice and ticks.

TRANSMISSION OF DISEASE BY THE HOUSE FLY:

The house fly is a potential vector of many disease: typhoid and paratyphoid fevers, diarrheas and dysenteries, cholera and gastroenteritis, amoebiasis, helminths infestations, poliomyelitis, conjunctivitis, viral hepatitis, trachoma, anthrax, yaws. In fact, most diseases that can be spread by mechanical transmission can be transmitted by flies.

Two methods of transmission are known: mechanical and biological. In the former, microorganisms are transmitted on their feet and hairy legs. In the latter, the regurgitated stomach contents is a rich bacterial source.

TRANSMISSION OF DISEASE BY OTHER INSECTS:

Mosquitoes are important in the transmission of malaria and viral encephalitis. The important disease transmitted by sandfly or phlebotomus is oriental sore. fleas transmit typhus and plague. Epidemic typhus is transmitted by the louse. Ticks are the reservoir of the agent of rocky mountain spotted fever and tularemia, etc. Ticks transmit certain other viral illnesses first to monkeys, then to other animals and finally to man.

CONTROL OF ORTHROPODS:

The following methods are used for control of orthropods:

- To eliminate their breeding places and destruction of other means which help the insects live and nourish. Abolition of domestic and peri-domestic sources (e.g. open ditches and cesspools) which are breeding places of mosquitoes.
- human excreta should be immediately disposed of to safe places. disinfection of the same, using chemicals and their burial.
- Safe drinking water for members of the society.
- Environmental sanitation and presonal hygiene.

 BEST AVAILABLE DOCUMENT

- Protection of food not to come in contact with flies and eradication of adult insects. This is accomplished by using insecticides in breeding places. This is also known as chemical control.
- Insecticides that are used against the insects are: DDT, BHC (HCH), chlordane, malthio, pyrethrum, etc.
- Genetic control. The sterile male technique for mosquitos to prevent reproduction. This requires a special technique. Chromosomal translocation is another technique that brings about change in the sexual form.
- The use of larvivorous fish, especially grambusia, is a biological method well-known in mosquito control.

INSECTICIDES:

Insecticides are substances which are used to kill insects. These poisonous substances act on the nervous and digestive systems of insects when they come in contact with insecticides. They are either natural or synthetic. Natural substances which are produced from plants are mineral oils and pyrethrum.

Pyrethrum: This is derived from a plant. There are 4 types of synthetic pyrethroids. it affects the nervous system and is available in 2 forms: powder and spray. Both types are used against the insects. They kill the insect in a short time. The action is not persistent. That is why it is used mixed with DDT. Pyrethrum is used against those insects which are resistant to DDT or other insecticides.

Chlordane: It is a brown liquid and its poisonous influence on insects is more than DDT. It is used to destroy ants and butterflies.

Aldring Endrim: Often used to kill insects associated with plants.

Diazinon: It is a brown volatile liquid. It is used as a 0.5% solution. It has proved effectiveness against DDT-resistant insects.

BEST AVAILABLE DOCUMENT

Malathion: The technical product is a yellow or clear brown liquid with a unpleasant smell. Its 5% solution is used and its action persists up to 3 months. It is used as larvicidal mosquitoes. In cracks and crevices in which eggs are laid down, malathion is used.

DDT: It is a white amorphous powder with a milk but not unpleasant smell. It is insoluble in water, but dissolves in most organic solvents. the residual action may last 3-6 months. One hundred (100) to 200 mgs. are spread per square food as 10% or 5% solution. It acts on the nervous system of the insect and causes paralysis of the legs. This DDT dosage does not cause immediate death but rather kills over a period of several hours. To some extent, DDT also influences the human body, especially with adverse effects to the bone marrow, liver, and the nervous system (producing tremors).

Recently it has been proved that insects have acquired resistance against DDT. According to epidemiological surveys, this is the reason for the resurgence of malaria as the anopheles mosquitoes have acquired resistance to DDT. But this substance is still used.

Grammexane: This is a white or chocolate colored powder with a musty smell. It is more insecticidal than DDT, though its action is not as prolonged as DDT. A 5% solution is used against fleas and flies.

Dieldrin: This is a solid having a white color and is odorless. It has an intense and rapid effect on insects. It is used against DDT-resistant insects.

methoxychlor: This is less poisonous and is in powder form that possesses a chocolate color. A 5% powder is used to kill flies and bugs.

RODENT CONTROL:

Rodents are part of man's environment, and some of them live in close association with man. They are not only a hazard to health but also cause great damage to buildings, food stuffs and other commodities.

AVAILABLE DOCUMENT

Rodents may be classified into two groups: domestic and wild. Those living in close association with man are house mice (muc musculus). Ratus is a domestic animal which can infest stores.

RODENTS AND DISEASE:

A number of diseases are associated with rodents. Broadly, these are bacterial (plague, tulenemia, salmonellosis), viral (encephalitis, rickettsial scrub typhus, murine typhus, rickettsial pox), and parasitic (leishmaniosis, amoebiasis, chagas disease).

The mode of transmission may be directly through rat bite, and some through contamination of food or water. Plague is transmitted through infected fleas and mice after flea bites. For control of transmission and occurrence of epidemics, persistent antirodent measures should be taken.

ANTIRODENT MEASURES:

Sanitation measures: Sound environmental sanitation is the most effective weapon in a deratization campaign. Rats require food, water and shelter. If these are denied, rats will naturally decrease in density. The environmental sanitation measures comprise:

- Proper storage, collection and disposal of garbage.
- Proper storage of food stuffs.
- Construction of rat-proof buildings and godowns or warehouses.
- Elimination of rat burrows by blocking them with cement.

Rodenticides must be used with extreme caution. Trapping is a simple method of controlling rats and mice.

Rodenticides: These are substances which have different mechanisms of action. They kill the rodents and are poisonous. The following are important rodenticides in common use:

- Barium carbonate (BuCO3). This is a white tasteless powder and is cheap and plentiful. It is mixed with wheat or rice flour in the ratio of one part to four parts of flour. The mixed

BEST AVAILABLE DOCUMENT

material is moistened with water and make into small round marbles. The poisoned bats are placed near the rat burrows and in dark, secluded places. On eating the pills, the rats are killed in 2 to 24 hours.

Zinc phosphide. This is an efficient rodenticide. When moist, the chemical slowly gives of phosphine, whose garlis odor is repellent to man and domestic animals, but seems to have no adverse effect on them. Zinc phosphide is used in a ratio of one part to ten parts of wheat or rice flour and mixed with a few drops of edible oil in order to render it more attractive to rats. rats are killed within three hours. The use of rubber gloves is recommended in handling zinc phosphide, as it is highly poisonous.

- Warfarin. This is a substance used for the purpose of anticoagulation in medicine. After ingestion of this substance, the animal suffers internal hemorrhages and dies within two days. Difacinon (the original text is to be referred to please) is used in the same way.

- Fumigants. Fumigation is an effective method of destroying both rats and rat-fleas. The most important fumigant used in anti-rat campaigns is calcium cyanide (cyanogos). This chemical is prepared in form and is pumped into rat burrows by a special pump after closing the exit opening, and the burrow is promptly sealed with wet mud. On contact with moisture, the cyanogos powder gives off hydrogen cyanide gas which is lethal to both rats and their fleas. Great care is necessary in using cyanages because it is extremely dangerous.

 BEST AVAILABLE DOCUMENT

BACTERIAL INFECTIONS

IMPETIGO

Impetigo is a very common contagious disease usually seen in children under 10 years.

Signs and Symptoms

- the skin has yellow-brown crusty scabs
- fever is unusual but can occur
- be sure to check the scalp and all covered body parts.

Treatment.

- Clean the skin with soap and water - remove the scabs and instruct the parents to do so each day.
- GENTIAN VIOLET-2 times/day for 10 days.
- No improvement in 3 days: ad appearance of fever lymphnodes enlargement ad deterioration of patient: PENICILLIN tablets - normal dose for 7 days.

CELLULITIS

Cellulitis is bacterial infection of the skin and soft tissue.

Signs and Symptoms.

- the skin is red, hot and painful
- swelling is common
- lymph nodes in the area may be enlarged and tender
- there may be fever,chills and malaise

Note: in cases of cellulitis without a break in the skin evaluate for the presence of fluctuence (see abscess).

BEST AVAILABLE DOCUMENT

Treatment.

-Elevate infected area when possible (above the heart)

- PENICILLIN tablets, high does for 7 days.

- If FEVER > 39 degrees or FACIAL CELLULITIS use CHLORAMPHENICOL tablets, high does for 3 days. Then reduce to normal does for a total of 7 days.

(Exception: In northern areas, you may see cellulitis of the face with a central, painless, black (necrotic) area. This is highly suspicious for Anthrax and should be treated for a total of 10 days

- If patient requires IV medication but you are unable to establish an IV: give PROCAINE PENICILLIN, normal dose until fever is gone, then PENICILLIN tablets, normal does for 7 days.

- PARACETAMOL for pain and fever.

Note: If the patient returns because the cellulitis is no better:

- Check for abscess
- If no abscess and the patient has been taking PENICILLIN as prescribed, change antibiotics to CHLORAMPHENICOL tablets normal does for 7 days.

ABSCESS

An abscess is a collection of pus usually located under the skin. Unless it is very deep, there will be associated cellulitis (swollen, red, painful skin). When you see cellulitis, always check for abscess.

Abscesses are the most common surgical problem seen in Afghanistan. They are often caused by intramuscular injections with dirty needles or unsterile technique. Patients with multiple abscesses may be suffering from malnutrition. Both history and general condition are important in the evaluation of abscesses.

BEST AVAILABLE DOCUMENT

C.M.C.E.P. II.
(ENGLISH)

COMBINED CONTINUING EDUCATION PROGRAM (CMCEP)

PHC & MCH.

COMMON DISEASES & NURSING

SKILLS

HEALTH SYSTEM MANAGEMENT, FIRST AID, ANATOMY & PHYSIOLOGY, MIDLEVEL HEALTH WORKER SKILLS KNOWLEDGE

DEVELOPED BY:

WHO, IPH(MOPH), IMC, MCI, MSH & SCA

FUNDED BY: U.S.A.I.D.

BEST AVAILABLE DOCUMENT

USAID 368

(If these don't work, give HYDROCORTISONE 1% cream and apply thinly BD while the reaction is acute. DO NOT use for more than 2 weeks!)

Complications

- Bacterial infections from scratching and in areas such as the groin.

Prevention

- Find out and avoid provoking factors.
- Treat the acute phase promptly at home.
- Keep nails cut short.
- Tie babies hands with cloth to prevent scratching.

FUNGAL SKIN INFECTION

Fungal skin infections are common and can become chronic if not properly treated. Skin, hair, nails and mucous membranes can be affected.

SCALP - TINEA

Signs and Symptoms

- scaling is common
- itching is common
- affected scalp can become thickened and red
- one or more areas with broken or lost hair

Treatment

- Mild cases
  - Wash affected areas with soap.
  - Apply GENTIAN VIOLET 2 times/day for 3 weeks
- Severe cases
  - Wash affected areas with soap
  - GRISEOFULVIN (500 mg tablets) 6 tablets (3.0 gm) by mouth as a single dose.
  - Follow-up in 4 weeks - if there is growth of the lesions, repeat the GRISEOFULVIN.

BEST AVAILABLE DOCUMENT

BODY AND SKIN FOLDS - CANDIDA

Signs and Symptoms

- well-demarcated red patches
- itching is common
- scaling is common

Treatment

- Wash with soap and keep dry
- GENTIAN VIOLET 2 times/day for 3 weeks.

GANGRENE.

Gangrene is necrosis or death of tissue. It is usually due to deficient or absent blood supply to the tissue. It is commonly a result of frostbite; crushing injuries; diseases such as diabetes; and inflammatory diseases/infections. Gangrene commonly occurs on the feet and toes.

Signs and symptoms:

- no pulse in the affected area
- skin may be bronze, brown or black color
- skin may be intact and dry, or open and wet
- may also have infection present
- in advanced stages, toes/tissue may actually fall off
- may have foul smell from area
- will be no pain in the dead tissue areas

Treatment.

- Before healing can take place, all dead tissue/matter must be removed. The wound must be thoroughly debrided, and overlying skin should be incised widely. All dead tissue must be cut away till only tissue that bleeds is left. Repeated debridement is often necessary.
- Refer to hospital surgical treatment-amputation, skin graft, etc may be necessary.

BEST AVAILABLE DOCUMENT

GAS GANGRENE

GAS GANGRENE IS CAUSED BY A CERTAIN TYPE OF BACTERIA CONTAMINATING A WOUND THAT CONTAINS DEAD TISSUE. IT IS FREQUENTLY FATAL. TO PREVENT THIS DISEASE ALL DEAD TISSUE MUST BE DEBRIDED FROM WOUNDS.

SYMPTOMS/SIONS.

- THIS IS RAPIDLY PROGRESSIVE DISEASE WITH SUDDEN ONSET AND MARKED INCREASE IN WOUND PAIN. THE WOUND BECOMES SWOLLEN AND SURROUNDING SKIN PALE. THIS IS FOLLOWED BY DISCHARGE OF BROWN TO BLOOD- TINGED, SEROUS FLUID FROM THE WOUND.

- AS THE DISEASE ADVANCES, THE SURROUNDING TISSUE CHANGES FROM PALE TO DEEPLY DISCOLORED AND HAS RED, FLUID FILLED BLISTERS.

- THERE MAY BE GAS IN THE TISSUES WHICH MAY MAKE A CRACKLING SOUND WHEN THE AREA IS TOUCHED.

- THE PATIENT MAY EVENTUALLY GO INTO A COMA (BE UNCONSCIOUS AND UNRESPONSIVE) AND DIE.

TREATMENT.

- BEGIN TREATMENT WITH PROCAINE PENICILLIN 1.2 MILLION UNITS IM. THEN GIVE PENICILLINY 500 MG BY MOUTH EVERY 3 HOURS FOR 10-14 DAYS (ADULT DOSE)

- ALTERNATE DRUGS; CHLORAMPHENICOL 500 MG EVERY 3 HOURS BY MOUTH.

- DEBRIDE THE WOUND THOROUGHLY. OVERLYING SKIN SHOULD BE INCISED WIDELY AND ALL DEAD TISSUE REMOVED. REPEATED DEBRIDEMENT IS OFTEN NECESSARY.

REFER TO HOSPITAL IF POSSIBLE.

PREVENTION

PROPER DEBRIDEMENT OF ALL DEAD TISSUE PREVENTS GAS GANGRENE. ALL DEAD TISSUE MUST BE CUT AWAY TILL ONLY TISSUE THAT BLEEDS IS LEFT.

BEST AVAILABLE DOCUMENT

DERMATITIS/ECZEMA

Cause

- Dermatitis is caused by contact with certain toxic substances or by eating something that causes allergic reaction.
- Aggravating factors include cold, heat, cloth, emotion, dust, plants, animal fur, foods.
- Often Family History of excema/asthma, allergic rhinitis.

Symptoms

- Itchy red area with vesicles and papules in characteristic area:
  - Dermatitis - in localized area
  - Excema - on the face,neck, back of the head, groin, buttocks and wrists in infants.
    - on the neck, elbows, wrists, hands, behind the knees and ankles and around the eyes in older children and adults.

Investigations.

- Take pulse, temperature and weight.
- Essentials of diagnosis:
  - Itchy, thick eruption with exudate on face, neck, upper trunk, wrists, hands and folds of knees and elbows.
  - Personal or family history of allergic problems(asthma, allergic rhinitis, excema).
  - Tendency to recur, with remission from age 2 to early youth and beyond.

Treatment.

- Put cold compresses on the area.
- Tell the patient not to wash in very hot water or to use strong soaps.
- Soak the area in solution of 1/100 GENTIAN VIOLET. For babies, make a bath of this and sit the baby in it. Do this daily while the problem is acute.
- For dermatitis, protect the area with cloth, gloves or VASELINE.

BEST AVAILABLE DOCUMENT

PARASITIC SKIN INFECTION

SCABIES

Scabies is a common infection of the skin due to small insects which tunnel under the skin and cause severe itching. Itching is worst at nigh. It is passed from person to person by direct contact or by contaminated clothing or bedding.

Signs and Symptoms

- severe itching, commonly located:
  - between the fingers and toes
  - under the arms
  - in the groin
- occasionally small tunnels may be seen in the skin
- in adults, the face and scalp are not involved.
- in small children, the entire body may be infected
- bacterial superinfection is common.

Treatment.

- Wash the body with soap and water.
- Apply BENZYL BENZOATE to the entire body EXCEPT the face:
  - adults: wash off after 24 hours
  - children: wash off after 12 hours and repeat again in 12 hours.
- Wash clothing and bedding - BOIL THEM, TOO.
- Repeat BENZYL BENZOATE in one week if new lesions.
- For severe itching, CHLORPHENIRAMINE for 3 days.
- Threat the infected family members at the same time.

Note: Bacterial Superinfection of scabies is common; if infection is present treat infection (See impetigo) until clear and give CHLORPHENIRAMINE for itching. Then [illegible] scabies with BENZYL BENZOATE.

BEST AVAILABLE DOCUMENT

ANTHRAX

ANTHRAX IS A BACTERIAL DISEASE THAT USUALLY AFFECTS THE SKIN. IT IS A DISEASE OF SHEEP, CATTLE, HORSES, GOATS AND CAMELS. PEOPLE GET ANTHRAX BY HANDLING MEAT OR SKINS OR EATING IMPROPERLY COOKED MEAT OF INFECTED ANIMALS. ANTHRAX COMMONLY ENTERS THE SKIN THROUGH A CUT WHILE HANDLING MEAT FROM AN INFECTED ANIMAL. THE DISEASE CAN ALSO AFFECT THE LUNGS AND MAY BE SEEN IN PEOPLE WHO HAVE BREATHED DUST FROM INFECTED ANIMAL SKINS.

SYMPTOMS/SIGNS.

ANTHRAX AFFECTING THE SKIN IS CALLED CUTANEOUS ANTHRAX. FIRST THERE IS ITCHING FOLLOWED BY A LESION WHICH BECOMES PAPULAR (RAISED), THEN VESICULAR (SMALL BLISTER) WITH A PURPLE TO BLACK CENTER. THE AREA AROUND THE LESION IS SWOLLEN AND SURROUNDED BY VESICLES. SKIN IN THE CENTER OF THE LESION DIES AND THE TISSUE SLOUGHS. THE PATIENT MAY ALSO HAVE HEADACHE, NAUSEA, VOMITING, ENLARGED LYMPH NODES IN THE AFFECTED AREA, AND MAY EVENTUALLY GO INTO SHOCK.

IN ANTHRAX OF THE LUNG THERE IS CONGESTION OF NOSE, THROAT AND LARYNX. THE PATIENT WILL APPEAR TO HAVE PNEUMONIA WITH DIFFICULTY BREATHING AND FEVER AND EVENTUALLY GO INTO SHOCK.

THIS DISEASE USUALLY OCCURS ABOUT 1 WEEK AFTER CONTAMINATION WITH THE BACTERIA.

TREATMENT

- OUTCOME IS USUALLY GOOD IN THE SKIN FORM OF ANTHRAX IF TREATED EARLY.

- THE MEDICINE OF CHOICE IN THE FIELD WOULD BE [illegible] PENICILLIN 600,000 UNITS IM EVERY SIX HOURS UNTIL AT LEAST THE SWELLING IN THE SKIN SUBSIDES. IDEALLY, TREATMENT SHOULD CONTINUE FOR 7 TO 10 DAYS. IF THAT IS NOT PRACTICAL, CONTINUE TREATMENT FOR A FULL 10 DAYS WITH PENICILLIN [illegible] MG EVERY [illegible] HOURS IM [illegible] TOTAL DOSE.
- ALTERNATE ANTIBIOTIC: TETRACYCLINE 500 MG EVERY 6 HOURS IM [illegible] TOTAL DOSE.

BEST AVAILABLE DOCUMENT

- IF PATIENT IS VERY ILL OR HAS ANTHRAX OF THE LUNG, REFER IMMEDIATELY TO HOSPITAL FOR INTRAVENOUS ANTIBIOTIC THERAPY IF POSSIBLE.

PREVENTION

- DO NOT EAT MEAT OR USE SKINS FROM SICK ANIMALS.

LEPROSY.

Leprosy is a skin and nerve disease, which is known in Afghanistan and Pakistan by different names:

- Jezam
- Sarinaroghi
- Bargeer
- Pais

What is Leprosy?

Leprosy, like other diseases of human beings, is an ancient, infectious one which is caused by leprosy bacteria called mycobacterium leprae.

What Causes Leprosy?

The cause of leprosy disease is a kind of bacteria which resembles TB bacteria, that is the bacteria of both diseases (leprosy, TB) are mycobacteria. Mycobacteria have a strong outer skin and with carbol fuschin, red spots appear on it, if other bacteriae are mixed with acid or alcohols, they give up their red colour. It is only the mycobacteria, when mixed with acid or alcohol, that keep the red colour. For this reason, it is called Acid Fast (AFB). Mycobacteriae develop very slowly and are divided into two kinds. Its multiplication has a long life cycle. For this reason, the diseases that come to being are ancient and durable. After 12-24 days, mycobacteria are divided into two parts. We call this period the multiplication time. Mycobacteria multipl, in the head and body, under [illegible] degree of centigrade. In the warmer parts of the body mycobacteria can not [illegible] remain resting. In this condition, they are called Permanent [illegible] Leprosy. In relation to other diseases, [illegible]

AVAILABLE DOCUMENT

Infection with this disease is very difficult. The contagiousness of this disease is ten times less than TB.

Transmission.

Leprosy is transmitted by means of infected water droplets. That is, it spreads by a droplet of water in the air. Droplet infections are spread by sneezing, coughing saliva or by a simple wound in the skin. The patient is spreading very small droplets from his mouth and nose in the air, and then they enter the healthy persons body by inhaling the air and finally causing an illness.

It is believed that the leprosy bacteria can not penetrate healthy undamaged skin. It is possible that these bacteria sometime can enter the body in a small wound. In positive cases a large number o~~f~~ bacteria have been found in the nose. It is possible that millions of bacteria can reproduce in one day. Many persons who have come in contact with leprosy patients have not contracted this disease because such persons have a strong immunity in their bodies, which destroys the microbes of leprosy. Some persons whose physical defences are less and come in contact with patients having this illness become sick.

Most people who have contracted leprosy have noncontagious microbes, so they can not infect others with this disease.

What happens when bacteria enter the body?

Normal and healthy skin has different white, brown and black colors and is soft and clear and has hair and sweat (glands). Nerve tissues are spread throughout the skin and by help of these tissues we tell temperature, pain and pressure. Leprosy bacteria live in the cool parts of the body for example, under the skin and in nerve tissues so leprosy patients do not feel pressure, heat and pain.

Leprosy bacteria multiply in the nerve tissues and the [illegible] is fighting with these bacteria by inflammator[illegible] reaction. The inflammatory reaction [illegible] spots on the skin. These white spots are th[illegible]

BEST AVAILABLE DOCUMENT

leprosy illness. These white spots develop in contagious and noncontagious illness.

Signs of leprosy disease:

Leprosy disease has four kinds:

- Indeterminate]
- Border line
- Tuberculoid
- Lepromatous

Two are most common:

First - Indeterminate

This disease is a primary form, and it may be cured by itself or the disease may develop and cause a dangerous situation.

A person is infected by this disease when his body does not have complete immunity. In this instance the inflammatory reaction happens only in the nerve tissues. The skin is flat and smooth. White spots appear on it and sensitivity is decreased.

Second - Tuberculoid

This kind of Leprosy appears at a time when the body of a person does not have white blood cells and antibody in a large quantity and his body has sent a large number of white blood cells and antibody to fight the microbes. In the fighting of the white blood cells and antibody a large number of skin and nerve tissues are damaged.

Spots on the skin caused by leprosy disease:

- Usually few (1-7)
- Smooth and flat
- The edges are sharp
- The skin becomes dry in the affected area
- The hair in lost very soon

BEST AVAILABLE DOCUMENT

- Sensation disappears
- Spots become colourless, or sometimes become red
- Leprosy bacteria - can not be seen in the spots of the skin.
- Many times, the center of the spots and stains heal. These spots or stains are large and appear in one part of the body: that is they can not appear on both sides of the body.

(KALDANA) (Leishmaniasis)

Cause

- Kaldana is caused by a microbe transmitted in the bite of a sandfly. It is very common in Afghanistan.
- It is a chronic ulcer that heals after one or two years, leaving a scar.

Signs and Symptoms

- In Kaldana of the skin, swellings of the skin appear about 2-6 weeks after being bitten by the sandfly.
- The swellings may ulcerate and discharge pus, or they may remain dry.
- Dry or moist forms are caused by different microbes, with the dry form having a longer incubation period.
- The lesions tend to heal spontaneously over a period of months to a year.
- The ulcer is not painful, but a secondary infection may make the lesion larger and cause disfigurement, especially on the face.

Investigation

- Take temperature, pulse and weight.

Treatment

A- Treat it as a wet skin disease.
B- If treated early, with GENTIAN VIOLET then refer, it will heal up and not become chronic.
C- Antibiotics may be required for secondary skin.
D- Refer to a doctor or Health facility.

BEST AVAILABLE DOCUMENT

Prevention.

- The sandflies live in dark holes, cracks in walls and rubbish.
- They bite in the evening and early morning.
- They only fly short distances, so if someone sleeps on the roof of his house, he will not be bitten.
- Spraying the house regularly with DDT will kill the sandflies.

FOLLICULITIS.

Folliculitis is an inflammation of the hair follicle (sac at the base of the hair). It is caused by bacteria, and affects mostly males.

Signs and symptoms:

- itching and burning in hairy areas.
- pustules in the hair follicles.
- may also be inflammation of the surrounding areas, with redness and crusting.

Treatment.

- Instruct patient to clean skin with soap and water every day.
- If there is deeper involvement with crusting, apply warm saline soaks or compresses to the area for 15 minutes twice a day.
- Gentian violet - 2 times/day for 10 days.
- No improvement in 3 days: Penicillin tablets - normal does for 7 days.

ACNE

DURING PUBERTY, YOUNG PEOPLE SOMETIMES DEVELOP SMALL PUSTULES ("PIMPLES") ON THEIR FACES AND BACKS. THIS IS CAUSED BY CHEMICAL CHANGES WITHIN THE BODY IN COMBINATION WITH BACTERIA ON THE SKIN. ACNE SOMETIMES CONTINUES INTO ADULTHOOD. YOUNG MEN ARE MOST AFFECTED. USUALLY ACNE IS MILD AND DOES NOT REQUIRE MEDICATION.

BEST AVAILABLE DOCUMENT

SYMPTOMS/SIGNS

SCATTERED TINY PUSTULES OVER FACE AND BACK. THESE MAY BE QUITE PAINFUL. THEY EVENTUALLY BREAK AND HEAL USUALLY WITHOUT SCARS. OCCASIONALLY LARGE DEEP PUSTULES FORM WHICH LEAVE PITS IN THE SKIN WHEN THEY HEAL.

TREATMENT.

1. WASH THE SKIN THOROUGHLY WITH SOAP AND HOT WATER TWICE A DAY.
2. SUNSHINE MAY HELP THE PUSTULES ("PIMPLES") TO HEAL.
3. EAT WELL, SLEEP ENOUGH AND DRINK PLENTY OF CLEAN,BOILED WATER.
4. AT BEDTIME, PUT A MIXTURE OF ALCOHOL WITH A LITTLE SULFUR (10 PARTS ALCOHOL TO ONE PART SULFUR) ON THE AFFECTED SKIN.
5. IN SERIOUS CASES WITH LUMPS AND POCKETS OF PUS FOR WHICH THE ABOVE MEASURES HAVE NOT HELPED, TETRACYCLINE CAN BE GIVEN.

LICE.

Lice infection is a parasitic infection of the hairy parts of the body: the scalp, under the arms, the groin, the chest hair. the beard and the eye lashes.

Signs and Symptoms.

- itching of hairy body parts.
- the tiny eggs may be seen at the base of the hair
- impetigo commonly develops in children with lice.

Treatment.

- BENZYL BENZOATE is applied to the affected hairy areas. Follow directions for scabies (above).
- Wash and boil clothing and bedding.
- For severe itching, CHLORPHENIRAMINE normal dose for 3 days.
- Treat affected family members.
- Shaving may speed recovery.

BEST AVAILABLE DOCUMENT

CONTACT DERMATITIS.

THIS CAN BE DUE TO CONTACT WITH AN IRRITANT SUCH AS A CHEMICAL OR CLOTHING OR DUE TO AN ALLERGY TO CLOTHING OR A PLANT SUCH AS POISON.

A SPECIAL TYPE OF CONTACT DERMATITIS IS CALLED SUNSHINE DERMATITIS, A RASH WILL APPEAR ONLY ON PARTS OF THE BODY EXPOSED TO SUN VITAMIN B DEFICIENCY CAN CAUSE SUNSHINE DERMATITIS.

DRUGS LIKE WOUND CREAM OR DISINFECTANT SOLUTIONS CAN CAUSE DRUG DERMATITIS. THE DERMATITIS IS LIMITED TO THOSE SKIN AREAS HAVING HAD DIRECT CONTACT WITH THE DRUG.

SYMPTOMS/SIGNS.

- ITCHING
- REDNESS
- VESICLES
- EDEMA (SWELLING)
- OOZING
- CRUSTING AND SCALING.

TREATMENT.

1. REMOVE OF PENDING AGENT.
2. USE WATER, SOAKS OR COMPRESSES ON AREA FOR COMFORT.
3. HYDROCORTISONE CREAM. APPLY THIN LAYER 2 TIMES DAILY OVER AFFECTED PART OF THE BODY EXCEPT FACE. DO NOT USE MORE THAN ONE WEEK.
4, MULTIVITAMIN ONE DAILY.

ALLERGIC REACTIONS.

Cause.

- Allergy is a bad reaction of the body to some thing which causes itching on part or all of the body.
- Allergy can come from food, medicine. touching plants, dust, animal skin, clothes, washing powder and insect bites.

It is a very common cause of itching.

BEST AVAILABLE DOCUMENT

- It is not enough to give medicine for allergy, you must find the cause and avoid it, or the itching will quickly come back when the medicine is finished.

Symptoms.

- MILD MODERATE: swelling, itch, red skin.
- SEVERE: generalized swelling, shortness of breath, wheezing, swelling of eyes/throat/tongue, shock.

Signs.

- Urticaria, wheezing, signs of severe reaction and shock.

Investigations.

- Take pulse, temperature and weight.
- Take the BP and watch the patient carefully for signs of distress.

Treatment.

- Mild-moderate:
  - Remove the cause
  - Use cold compresses.
  - Give CHLORPHENIRAMINE.
- Severe:
  - ADRENALINE SC stat.
  - CHLORPHENRAMINE for 2 days.

Complications.

- Shock and respiratory arrest.

Prevention.

- Avoid the cause.

BEST AVAILABLE DOCUMENT

VIRAL CONJUNCTIVITIS.

It can occur as a conjunctival inflammation only or accompany other viral infections like URI, etc.

Signs and symptoms:

- red eyes.
- tearing, itching, sometimes pain
- sticking of eyelids in the morning.
- photophobia can occur

Treatment: There is no specific treatment for this. Treatment is symptomatic.

- rest
- eyes should be kept clean
- antihistamines if itching and analgesics for pain.
- Optisol eye drops are used sometimes for washing.

BACTERIAL CONJUNCTIVITIS.

Signs and Symptoms:

- Red eye
- Purulent discharge
- Pus sticks the eyelashes together,especially in the morning.
- One or both eyes are affected.

BEST AVAILABLE DOCUMENT

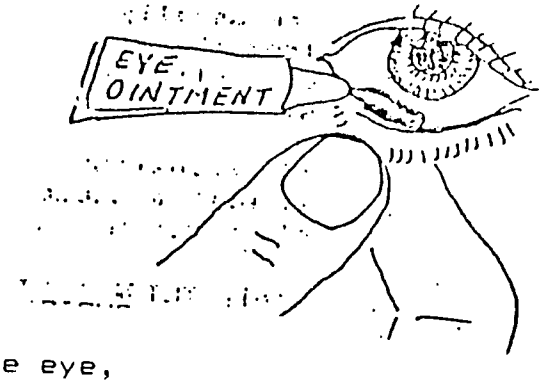
Treatment.

- CHLORAMPHENICOL eye drops 4 times/day for 5 days OR TETRACYCLINE ointment 4 times/day for 5 days.
- If no improvement after treatment, treat as TRACHOMA.

Prevention.

- Conjunctivitis is very contagious. clean the eyes frequently. Wash hands after touching the eye.

Putting Eye Ointment in the Eye:



- Clean pus from the eye, take a clean cloth wet with cooled boiled water.
- Gently pull down the lower eyelid and place a small amount of ointment inside the eyelid.
- Conjunctivitis is VERY CONTAGIOUS. WASH YOUR HANDS AFTER TOUCHING THE EYE.

VIRAL CONJUNCTIVITIS.

Signs and Symptoms.

- Red, itching eyes with watery discharge.
- Both eyes are affected.
- Runny nose (rhinitis).
- Sneezing.
- Prior history - seasonal.

BEST AVAILABLE DOCUMENT

Treatment. .

- CHLORPHENIRAMINE normal does for 7 days.

TRACHOMA

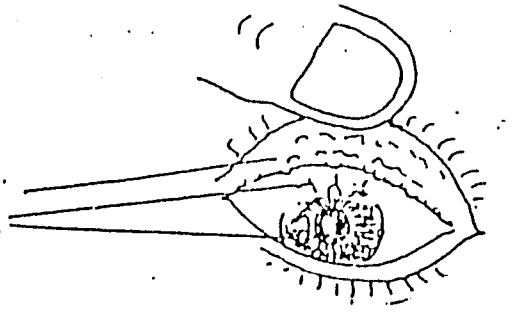
Trachoma is the leading cause of blindness in the world. It is a chronic disease. It can be cured early in its course by antibiotics if they are given long enough.

In its early stage, trachoma looks identical to bacterial conjunctivitis. For this reason, any case of bacterial conjunctivitis (above) that does not improve with treatment should be treated as trachoma. In its late stages small pinkish-white lumps appear on the inside of the upper eyelid (folliculare hypertrophy). To see these, the eyelid must be turned back. The top edge of the cornea looks cloudy due to the growth of blood vessels (pannus). Finally, the upper eyelid and the cornea become scarred. Eyelashes grow into the eye causing pain. At this stage, there is no treatment that will return sight. The eyelashes that grow into the eye should be removed for comfort. Refer to an eye specialist if possible.

Signs and Symptoms.

Early Stages.

- red eyes with tearing.
- follicular hypertrophy
- pannus.



Treatment.

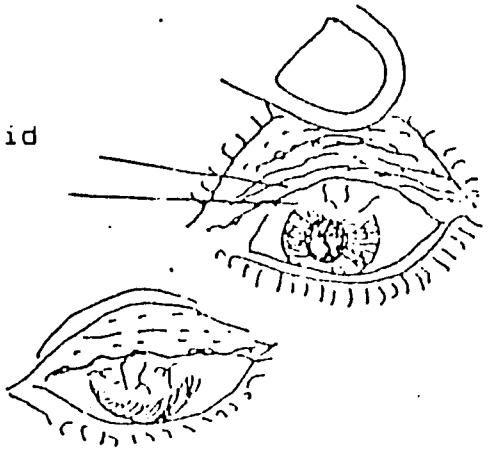
1. (TETRACYCLINE capsules normal dose for 3 weeks is acceptable EXCEPT for children under 8 AND for women of child bearing age.
   TRIMETHOPRIM/SULFAMETHOXAZOLE tablets normal does for 3 weeks.

2. If no improvement after treatment - repeat treatment 3 weeks later.

BEST AVAILABLE DOCUMENT

3. TETRACYCLINE ointment for 6 weeks ONLY if 1 or 2 is not possible. Must use every day for full course.

<u>Later Stages.</u>



- scarring of the upper eyelid
- scarring of the cornea
- the eyelid will not close completely.
- the eyelashes invert and rub against the eye.

<u>Treatment.</u>

1. Remove eyelashes that grow into the eyes.

2. There is no treatment that will restore sight.

FOREIGN BODY AND CORNEAL ABRASION.

When a patient has a red, painful, or burning eye with history of trauma, or foreign body, the following guidelines should be followed :

1. Examine the patient in good light.

2. Turn the upper eyelid back over a soft object to allow examination of its inner surface (see diagram). Examine inside the lower lid, too.

3. When you see a foreign body in the eye, attempt to irrigate it out with salt solution:

   1 liter of cooled boiled water with two pinches of salt..

   Use a 10 or 20 ml syringe with a plastic catheter from an IV cannula. Direct the flow at the foreign body. If you did not find a foreign body, the patient probably has a corneal abrasion. These are usually painful to

BEST AVAILABLE DOCUMENT

see but a light, shining from the side of the eye into the cornea sometimes demonstrates the scratch. Treat by proceeding to step-5.

4. If irrigation is not successful, attempt to remove it with a piece of clean, twisted cotton gauze or clean cloth.

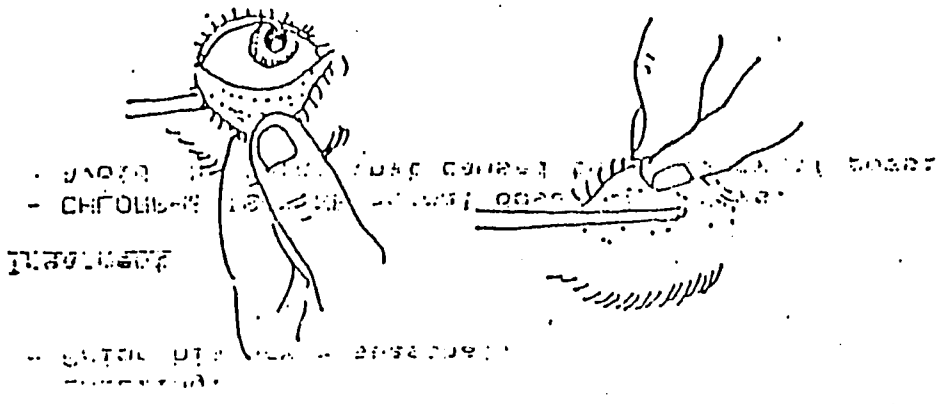
5. Apply TETRACYCLINE ointment.

6. Place an eye patch on the eye. DO NOT PATCH AN EYE IF THERE IS PUS PRESENT. TREAT THIS AS CONJUNCTIVITIS.

7. ASPIRIN for pain - normal dose for 3 days.

8. Return to clinic in 2 days for follow up.

HOW TO TURN THE UPPER EYELID BACK TO ALLOW EXAMINATION.



CORNEAL ULCER

<u>Cause.</u> Trauma to the corneal surface. Viral infection of the cornea.

<u>Symptoms.</u> Painful eye, watering eye, photophobia.

<u>Signs.</u> Red eye.

<u>Investigation.</u> Take pulse, temperature and weight. Test the visual acuity.

BEST AVAILABLE DOCUMENT

Treatment. Tell him to rest in bed for 2 days. Cover the eye with a pad.
DIAZEPAM 3 mg TDS for 2 days.
TETRACYCLINE ointment ODS or CHLORAMPHENICOL eye drops.

Complications. Corneal scar.
Partial or total blindness.

Prevention. Nil.

EYE INJURIES.

BLUNT INJURY TO THE EYE.

A patient who has been struck forcefully in the eye may come to your clinic because of pain and/or decreased vision. He may have a corneal abrasion. If you see bright blood between the clear conjunctiva and the white sclera, he has a SUBCONJUNCTIVAL HEMATOMA. Though this looks bad, it is not serious and goes away by itself. Reassure the patient.

A more serious injury results when there is bleeding in the clear chamber between the cornea and the pupil (anterior chamber). This condition is called a HYPHEMA and should be considered in all patients with blunt eye trauma and decreased vision.

HYPHEMA

Signs and Symptoms.

- Decreased vision (can see light but vision is cloudy).
- Anterior chamber of the eye looks cloudy when a flashlight is directed towards it from the side OR you see a layering out of blood in the chamber.

Treatment

1. Bed rest in a quiet room with head elevated.

BEST AVAILABLE DOCUMENT

2. DIAZEPAM 5 mg 3 times/day for 3 days.

3. Emphasize to the patient or parents that this is a serious injury and the patient must stay in bed. If not, the bleeding may recur and cause irreversible injury.

PENETRATING INJURY TO THE EYE.

Penetrating injuries to the eye are uncommon but serious and often result in blindness. They usually result from being stuck with a sharp object or a flying metallic fragment.

Signs and Symptoms

- Decreased vision or blindness.
- Bleeding under the conjunctiva.
- +/- irregular pupil and iris.

Treatment.

1. If penetrating object can not be seen, do not try to remove it.
2. Place a protective shield over the eye which does not touch the eye. Pressure on the eye may result in loss of sight.
3. Begin CHLORAMPHENICOL tablets normal dose for 7 days.
4. Refer to an eye hospital as soon as possible.

EYELID INJURY.

Eyelid lacerations are difficult to suture. Irrigate the wound gently with cooled, boiled water, or salt solution.

Treatment.

1. Begin PENICILLIN by mouth -- Normal dose.
2. Apply eyepatch.
3. Refer to an eye doctor.

BEST AVAILABLE DOCUMENT

DECREASED VISUAL ACUITY.

After taking history, the patient's visual acuity must be examined. If there is no pain and the on set is acute, the causes are usually central retinal artery or vein obstruction, vitreous hemorrhage, or optic neuritis, in which case the patient should be sent to a hospital. However, if it is chronic, cataract, night blindness, or other eye problems which need eye glasses may be the cause (see manual for more details).

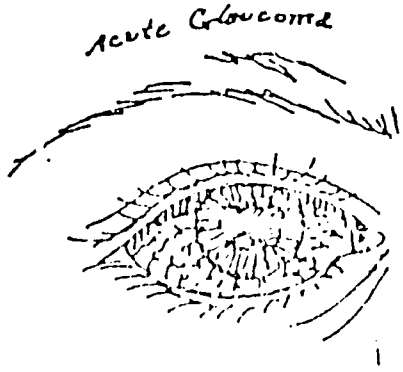
GLAUCOMA

General Considerations.

Glaucoma is a disease of the eye which is caused by a block in the normal movement of fluids through the inner chambers of the eye. Fluid builds up in the "anterior chamber" resulting in severe pain.

Clinical Picture

A patient with acute glaucoma seeks treatment immediately because of the extreme pain and blurring of vision in one eye. The patient may say he sees colored circles around lights. The eye is red around the iris (where the cornea meets the conjunctiva). The cornea is steamy. The pupil is larger in the affected eye than the pupil in the unaffected eye. The pupil does not become smaller when exposed to a bright light (no light reflex).



Course

The pressure continues to build up and may lead to blindness if not treated within 2-5 days.

BEST AVAILABLE DOCUMENT

Complications.

The increased pressure causes the iris to become fixed in a dilated position. The pressure can cause destruction of the optic nerve. Either can result in permanent blindness.

Management.

Glaucoma is an emergency. The patient is to be referred to a physician as soon as possible. If the patient is unable to reach the doctor in less than 4 hours, then you should give a diuretic.

He should proceed to the doctor as quickly as possible.

Warning: A delay can result in blindness.

EYELID INFECTIONS.

Small, acute or chronic abscesses of the eyelids are common. They cause pain, but are not dangerous.

Signs and symptoms.

- Painful lump on the eyelid.
- Upper lid is usually involved.

Treatment

1. Warm compresses for 3 days.
2. TETRACYCLINE eye ointment 4 times/day for 5 days, or CHLORAMPHENICOL eye drops.

Prevention.

- Wash hands and face every day.
- Do not let flies crawl in the eyes.
- Do not rub eyes.

BEST AVAILABLE DOCUMENT

DACROCYSTITIS.

Cause Bacterial infection of the tear duct.

Symptoms Pain between the eye and the nose.

Signs. Redness, swelling, tenderness of the tear duct area.

Investigations. Take pulse, temperature and weight. Check the visual acuity.

Treatment. Put HOT COMPRESSES on the area.
ASPIRIN for pain.
TETRACYCLINE ointment ODS for 5 days. or CHLORAMPHENICOL drops. If not better, add RENIOLLIN tab for 5 days. Refer to hospital if no improvement in 7 days.

Complications. Abscess.
Chronic dacrocystitis.

Prevention. Wash the face daily with soap, morning and evening.
Wash the hair and body regularly. Wash children's faces and bodies for them. Do not let flies crawl in the eye. Treat all eye problems promptly at home with SALT WATER eye washes.

BLEPHARITIS.

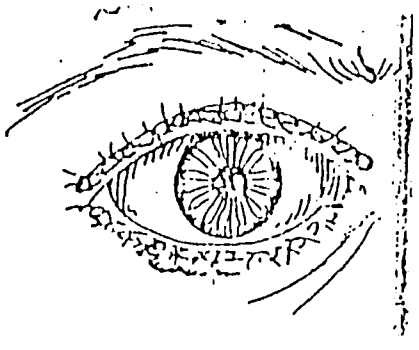
General Considerations.

It is defined as chronic bilateral inflammation of the eye lid margin.

BEST AVAILABLE DOCUMENT

Clinical Picture.

The patient usually complains of irritation, burning and itching of eye lid margin. On examination, scales can be seen sticking to eye lashes. The whole lid is tender and swollen.



Management.

1. Remove and clean the scales from the eye lashes and lid margins.

2. Apply antibiotic ointment once daily to eye lid margin.

3. For complications refer immediately.

STY

General Considerations.

A sty is defined as a localized abscess of the eye lid margin.

Clinical Picture.

Patient complains of pain in the region of the abscess. On examination abscess is found usuall on the edge of the eyelid pointing either on the outer or inner side of the eyelid. The area around is swollen and inflamed. The sty is tender to touch.

BEST AVAILABLE DOCUMENT

Management.

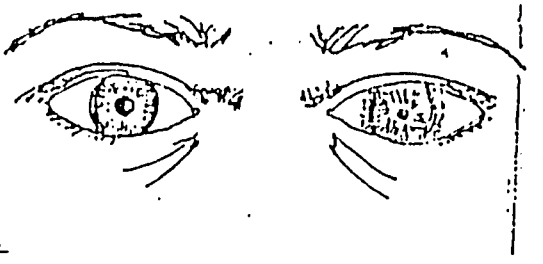
1. Hot compresses 3 times per day.

2. Tetracycline eye ointment or other eye antibiotic every 3 hours.

IRITIS.

General Considerations.

Iritis is an acute or chronic inflammation of the iris which is a resulting complication from some other problem. Problems which can cause the complication of iritis are leprosy, tuberculosis, herpes zoster and trauma to the eye which has become secondarily infected.



Clinical Picture.

The patient most commonly complains of sudden pain in one eye with reduced vision. The eye is red around the iris (where the cornea meets the conjunctiva). There is usually no discharge from the eye. The pupil is small or irregular in shape and does not increase in size in dim light as a normal pupil should (the light reflex is gone).

Course.

Iritis usually lasts a number of weeks after the acute onset. There is a tendency for the problem to recur following treatment. This recurrence is especially common if the underlying cause (leprosy, tuberculosis, etc) has not been identified and properly managed.

BEST AVAILABLE DOCUMENT

Complication.

The iris will eventually become fixed to the lens and blindness will result.

Management.

A patient with iritis is to be referred to a physician as soon as possible.

Prevention.

Early recognition of underlying problems and proper management of these problems will prevent the complication of iritis.

COMMON COLD.

The common cold is a viral infection affecting the mucous membranes of the nose, throat and upper respiratory tract. Do not treat with antibiotic. If there is a cough, antihistamines may be harmful because they make the sputum thick and difficult to cough up.

Signs and symptoms.

- White or yellow discharge from nose.
- Mild sore throat.
- +/- low grade fever.
- +/- cough (purulent sputum NOT present).
- +/- hoarseness.

Treatment.

1. Encourage patient to increase fluids (tea, water...)

2. If sore throat or low grade fever give ASPIRIN or PARACETAMOL.

BEST AVAILABLE DOCUMENT

3. Instruction: Tell patient symptoms should last 7-10 days. If no better at that time, or if high fever develops, return to clinic.

4. Gargle sale solution.

OTITIS MEDIA.

This is the most common type of ear infection. If diagnosed early, it responds well to antibiotics. If it has become chronic (discharge from the ear for more than 2 weeks), antibiotics do not help. Parents should be instructed to bring their children to the clinic early if they suspect ear pain. For example, the child pulls on his ears. Recurrent infections can cause decreased hearing.

Signs and symptoms.

Acute.
- Fever.
- Ear pain.
- Ear pulling in young children
- +/- discharge.

- No pain with gentle pulling on the ear posteriorly.

Otoscope
- Tympanic membrane is red, inflamed,bulging.
- +/- perforation with discharge.

Treatment.

1. Antibiotics.

   Children <5 years:
   TRIMETHOPRIM/SULFAMETHOXAZOLE (or AMPICILLIN).

   Patients > 5 years:
   PENICILLIN normal dose for 7 days.

2. For pain or fever: ASPIRIN or PARACETAMOL for 3 days.

BEST AVAILABLE DOCUMENT

3. Return to clinic in 10 days. If draining or persistent pain-change antibiotics. For example - If child used TRIMETHOPRIM/SULFAMETHOXAZOLE, now use AMPICILLIN and treat for one more week. If second treatment fails to clear up the discharge, od not treat again. Encourage good nutrition.

Chronic. Purulent ear discharge for more than 2 weeks.

Treatment. The best treatment for chronic otitis media is to clean and dry the external ear canal. Antibiotics do not help. Instruct the parents to clean the external ear and introduce a rolled piece of cotton with stick into the external ear canal 3 times a day until the discharge stops.

OTITIS EXTERNA

This is a less common type of ear infection.

Signs and symptoms.

- Pain increases when ear is gently pulled posteriorly.

- +/- watery green discharge.
- +/- ITCHING IN EAR CANAL.
- +/- LOW GRADE FEVER.

Otoscope.

Insertion of Otoscope is very painful. Tympanic membrane is normal, but often can not be seen in children due to swelling of canal. Often, outer ear canal is red.

Treatment.

1. Instill GENTIAN VIOLET into ear. Patient to do same twice a day for 7 days.

2. If canal is swollen and narrow:

BEST AVAILABLE DOCUMENT

(a) Cut small strip (1 cm wide, 5 cm long) of gauze or dressing. Soak with GENTIAN VIOLET and insert gently with forceps into outer ear canal.

(b) Follow up in one day - repeat until canal is open. Then, have patient apply GENTIAN VIOLET twice a day for 5 days.

3. ASPIRIN or PARACETAMOL for 3 days.

4. Instruct patient:

- Do not get ears wet.
- Be careful when washing.
- No swimming for 2 weeks.

Prevention.

- Clean ears regularly.
- Do not put objects in the ear canal.
- Clean children's ears for them.

CHRONIC OTITIS MEDIA: prolonged drainage from perforated TM.
Central perforation: benign, may heal spontaneously.
Attic perforation (pars flaccida):
Appears as posterior upper bulge, white debris, chronic or intermittent discharge, bad odor.
Rx: dry canal with clean cotton wool or tissue. If green or foul odor sytemic antibiotic? before repair.

BROKEN EAR DRUM.

Cause.

Trauma to the head or ear causing bleeding from the ear.
Acute Otitis Media causing a brief discharge of pus.
Chronic Otitis Media causing a chronic discharge of pus.

BEST AVAILABLE DOCUMENT

Symptoms. Trauma-pain in the ear; blood from the ear. Acute OM-relief of pain by discharge of pus. Chronic OM-discharge of pus from the ear for more than 2 weeks.

Signs. Ruptured ear drum with blood or pus in the canal.

Investigations. Take pulse, temperature and weight. Examine ear with otoscope.

Treatment.

For trauma:

- Clean the canal with cotton.
- Do not put anything in the ear.
- Warn patient not to get water in ear.
- It will heal in a few days, usually less than one month.

For Acute Otitis Media:

- Treat as indicated under Otitis Media.

For Chronic Otitis Media:

- Treat only as indicated under Otitis Media.

FOR BROKEN EAR DRUM DO NOT USE ANY EAR DROPS.

PHARYNGITIS AND TONSILLITIS (sore throat)

Pharyngitis and tonsillitis are infections of the throat. They are caused by viruses (common) and bacteria (less common). Symptoms last 3-5 days.

Signs and Symptoms (Common) MILD.

- Throat pain
- Red tonsils
- +/- low grade fever.
- +/- runny nose.

BEST AVAILABLE DOCUMENT

Treatment.

1. ASPIRIN or PARACETAMOL for 3 days.

2. Encourage fluids, soft foods.

3. SALT WATER gargle prn.

Signs and Symptoms (uncommon) SEVERE

- Throat pain
- Fever
- Red tonsils with pus, ulcers
- Tender large neck lymph nodes.

Treatment.

1. ASPIRIN for 3 days.

2. BENZATHINE PENICILLIN:

Adult - 1.2 million unit IM]
Child - 600,000 unit IM

OR

PENICILLIN
ADULT - 250 MG QID X 10 DAYS
Child - 125 mg qid x 10 days

3. SALT WATER gargle prn.

The primary reason for treating severe (bacterial) pharyngitis is to prevent delayed damage to the heart and kidney. Therefore, if oral antibiotics are given, the full course MUST be taken even if sore throat disappears. This is why IM PENICILLIN is advisable.

ACUTE SINUSITIS

Acute sinusitis is a rare complication of the following E.N.T. disease :

BEST AVAILABLE DOCUMENT

1. Common cold.
2. Chronic allergy (Allergic rhinitis)
3. Tooth infections.
4. Trauma + Obstruction (Nose fracture, foreign body)

Note:

In small children with unilateral foul-smelling discharge, check for a foreign body in the nose.

Signs and Symptoms.

- Facial pain above eye or below cheek bones.
- Pain with percussion over these areas.
- Fever/
- Sensation of fluid movement with movement of head.

Treatment.

1. Antibiotics:

   TRIMETHOPRIM/SULFAMETHOXAZOLE normal dose for 7 days.

2. Antihistamine:

   CHLORPHENIRAMINE, normal dose for 7 days.

3. ASPIRIN for 3 days.

4. Encourage fluids.

CHRONIC SINUSITIS.

Causes are the same as acute sinusitis, and this is usually caused by nasal septal deviation, infection, smoke, dust and allergy. Patient may have nasal mucoid redness and nasal discharge, or post nasal drip. Treatment: The same as acute, but antibiotics should be continued for 6 weeks.

STOMATITIS.

Painful ulcers of the oral cavity, usually due to a virus.

BEST AVAILABLE DOCUMENT

Signs and Symptoms

- Small, painful ulcers of the mouth, tongue or throat.

- Poor feeding in infants common (check for dehydration)

- Mild fever.

Treatment.

1. Rinse mouth with SALT WATER several times daily.
2. ASPIRIN for pain.
3. The ulcers heal themselves in 1 to 2 weeks.

ORAL CANDIDIASIS (Monilia)

A fungal infection of the mouth or tongue, common in babies, young children and people taking antibiotics.

Signs and Symptoms

- While plaques on the lining of the mouth and on the tongue.
- Occasional poor feeding in infants.
- Pain is infrequent.

Treatment.

1. NYSTATIN tab (if available) dissolved in water (see formula) daily for 7 days BID OR GENTIAN VIOLET BID 3-3 - weeks or until better.
2. Stop antibiotics if possible.

MASTODITIS

Cause Complication of otitis media.

Symptoms Earache; pain behind the ear; headache.

Signs High fever; fast pulse; child is usually very ill. Signs of recent OM; tender behind the ear.

BEST AVAILABLE DOCUMENT

Investigations Take pulse, temperature and weight, Monitir all children for malnutrition.

Treatment BENZATHINE PENICILLIN IM p.o. for 10 days. PARACETAMOL for pain and fever. Continue to eat a soft diet. Continue to feed sick babies. Drink plenty of fluids and ORS, Refer to hospital if no better after 3 days.

Complications Meningitis; osteomyelitis of the skull; brain abscess.

Prevention Cover the mouth when coughing and sneezing. Breastfeed children until 2 years old. Treat otitis media before complication of mastoiditis occurs.

EPISTAXIS (NOSE BLEED)

Bleeding from the nose is usually a minor problem resulting from nose picking or other mild trauma to the nose. It is more common cold. Rarely, bleeding can be massive and life threatening.

Management

If bleeding has stopped:

1. Instruct patient not to pick or blow his nose.

2. Using a cotton applicator, carefully apply petroleum jelly to inner aspect of both nostrils. Instruct patient to do same for 5 days.

If still bleeding:

1. Sit patient down and reassure him.
2. Have patient blow out the clots.
3. Pinch both nostrils between your thumb and index finger and hold with constant pressure for 5 minutes. TIME IT! Most bleeding will stop. Then, instruct patient as above.

BEST AVAILABLE DOCUMENT

If bleeding continues:

1. Use same technique as above, but apply constant pressure for 15 minutes.

If bleeding continues:

1. Dilute 1 ampule ADRENALIN (1 ml = mg) in 9 ml sterile water = 10 ml ADRENALIN SOLUTION (i mg/10 ml). (If patient did not suffer from hyparfession) .
2. Pack nostril with gause soaked with this ADRENALIN solution.
3. Remove pack after 24 hours.

DIPHTHERIA

Cause — Bacteria that live in the nose and throat of carriers. Epidemic disease spread by coughing and sneezing. The symptoms ares cause by the bacteria itself, but the complications by a Toxin.

Symptoms — Fever; nausea; sore throat; headache.

Signs — Fever; tachycardia. Difficulty breathing with stridor. Swollen neck; membrane on the tonsils.

Investigations — Take pulse, temperature and weight.
Monitor children for malnutrition.

Treatment — ERYTHROMYCIN (first) or AMPICILLIN (second) for 10 days.
Give all contacts the same treatment for 5 days, including health care workers.
Isolate the house or village until 2 days after the fever has gone down.
Continue to breastfeed babies.
ASPIRIN/PARACETAMOL for pain and fever.
Drink plenty of fluids and ORS.
Show mothers how to sponge babies with fevers.

Complications	Heart failure; kidney failure; paralysis.
Prevention	Cover the mouth when coughing and sneezing. Use a spittoon for spitting,. Continue to feed sick children. Vaccinate all children.

Group

Group is a viral ,illness (except in the case of Diphtheria). It most commonly affects children from ages 3 months to 5 years, especially toddlers. Boys are more affected than girls.The clinical course is similar to the typical URI. Stridor and a barking cough occur suddenly at night and are associated with anxiety and dyspnea, nasal flaring and use of the accessory muscles of respiration. The child prefers to sit up.In severs cases, the child is "air hungry" and may even become cyanotic. Recovery is partial in a few hours, but stridor and the other symptoms may return the next several night, but becomes progressively milder. When you examine the child, do not use the tongue depressor. Treatment consists of steam, sitting up[, and reassurance.

Epiglottitis

This is a life-threatening form of group caused by a bacterial infection in the epiglottis. Hemophilus Influenza is the bacteria responsible. Symptoms rapidly progress, often to complete airway obstruction. Children aged 5 - 10 years are most commonly affected. The clinical course starts suddenly with fever and difficulty breathing. The stridor is more guttural and less metallic than that seen in viral group. The child has difficulty swallowing, even his own saliva, and therefore drools. Speech is garbled or lost. Older children will complain sore throat. Respiratory distress is rapidly progressive making the patient irritable and restless,

Diagnosis is made by visualizing the massively swollen cylindrical fiery red epiglottis at the base of the tongue. DO NOT USE A TONGUE DEPRESSOR SINCE A GAG MAY PRODUCE RESPIRATORY ARREST. Treatment consists of steam inhalation and sitting up.

Use high dose Ampicillin and Chloramphenicol Refer to CMC Drug Formulary. The child may need a tracheotomy if a qualified doctor is available.

CERUMEN REMOVAL (ear wax)/ FOREIGN BODY REMOVAL

Removal of cerumen is often required to see the ear drum. If the patient has decreased hearing from cerumen impaction, it may also have therapeutic effect.

1. Mix 1 glass of clean, warm water with 1/2 teaspoon salt. Let patient hold kidney tray below his ear.

2. Draw outer ear gently upwards and backwards to straighten the ear canal (downward and backwards in children <1 year). Tell patient you are going to put water into his ear (reassure him).

4. If irrigation is not successful, dissolve the cerumen:

   a) With patient lying so that affected ear is turned upwards,instil 1 ml GLYCERIN.

   b) After 10 minutes, attempt to remove dissolved cerumen using above irrigation technique.

FOREIGN BODY IN THE EAR

<u>Cause</u> Insects that crawl into the ear or solid objects that children put in their ears.

<u>Symptoms</u> Deafness; pain; itching. Noise and movement in ear, if an insect.

<u>Signs</u> Pain when you pull on the ear lobe.
FB is visible in the canal.

<u>Investigations</u> Take pulse,temperature and weight.

Treatment For insects, kill it by putting GLYCERINE in the ear for a few minutes, then, syringe out the ear. For solid objects, take a thin piece of wire and make a small hook on the end of it. Tell the mother to hold the child firmly in the "ear examining position" so he cannot move his head. Gently insert the hook past the object along the roof of the canal, rotate the hook down and draw the object out. If it cannot be removed, refer the child for a surgical operation.

Complications Otitis externa.
Ruptured ear drum from careless attempts to remove the object.

Prevention Nil

PHARYNGITIS AND TONSILLITIS (Sore throat)

Pharygitis and tonsillitis are infections of the throat. They are caused by viruses (common) and bacteria (less common). Symptoms last 3-5 days.

Signs and symptoms (common) MILD

- Throat pain
- Red tonsils
- +/- low grade fever
- +/- runny nose

Treatment

1. ASPIRIN or PARACETAMOL for 3 days.
2. Encourage fluids, soft foods.
3. SALT WATER gargle prn.

Signs and Symptoms (uncommon) SEVERE

- Throat pain
- Fever
- Red tonsils with pus, ulcers
- Tender large neck lymph nodes.

Treatment

1. ASPIRIN for 3 days.

2. BENZATHINE PENICILLIN:

Adult - 1.2 million unit IM
Child - 600,000 unit IM

OR

PENICILLIN

Adult - 250 mg qid x 10 days
Child - 125 mg qid x 10 days

3. SALT WATER gargle prn.

The primary reason for treating severe (bacterial) pharyngitis is to prevent delayed damage to the heart and kidney. Therefore, if oral antibiotics are given, the full course MUST be taken even if sore throat disappears. This is why IM PENICILLIN is advisable.

ALLERGIC RHINITIS

Cause Allergic reaction that is common in spring and summer. Susceptible people also get other allergic problems like excema or asthma.

Symptoms Sneezing, itchy eyes, water from the nose, water from the eyes.

Signs Red eyes, red throat, red nose and sometimes a rash or wheezing.

Investigations

Take pulse, temperature and weigh.

Treatment 1. Menthol inhalation.
2. CHLORPHENIRAMINE if severe.

Complications

Nil

Prevention Try to find out what causes the allergy and avoid it.

DEAFNESS AND DECREASED HEARING

History

When patient presents with altered hearing, consider the following causes;

1. Chronic ear infection with damage to ear drum.

2. Ear drum rupture.

   (a) Loud noises - sudden pain and hearing loss.

   (b) Sharp objects in ear, especially trying to remove cerumen. Bleeding often present.

3. Cerumen impaction or foreign body.Unable to see the ear drum.

4. Streptomycin injections with nerve damage.

Examination with otoscope

Inspect for ear drum rupture,cerumen impaction.

Treatment

1. If Ruptured Ear Drum

   Decreased hearing from rupture of the ear drum will usually improve over time without treatment.In these

cases, do not irrigate the ear even if you see some blood.

Advise patient to keep ear dry until the hole has closed, generally < 1 month.

Do follow up examination.

Treat with antibiotics if there is purulent discharge.

A hearing aid, for chronic decreased hearing is only sometimes effective. Evaluation in Pakistan or Afghan city if possible.

2. Cerumen Impaction

If the ear canal is full of wax and you are unable to see ear drum, remove cerumen.

3. Treat infection if present.

Respiratory

COUGH

Cough is a prominent symptom of respiratory disease. The following "table, which includes the duration of cough and associated symptoms, can be used to help diagnose a patient with cough:

COUGH: A TABLE FOR DIAGNOSIS

Duration	sputum		fever	shortness of breath	Other associated symptoms	Diagnosis
	non-purlent	purlent				
>1 month	+	-	-	+/-	-	Chronic bronchitis (simple)
>1 month	-	(+/-blood-streaked	+/-	+/-	-	chronic bronchitis with infection
>1 month	+/- (+/-blood)	-	+	+/-	right seats visible weight loss	tuberculosis
6-8 weeks (children only)	-	-	-	only after hard coughing	burst of coughs (5-15) vomiting after coughing	Whooping cough
<2 weeks	-	+	+/-	-	-	acute bronchitis
<2 weeks		+/-	+	+	chills	pressures
<2 weeks	+/-	-	+/-	-	latery, nazal discharge	common cold (vital-see)

ALLERGIC REACTIONS

Cause

- Allergy is a bad reaction of the body to some thing, which causes itching on part or all of the body.

- Allergy can come from food medicine, touching plants, dust, animal skin, clothes, washing powder and insect bites.

- It is a very common cause of itching.
- It is not enough to give medicine for allergy, you must find the cause and avoid it, or the itching will quickly come back when the medicine is finished.

BEST AVAILABLE DOCUMENT

Symptoms

- MILD-MODERATE: swelling, itch, red skin
- Severe: generalized swelling, shortness of breath, wheezing, swelling of eyes/throat/tongue, shock.

Signs

- Urticaria, sneezing, signs of severe reaction and shock.

Investigations

- Take pulse, temperature and weight.
- Take the BP and watch the patient carefully for signs of distress.

Treatment

-Mild-moderate:
  -Remove the cause
  -Use cold compresses
  -Give CHLORPHENIRAMINE

-Severe:
  -ADRENALINE SC stat
  -CHLORPHENIRAMINE for 2 days.

Complications

-Shock and respiratory arrest.

Prevention

-Avoid the cause.

CHRONIC BRONCHITIS

Chronic bronchitis is a common illness resulting from long standing irritation of the airways of the lungs. It occurs primarily in adults and is often associated with smoking and dust. The patient with chronic bronchitis will usually seek medical care when he has:

1. a new respiratory infection, or
2. been exposed to high levels of particles in the air. For example, dust, smoke, particles of straw or a cold.

DECISION TREE FOR TREATMENT OF CHRONIC BRONCHITIS

Chronic Bronchitis (uncomplicated)

Cough of several months with clear sputum +/- shortness of breath on exertion.

TREATMENT

1. Avoid causes of airway irritation (smoking, dust).
2. Drink plenty of fluids, making sputum more liquid and easy to cough up (steam inhalation may help).
3. MENTHOL Inhalations.

IF

Increased cough, shortness breath, prolonged expiratory phase with wheezing (no green sputum or fever):

TREATMENT

1. Treatment as above:
2. AMINOPHYLLINE 100 mg to 200 mg 4 X day for 10 days (1/2) dose for small patients).

IF

Increased cough, green of sputum or fever:

TREATMENT

1. Treatment as above.
2. For men:
TETRACYCLINE 500 mg 4 X day for 10 days. (or BACTRIM 2 tabs 2 times/day for 10 days.)
For women:
AMPICILLIN 500 mg 4 times/day for 10 days.
If also shortness of breath with respiratory rate > 30/min, add:

3. AMINOPHYLLINE 100 to 200 mg 4 X day for 10 days (1/2 dose in small patient).

Any patient with respiratory rate 40/min and who is acutely short of breath must be kept at your clinic until improved.

ACUTE BRONCHITIS

Acute bronchitis is a respiratory infection seen in adults primarily during the winter. It usually lasts 2 weeks and is not dangerous. It is often confused with the common cold, a viral illness that does not respond to antibiotics. The mair difference is the presence of green, purulent sputum.

Signs and Symptoms

- New onset of a reactive cough.
- Purulent (green) sputam.
- +/- low grade fever.
- Rhonchi, decreasing with cough.
- No respiratory distress (nasal flaring, rib reaction).
- No tachypnea.
- Rhonchi heard by stethoscope.

Treatment

1. Encourage PO
2. Antibiotics:

   Men: TRIMETHOPRIM/SULFAMETHOXAZOLE,normal dose for 7-10 days, OR TETRACYCLINE normal dose for 7-10 days.

   Women AMPICILLIN, normal dose for 7-10 days.

3. Do not give antihistamines. They make the sputum thick and difficult to cough up.

4. MENTHOL/ALCOHOL Inhalations.

5. Instruct patient to come back to clinic if not better after treatment.

NOTE: Patients with respiratory distress and fever often have pneumonia. See next page

PNEUMONIA

Pneumonia is a serious infection of the lung tissue. It is uncommon but can be dangerous, especially in young infants, malnourished children or old people. It may occur suddenly or develop after a mild respiratory illness.

Signs and Symptoms:

- Fever
- Tachypnea
- Shortness of breath
- Respiratory distress (in a child, nasal flaring, rib retraction, grunting)
- Cough, often productive.
- Rhonchi: Crepitation wheezing by auscultation (often)

Treatment

1. Encourage PO fluids. Only RARELY requires IV hydration.

2. Antibiotics:

Adults:

PENICILLIN V tablets normal dose for 10 days. If vomiting, give PENICILLIN PROCAINE IM normal dose until vomiting stops - then tablets.

Children:

TRIMENTHIPRIM/SULFAMETHOXAZOLE normal dose for 10 days.

Most patients with pneumonia need hospitalization.

Hospitalize all patients with respiratory rate>40. confusion or malnutrition.

ASTHMA

Asthma is an uncommon disease of the airways of the lungs which results in shortness of breath. It can occur at any age. When severe, it can be fatal. A history of similar attacks in the past is very helpful in diagnosing asthma.

Chronic bronchitis is sometimes misdiagnosed as asthma. An important difference is that with chronic bronchitis, the cough is persistent. With asthma, the patient has no cough between attacks.

Signs and Symptoms

- Shortness of breath.
- Chest tightness.
- Respiratory distress (nasal flaring, rib retractions).
- Tachypnea.
- Cough (no Fever). Sometimes clear sputum.
- Wheezing with prolonged expiration.
- Diffuse wheezing by auscultation.

Treatment

1. Hydration Encourage fluids, both in the clinic and at home. Intravenous rehydration is almost never necessary.

2. AMINOPHYLLINE :

   Adults: 400 mg p.o. now, then normal dose for 10 days.

SALBUTAMOL, (VENTOLIN) tablets can be use as a substitute for AMINOPHYLLINE.

3. Instruct your patient to come back EARLY if symptoms recur after finishing medicine.

It may take several hours to observe improvement. Keep patient in your clinic until he is improving.

FOR SEVERE, LIFE THREATENING ASTHMA ATTACK

(very rare) - cyanosis, respiration greater than 60, Confusion.

1. EPINEPHRINE sub q 0.3 to 0.5 ml. Repeat every 15 minutes up to four times until improvement in breathing. If necessary, every four hours.

2. Begin high dose AMINOPHYLLINE as above at same time.

3. Hydration.

TUBERCULOSIS

Tuberculosis (TB) is a serious disease in Afghanistan. However, in adults, it is often confused with a much more common disease, Chronic Bronchitis. The result is that TB is over-diagnosed. Unfortunately, the medicines used to treat TB are DANGEROUS and are available in many bazaars from people who do not know how to use them properly. These medicines include STREPTOMYCIN which causes kidney and ear damage and ISONIAZID (INH) which causes liver damage.

To treat TB effectively, these dangerous drugs must be given for nine to twelve months. Because of the danger, expense and length of treatment, it is important to be sure that the diagnosis is correct. The diagnosis of TB is difficult and requires a laboratory and an X-Ray machine. For these reasons, patients with TB should be diagnosed and treated by specialists in TB hospitals.

Your role as a health provider in Afghanistan should be:

1. Protect your people from harm. Never give TB medicines.

2. Identify patients who are likely to have TB.

3. Refer these patients to a TB hospital where they can be correctly diagnosed and treated.

Signs and Symptoms

- Continued low grade fever particularly in the evening and night sweats.

- Chronic productive cough for more than 4 weeks.
- +/- blood streaked sputum.
- No improvement with antibiotics.
- Weight loss or failure to grow.

Approach To The Adult With Possible Pulmonary TB

As was stated earlier, it may be difficult to distinguish between chronic bronchitis and TB in some adult patients. However, two signs, weight loss and chronic fever, should make you suspect TB. If you see these on exam, (weigh the patient and take his temperature;), refer the patient to a TB hospital. If these signs are not present, treat as chronic bronchitis and have patient return to clinic in 2 weeks. If he is much improved, he probably does not have tuberculosis.

LOCATION OF TUBERCULOSIS OUTSIDE THE LUNGS:

Bone Infection:

Particularly in children, TB may cause bone infection (osteomyelitis). Often, TB affects the back bone (spine). The spine is painful and develops an abnormal bend.

TB may infect the lymph nodes, especially those in the neck. The patient will have rapidly growing, painless lymph nodes which enlarge over 1-2 months. There may be drainage from the lymph nodes.

PLEASE NOTE:

TB in children often presents without pulmonary signs. Instead, it may be a non-specific chronic illness. As a general rule, any child who is chronically ill with fever failure to grow or weight loss, should be examined in a TB hospital.

Prevention

You can help prevent the spread of tuberculosis. this is accomplished in the following ways.

A) Refer all active cases for treatment so that the patient will not spread the disease.

B) Encourage, when possible, vaccination with BGG against TB.

C) If possible, test the whole family for TB.

D) Raise the resistance of susceptible people:

- Eat nutritious foods to prevent malnutrition.
- Malaria control
- Treat anaemia and parasites
- Good hygiene.

E) a person with TB should eat and sleep separately from children as long as he has a cough.

F) Take a child with a cough for more than 2 weeks to a health center.

G) Treat TB at once. A person who no longer has TB cannot spread it.

Cardiovascular

A. Arteries and Hypertension

Hypertension

Hypertension is the condition when an individual's blood pressure is constantly abnormally high. It can range from very mild to very severe. there are no definite cut-off points, but for our purposes we will divide hypertension as follows:

Mild	140/90 to 160/105
Moderate	160/105 to 180/120
Severe	Over 180/120 (also called "malignant")

Note: The diastolic (lower) value is the more important.

Perhaps 20% of those over age 40 are affected. Hypertension rarely develops in childhood except with chronic kidney disease such as nephritis or nephrosis.

Causes: Hypertension has many different causes. Sometimes the cause cannot be detected. Some of the causes can be prevented. improved, or cured.

"Essential" hypertension is the term we use to describe the hypertension we can find no cause for. Even the most complete examinations in large medical centers cannot find the cause, and essential" diagnosis means "we don't know the cause"

-Known causes: Can be divided into Renal (kidney) causes and Non-renal causes.

Renal Causes:

Glomerulonephritis, Phyelonephritis, Diabetes or Atherosclerosis of the renal arteries can cause reduced blood flow to the kidneys. The kidneys respond to this reduced flow to the kidneys. The Kidneys respond to this reduced blood flow by secreting substances to constrict the arteries and raise the blood pressure to maintain the blood flow so they can continue their function of filtering the body fluid.

Non-Renal Causes:

- Hyperscretion of hormones from the adrenal gland. Included are:

Cushings's syndrome (too much cortisone)
Conn's Syndrome (too much aldosterone)

Cortisone and aldosterease both increase vascular fluid and increase arteriolar constriction.

-Pheochromocytoma - a tumor of the adrenal gland which secretes epinephrine and ephedrine, both constrict vessels.
-Toxemia of pregnancy.
-Increased salt ingestion (increases vessel fluid).
-Obesity
-Emotional stress - causing adrenal gland to secrete excess epinephrine.
-Heredity - hypertension can be a tendency in families.

Signs and Symptoms: Many people with Hypertension have no symptoms.

-Headache and light-headedness or dizziness can be signs of hypertension, but can also be associated with anxiety without high blood pressure. Persons with early morning headaches are more indicative of hypertension.
-Nosebleed - can often be a sign of hypertension, so check blood pressure when nosebleeds are present and are not a result of trauma to the nose or of allergy. (See Epistaxis in ENT section).
-Blood pressure must be CONTINUALLY ELEVATED for a diagnosis of hypertension. ONE ELEVATED BLOOD PRESSURE DOES NOT PROVE HYPERTENSION. Because the blood pressure can rise temporarily when patient is worried or excited, if the blood pressure is elevated, let the patient rest for 15 minutes and take it again. If still elevated, repeat the BP daily for 3 days before diagnosing chronic hypertension and prescribing anti hypertensive drugs.
-Morning headache is a proven symptom with Malignant Hypertension, and if untreated, death can occur within 2 years.

Complications: Hypertension shortens life.

-A mild case of hypertension without treatment may develop into severs hypertension.

-Hypertension damages the smaller arteries (arterioles) and they become thickened and narrowed. Larger cerebral arteries may back up and burst from the increased pressure in the arterioles. Damaged arteries damage the organs they supply. Almost all organs are affected with hypertension, but the more seriously affected are the BRAIN, HEART, and KIDNEYS.

-BRAIN -Seizures, minor strokes, personality changes, and mental deterioration are signs of HYPERTENSIVE ENCEPHALOPATHY.

-STROKE is the most severe cerebral symptom. It is caused by a cerebral artery bursting or blocking an artery--thrombosis (See Neurology Section). Its severity will depend on how much damage exists in the brain tissue.

Signs and Symptoms:

1. Heart:

Left Heart failure can develop because the heart tires from the constant work of pumping blood into and against the high pressure of the arteries.

2. Kidney:

-Uremia can develop from renal insufficiency secondary to kidney damage. Uremia is a build up of toxic materials in the blood that cannot be excreted with inadequate kidney function. This can result in death. Protein in the urine (Proteinuria) is usually a sign of kidney damage.

Most Hypertension deaths occur as a result of STROKE, CONGESTIVE HEART FAILURE, or RENAL INSUFFICIENCY. Whenever you diagnose any of these three, take several blood pressures to rule out hypertension.

Treatment:

-Mild Hypertension (90-105 diastolic)
-Reduction of salt intake
-Lose weight if overweight
-Moderate exercise.

Moderate: Systolic >150 or Diastolic >90

1. Eliminate salt from the diet
2. Weight loss if over weight
3. Follow up in 2 weeks, recheck blood pressure

Severe: Systolic >180 or diastolic >120

1. Dyazide 1 tablet/day for 7 days
2. Eliminate salt from the diet
3. Weight reduction
4. Follow-up in 1 week:
   -if blood pressure is in the moderate range,stop the dyazide, recheck in 1 week.
   -if blood pressure is in the severe range, increase the dyazide to 1 tablet, 2 times/day, then recheck in 1 week
5. Emphasize importance of salt reduction and weight loss.

Note: Antihypertensive drugs can deplete potassium in the body. Encourage the patient to eat foods high in potassium (bananas and oranges).

Prognosis:

Is good when the blood pressure is properly controlled. Even a patient with severe hypertension (Malignant Hypertension) can expect to live 10 years or longer (rather than less than 2 years) if his blood pressure is controlled properly.

Follow up Management for Moderate and Severe Hypertension

-Let the patient rest 15 minutes after arriving, then take his blood pressure standing up

-Ideally his BP should be 140/90 or slightly less. With severe hypertension 160/150 is acceptable. Sometimes 170/110

is the best that can be achieved, but not really satisfactory.

-If the BP is too high, let the patient rest 15 minutes more and repeat it.

-If the blood pressure falls below 130/80 and the patient feels weak or faint. reduce the medications slightly.

-If the blood pressure is satisfactory, continue the same medications give 1 months's supply.

Prevention:

The prevention of hypertension is difficult but there are 6 useful point to recommend:

1. Most important, routinely check BP on every adult patient at least once yearly to detect and control hypertension at an early stage to prevent it from becoming severe.

2. Avoid overweight - hypertension more frequently develops in overweight people.

3. avoid diets high in fats from animals ("Rice and soup" is more appropriate than a diet with butter and fatty meats.) Too much animal fat leads to atherosclerosis.

4. Urinary tract infections should be treated promptly and adequately. In any urinary tract infection in the male or when urinary tract infections in the female recur more than twice, it is best if possible to refer the patient for special studies in a medical center.

5. The patient should get plenty of exercise, consistent with age and physical condition, and plenty of rest.

Note: Antihypertensive drugs can deplete the body's potassium and cause arrhythmias. Encourage patient to eat foods high in Potassium such as bananas and oranges.

Patient Education: Therapy is for the patient's lifetime, and success depends upon gaining the cooperation of the patient and his relatives. Call on the relatives and carefully explain the situation to them and the patient. Explain that:

-Hypertension, untreated, shortens life.
-Hypertension can be successfully controlled but not cured.
-Continual treatment lengthens l .

-It will be necessary to find which drugs work best for the patient. With moderate or severe hypertension this can best be done at the hospital.

-Thereafter, the patient can see those health workers trained to follow hypertension monthly for a BP check and more medication.

-Patients should get plenty of rest.
-Patients should follow the preventive measures listed above.

ACUTE RHEUMATIC FEVER (ARF)

General: A non-suppurative acute inflammatory complication of gpA streptococcal infection characterized by arthritis, carditis, or chorea with a definite risk of heart disease. Onset is usually approximately 2 weeks after a recent B streptococcal infection.

It is estimated that approximately 5% of the population has the genetic susceptibility to react to B strep infection with ARF.

It is rare for ARF to occur if the B strep infection is appropriately treated within a few days of onset.

Signs and Symptoms:

1. Five major manifestations of ARF are possible:

a. Erythema Marginatum - a serpiginous transient flat

rash.

b. Subcutaneous nodules - most often on extensor surfaces of large joints are painless and transient and are more likely to occur in patients who will get carditis.

c. Chorea - inflammatory reaction in brain tissue causing purposeless, nonrepetitive movements of all muscles, with facial grimacing and impaired coordination.

d. Arthritis - in large joints especially ankles, knees, elbows, and wrists. May be one joint or many, and may shift from one joint to another. Joints are red, swollen, hot, and incredibly tender.

e. Carditis - may involve any or all three cardiac layers (pericardium, myocardium, endocardium, endocardium (valves). There are changing heart murmurs and often congestive heart failure.

2. Minor Criteria:

a. Fever
b. antecedent B strep infection
c. Elevated ESR
d. arthralgia
e. EKG changes

3. Diagnosis - by the modified Jones Criteria as follows:

At least 1, preferably 2, major criteria, plus 1-2 minor criteria.

4. Treatment:

a. Eradicate all B strep with complete Penicillin R course.

b. Aspirin: 60mg/kg/d. (in 4 doses)--increase to:

100mg/kg/d (in 6 doses) if not controlle on 60 mg/kg/d.

Reduce the dose if tinnitus and headache occur. Keep up high dose until fever gone for 1 week.

Keep on 60 mg/kg/d till pain or other inflammatory signs disappear.

c. Bed rest.

d. Prevent future B strep infections with Benzathin Penicillin 1.2 million units IM every month.

HEMORRHOIDS

These are swollen veins that sometimes come down the anus and cause pain and bleeding when passing a stool. The are due to high pressure in the rectum.

Causes Complication of chronic constipation.
Common in pregnancy.
Liver problems.

Signs and Symptoms Often without symptoms.
Pain on passing stool.
Lump at the anal verge (visible hemorrhoids).
Blood covering the stool.
Anal itching (sometimes).

Investigations Take pulse, temperature and weight.

Treatment Give dietary advice to avoid constipation.
Put VASELIN on the area after each stool and each morning and night.
If very painful, use LIGNOCAINE ointment.
Refer to hospital for surgical operation for large hemorrhoids that are causing a lot of problems and not responding to medical therapy.

Complications Anemia

Prevention Eat plenty of fruits and raw vegetables.
Drink plenty of fluids.
avoid constipating medicines.
Tell old people to take regular exercise. Do not strain at stool.

Cardiac Failure

Definition:

The failure of the heart to maintain an output equal with the body's needs. This creates blood congestion (backs up) in the lungs and/or the peripheral venous system.

Either ventricle may fail separately or the left Ventricle may fail causing a secondary failure of the right Ventricle.

Cause: Any heart disease which compromises the efficiency of the heart.

Course: The normal heart empties completely in systol. With exercise there is more blood pumped each beat as well as the heart rate increases but still emptying is complete. Cardiac Failure occurs when the heart can no longer empty completely each stroke causing blood to "congest" behind the failing ventricle. The heart dialates (enlarges) and the veins engorge from "backed up" blood causing dyspnea in the lungs and edema and congested enlarged liver in the systemic system.

Symptoms May come on suddenly or gradually. Earliest symptoms are fatigue and dyspnea on exertion, then ankle edema and dyspnea on lying down (orthopnea). As the left ventricle fails further the lungs become more congested to the point that fluid backs up in the lung capillaries and transfers into the air sacs causing rales in the lungs. This in turn, causes paroxysmal nocturnal dyspnea, coughing and wheezing (cardiac asthma). If this worsens, especially rapidly, pulmonary

edema results with interstitial fluid in the lungs and frothy blood tinged sputum and extreme dyspnea.

Treatment:

1. Patient education: Instruct patient not to add salt to diet.

If no better after I week:

2. Dyazid 1 tablet/day for 1 week (continue salt reduction)

If no better after I week:

2. Increase dyazide to 1 table 2 times/day for one week.

If still not better, refer to a hospital.

Manifestations of Heart Disease

The patient's symptoms of heart disease depend on:

1. Nature of cardiopathy
2. Resultant physiological disturbances of the circulation.

A. Edema

Edema is an abnormal accumulation of serous fluid in the connective tissues.

a. General Features

1. Cardiac causes of edema-congestive heart failure
2. Other causes of edema-sodium retention, liver disease, renal disease, hypoproteinemia,venous or lymphatic obstruction

b. Types

1. Ascites-excessive fluid in peritoneal cavity.
2. Pleural effusion-excessive fluid in the pleural cavity.

3. Anasarca-gross generalized edema

c. Nursing Implications

1. In heart conditions the location of edema is influenced by gravity. Fluid collects in the lower parts of the body (dependent edema).

   a. Evaluate for edema of ankles and feet in the ambulatory patient.

   b. Evaluate for edema of sacral area and posterior thighs in patients confined to bed.

B. Skin color and Temperature

Examine for change in skin color pallor, flushing, cyanosis. Cyanosis is a bluish discoloration of the skin and mucous membranes.

a. Types of Cyanosis

1. Central cyanosis-low oxygen saturation of arterial blood.

2. Peripheral cyanosis-reduction of oxyhemoglobin in capillaries from restricted circulation (low output or vasoconstriction).

b. Cardiac Causes of Cyanosis

1. Congenital heart disease-due to mixing of arterial stream with venous blood.

2. Congestive heart failure and pulmonary edema-due to hypoxia resulting from low cardiac output and poor oxygenation of blood by lungs.

c. Nursing Assessment

1. Look at lobes of ears, fingernail beds, and palms.

2. Look in mouth-less color variation in mucous membranes.

3. Palpate for sweaty, cold, clammy, warm, or dry skin.

4. Evaluate for jaundice-may indicate congestive heart failure associated with severe liver congestion.

C. Dyspnea

Dyspnea is undue breathlessness. and awareness of discomfort associated with breathing.

a. General Features

1. Dyspnea of cardiac origin-failure of left ventricle characterized by increased left atrial, pulmonary venous and capillary pressures; as left atrial pressure rises, the lungs become congested resulting in dyspnea.

2. The threshold (tolerance) for dyspnea varies with the individual.

b. Types of Cardiac Dyspnea.

1. Exertional dyspnea-breathlessness upon moderate exertion, which is relived by rest.

2. Orthopnea-shortness of breath when lying down, which is relived by promptly sitting upright.

3. Paroxysmal nocturnal dyspnea-sudden dyspnea at night while lying down.

4. Cheyne-Stokes respiration-periodic breathing characterized by gradual increase in depth of

respiration, followed by a decrease in respiration resulting in apnea; periods of hyperpnea alternating with periods of apnea.

a. Cheyne-Stokes respiration is usually considered a serious sign.

b. Associated with left ventricular failure (severe),cerebral vascular disease.

c. **Nursing Assessment of Dyspnea**

1. What precipitates or relieves the dyspnea?
2. What position does the patient assume?
3. what is the skin color? Cyanosis?

<u>Varicose Veins</u>

Definition Dilated tortuous superficial veins found most often in the lower legs but also in the rectum (where they are called hemorrhoids);

Cause: Man's upright posture puts a strain on the veins due to the increased hydrostatic pressure.

The valves in the veins keep the blood flowing centrally, but in some individuals the valves become incompetent which prevents the muscular action of the lower legs (in walking) from properly "pumping" the blood upwards toward the heart. the increased venous pressure caused dilatation of the veins and edema.

The above situation is aggravated by prolonged standing, pregnancy, abdominal tumor, ascites, obesity, and excessive body height.

Symptoms:

1. May be none.
2. Aching in legs
3. Edema

4. atrophic skin changes as a result of poor cutaneous circulation-also causes itching and ulcerating of skin at ankle area.

Treatment:

1. Remove aggravating causes.
2. Elastic leg wraps (always wrap <u>from</u> foot upwards to knee).
3. Elevate legs as much as possible.
4. Varicose vein surgery.

Gastrointestinal

1. VIRAL DIARRHEA

Viral infection is the most common cause of diarrhea. Usually viral diarrhea is not dangerous. IT MAY CAUSE THE DEATH OF A MALNOURISHED CHILD BY DEHYDRATION. Viral diarrhea usually lasts 3 -7 days. Virus infection is NOT a cause of chronic diarrhea.

Signs and symptoms

- watery diarrhea WITHOUT blood or mucus
- vomiting is common
- symptoms of viral infection are common: muscle aches, clear nasal discharge, mild sore throat (not tonsillities)
- fever, if present, is 39 degrees or less.
- cramping abdominal pain may be present
- dehydration may present

Laboratory.

- stool examination is usually NOT performed
- there will be no pus cells on microscopic examination of the stool if it is done.

Treatment

- antibiotics are not helpful
- treat and prevent dehydration
- increase fluid intake: use cooled boiled water
- Paracetamol is given for fever if it is present
  Adult:500mg 4 times per day
  children: 10 - 15 mg/kg 4 times per day.
- breast feeding should be continued
- Children with MALNUTRITION and DEHYDRATION should not leave your clinic for at least 24 hours.
- if there is VOMITING , see dehydration.

Follow-up

- mild diarrhea will require no follow-up
- if no improvement in 3 days:
  re-evaluate
  stool examination

2. BACTERIAL DIARRHEA OR BACILLARY DYSENTERY

Bacterial diarrhea is less common than viral diarrhea. Like viral diarrhea it is a disease that is usually not dangerous except to children who are MALNOURISHED or DEHYDRATED. bacterial diarrhea usually lasts from (- - days). Bacteria can sometimes cause chronic diarrhea.

General considerations

Dysentery means severe diarrhea with passage of mucus or blood in the stool. This is most often caused by a bacteria or infection of the intestinal walls. The bacteria is usually shigella or salmonella. both are transmitted by fecal contamination.

Clinical Picture

The patient is well until he experiences a sudden onset of colicky abdominal pains, followed by the passage of bloody stools. Fever is usually present along with tenesmus (the urge to defecate - without much stool).

The diagnosis is confirmed by examining a stained stool preparation and identifying numerous bacteria and pus cells.

Signs and symptoms

- diarrhea-both blood and mucus may be present
- fever is common and may be above 39 degrees
- severe abdominal cramps are common
- tenesmus is common (tenesmus is the sudden strong desire to empty the rectum when no feces are present)
- abdominal tenderness is common.

Treatment

- treat and prevent DEHYDRATION.
- trimethoprim-sulfamethazole (Clotrimoxazole,Septra) given by mouth at the normal dose for 7 days.
- increase fluid intake - use cooled boiled water.
- paracetamol is given for fever.
- breast feeding should be continued
- children with MALNUTRITION and DEHYDRATION should not leave your clinic for at least 24 hours.
- if there is vomiting, see dehydration.

Follow-up

- if no improvement in 3 days, re-evaluate the patient.
- REMEMBER- check for signs of the other causes of diarrhea
- Avoid spread of the disease by strict observance of cleanliness when disposing of the stool and start flagyl, high dose, for 10 days.

3. AMOEBIASIS

General Considerations

This diarrheal condition is caused by protozoan entoemeba histolytic. The microbes migrate to the large intestine when the patient eats food or water contaminated with amoeba containing feces. The disease occurs in all ages and in both sexes. Amoeba may live in the large intestine and cause no symptoms. Amoeba may cause chronic diarrhea.

Clinical Picture

The patient usually has a history of repeated mild attacks of diarrhea. There is usually no fever. Occasionally, the inflammation of the bowel is so severe that the stool will contain blood and mucus. There may be mild abdominal pain. Any person complaining intermittently of one or two loose motions with blood over many weeks or months, history of indigestion and dyspepsia is probably suffering from chronic dysentery.

Signs and Symptoms

- diarrhea-both blood and mucus may be present (dysentery)
- fever is usually not present though sometimes high fever may be present
- lower abdominal cramping pain is common
- Tenesmus.

Complications

The amoeba can move through the intestinal wall into the bloodstream. From here it can migrate anywhere, but the most common site is the portal circulation. Here it can cause severe liver damage due to abscess formation. Other less common sites of amoebic abscess are the lungs and the brain. The diagnosis is confirmed by seeing active amoebic tropozoites or ova in a fresh stool specimen.

Laboratory

- stool smear will show both motile (moving) amoeba and cells (see laboratory manual)

Treatment

- treat and prevent DEHYDRATION
- metronidazol (Flagyl) is given by mouth at the high dose for 10 days
- increase fluid intake -- use cooled boiled water
- give paracetamol for fever.

Prevention

- teach to avoid fecal contamination of food and water supplies.

Follow-up

- if no improvement after treatment, re-evaluate: perform stool examination.

4. GIARDIASIS

Giardiasis is diarrhea caused by giardia. Giardia is a common cause of CHRONIC diarrhea that is usually not dangerous. Giardia may also cause chronic vague abdominal pain

Signs and symptoms

- diarrhea - WITHOUT blood or mucus
- fever is uncommon
- vomiting is uncommon
- tenesmus is uncommon

Laboratory

- giardia cysts are often NOT FOUND in the stool examination 40% missed even with 3 samples.

Treatment

- Giardia infections often improve by themselves. Good nutrition helps.
- Severe cases are treated with METRONIDAZOLE low dose 3 times a day for 5-10 days. Note that this is 1/2 the dose for Amebiasis.
- Look up the dose of METRONIDAZOLE for giardia in children in the Drug Formulary.

Follow-up

- if no improvement after treatment, re-evaluate: remember other causes of diarrhea.

Complications

-failure to thrive in children (common) plus frequent malnutrition

FOOD POISONING

FOOD POISONING IS ACUTE NAUSEA, VOMITING, AND/OR DIARRHEA CAUSED BY EATING FOOD CONTAMINATED BY BACTERIA,. THIS DISEASE MAY AFFECT A GROUP OF PEOPLE WHO ATE THE FOOD DIFFERENT TYPES OF BACTERIA CAN CAUSE THIS SYNDROME MOST FOOD POISONING CASES RECOVER IN TWO TO THREE DAYS WITHOUT TREATMENT EXCEPT PREVENTION OF DEHYDRATION BY TAKING SUFFICIENT FLUIDS.

STUDENT GUIDE

DEHYDRATION AND DIARRHEA

Objectives

Using the information and experiences provided by the instructor and the module text you will be able to:

1. Identify the physical signs associated with dehydration.

2. Describe the physical signs associated with dehydration.

3. Estimate the PO fluid replacement for a dehydrated child.

4. Use diagnostic and management protocols as a guide to identification and treatment of diarrhea.
   Determine the appropriate management for all degrees of dehydration.

5. Determine the appropriate management for all degrees of dehydration.

6. Educate parents about the preparation and administration of salt-sugar solution.

7. Calculate I.V. fluid needs for a dehydrate child.

8. Recognize the physical examinations listed in the module for dehydration.

II. Evaluation:

Upon completion of this module you will be rated on your attainment of the above objectives.

*Knowledge: Written test based upon module content.

*Skill: See rating sheet for acceptable performance level

1. calculation of PO.O. and I.V. fluid replacement.
2. Parent education salt sugar solution.
3. Start I.V. on a child.
4. Pass N.G. tube on a child.

III. Activities you will be participating in to accomplish the objectives.

1. Read the module text on mild and moderate and severe dehydration and answer review questions.

2. Presentation of slides on clinical picture of diarrhea and dehydration and discussion.

3. Practice calculation of fluid retention.

4. Discussion of management of diarrhea and dehydration.

5. Review of case studies.

6. Practice use of salt sugar solution flip chart for parent education.

7. Clinical experience, identification and management of dehydration.

General Considerations

Diarrhea and dehydration are considered together because they occur together. When a child has diarrhea it means that he is 1) passing more stool than usual and 2) these stools are more watery than usual. Because the body is losing this extra water, the child soon has too little water. When this occurs he is said to be dehydrated. The more water he loses, the more dehydrated he becomes. It is the dehydration that causes the child to be so sick. Diarrhea and dehydration are very common in young children.

Three of the most important life saving functions of a Medic are:

1. Recognizing the 3 degrees of dehydration.

2. Managing dehydration and associated problems.

3. Preventing diarrhea and dehydration by instructing mothers about giving salt sugar water to their children at home.

There are many interrelated causes of diarrhea. These causes are very important to know and understand in order to help mothers prevent diarrhea. They are less important to the actual treatment of diarrhea and dehydration. Some of the most important causes of (or factors related to) diarrhea are:

1. Intestinal infections:

-Viral. 60% of diarrhea cases are viral and are usually mild.Viruses do not respond to antibiotics. Treatment is O.R.S. and fluids.

- Bacterial. (examples: cholera, shigella) Bacterial diseases can be treated with specific antibiotics in many cases. An important part of treatment, however, is O.R.S. and fluids

-Parasite. Amebas or giardia may cause diarrhea, but worm infestations usually do not. There is specific medications of these parasites. An important part of treatment is O.R.S. and fluids.

2. Malnutrition - Poor nutrition causes Malabsorption and weakens the patient causing diarrhea from other causes to be worse. Treatment is good food, ORS, fluids, and medicines for any bacterial or parasitic infection.

3. Weaning - Many children between 6 months and 2 years of age develop diarrhea as they are being weaned from the breast to an adult diet. This is especially true if weaning is done too quickly. For children in this 6 months to 2 year age group, you will hear the term "weaning diarrhea" used.

4. Bottle feeding - It is now very clear that infants who are bottle fed have many more episodes of diarrhea than do breast fed infants. This is especially true where refrigeration and water piped into the house are absent. BREAST MILK IS THE BEST FOOD FOR INFANTS AND IT IS STERILE

5. Allergies, intolerance to certain foods - This is an unusual cause and should be considered last. Treatment is to stop the food causing the problem, replacing it in the diet with food of equivalent nutritional value. Give ORS and fluids if dehydrated.

6. Laxatives, purges, certain poisons and medications. Treatment is to stop the irritating chemical or drug and take ORS and fluids.

7. Infections outside the intestine - (Examples: ear infections, measles, malaria). Treatment is of the infection plus ORS and fluids.

Children utilize about 5 times as much liquid/lb/day as adults. Dehydration is caused by the increased loss of water and electrolytes in the diarrhea stools. Children are consequently much more vulnerable to dehydration than adults.

Epidemiology

Diarrhea and dehydration, in the more severe form, are seen almost exclusively in the poor communities around the world. This is primarily due to the poor nutritional sanitary conditions seen in these communities. These two factors are further complicated by the fact that many mothers withhold food and liquids (including breast feeding) from infants and children with diarrhea. This is done because they believe that it will help the baby by slowing the diarrhea. It may in some cases slow the diarrhea. But more importantly, it causes the baby to become more dehydrated and weaker by not replacing the lost fluids.

All ages can be affected by diarrhea and dehydration; however, most of the serious cases occur in children below the age of 3 years.

Prevention

Diarrhea can be prevented by:

1. barest feeding (up to age 2-3 years)
2. Boiling all water given to children.
3. Following the Six Basic Rules of good nutrition (see malnutrition)
4. Using latrines and keeping houses clean.

DIARRHEA

Diarrhea is a common complaint meaning numerous loose stools. In adults, this is more than there stools per day. This, one large watery stool/day is not diarrhea. In children, the "normal" number is higher (in infants, as many as six per day may be normal). Therefore, in children, diarrhea means a marked increase in stool number over normal. Infants and children are at highest risk for complication of diarrhea (ex., dehydration and malnutrition). For ways to prevent diarrhea in infants and children, refer to the Nutrition chapter.

DIARRHEA IS MORE COMMON AND MORE DANGEROUS IN A MALNOURISHED CHILD. Most children who die from diarrhea do so because they do not have enough water in their bodies. This is called DEHYDRATION (p.50).

GENERAL GUIDELINES FOR THE TREATMENT OF DIARRHEA:

1. Always treat dehydration (p. 50) if present. Prevent dehydration by giving lots of fluids.

2. Insist that the patient is cating: give food as soon the person can eat. Bland, well-mashed foods are about. If breastfeeding, the mother should continue, even if the child is vomiting. See Nutrition (p. 115)

3. Diarrhea has many causes. Only some require antibiotics. The following table will help to you to choose the correct treatment.

Remember: in children there are many other causes: otitis media, pneumonia, tonsillitis, teething, malnutrition and malaria.

A TABLE TO HELP TREAT DIARRHEA

FEVER

(GREATER THAN 38.5 DEGREES ORAL, 39 RECTAL)

BLOODY	NON-BLOODY
1. TREAT AND PREVENT DEHYDRATION	TREAT AND PREVENT DEHYDRATION
2. TRIMETHOPRIM/SULFAMETHOXAZOLE NORMAL DOSE - FOR 7 DAYS	FOLLOW THE GENERAL GUIDELINES
3. NO IMPROVEMENT IN 3 DAYS: METRONIDAZOLE HIGH DOSE FOR 5 DAYS	3. NO IMPROVEMENT IN 3 DAYS TREAT AS BLOODY DIARRHEA

REMEMBER THE OTHER CAUSES OF DIARRHEA IN CHILDREN

NO FEVER

BLOODY	NON-BLOODY
1. TREAT AND PREVENT DEHYDRATION	1. TREAT AND PREVENT DEHYDRATION
2. METRONIDAZOLE HIGH DOSE FOR FIVE DAYS	2. FOLLOW THE GENERAL GUIDELINES
3. NO IMPROVEMENT IN 3 DAYS CONSIDER HEMORRHOIDS	3. REMEMBER: THE OTHER CAUSES OF DIARRHEA

4. NO IMPROVEMENT IN 3 DAYS: METRONIDAZOLE NORMAL DOSE FOR 5 DAYS

FIRST ASK:-

- Does the child have loose or watery stools?
- How many days has the child had diarrhoea?
- Is there any blood in the stools. If yes, then give parent a stool pot and look for visible blood.
- Does the child have a fever?If yes, take temperature.
- Has the child been given any fluids? Which ones?How much? How often?
- Has the child been given any foods?Which ones?How much How often?
- Has the child been given any medicines? Which ones?

THEN ASSESS YOUR PATIENT FOR DEHYDRATION

1. LOOK AT: CONDITION EYES TEARS MOUTH AND TONGUE THIRST	Well, alert Normal Present Moist Drinks normally, not thirsty	*Restless, irritable Sunken Absent Dry *Thirsty, drinks eagerly*	*Lethargic or unconscious; floppy* Very sunken and dry Absent Very dry *Drinks poorly or not able to drink*
2. FEEL SKIN PINCH	Goes back quickly	*Goes back slowly*	*Goes back very slowly*
3. DECIDE:	The patient has NO SIGNS OF DEHYDRATION	If the patient has two or more signs, including at least one key *sing*, there is SOME DEHYDRATION	If the patient has two or more signs, including at least one key *sing*, there is SEVERE REHYDRATION
4. TREAT:	Use Treatment Plan A	Weigh the patient, if possible, and use Treatment Plan B	Weigh the patient and use Treatment Plan C URGENTLY

TREATMENT PLAN A
TO TREAT DIARRHOEA AT HOME
USE THIS PLAN TO TEACH THE PARENT TO:

- Continue treatment at home after leaving the health facility.
- Give early treatment for future episodes of diarrhoea.

EXPLAIN THE 5 RULES FOR TREATING DIARRHOEA AT HOME:

Rule 1. Give child at least one extra cup of fluid after each watery stool to replace.

Water Loss.

- Give fluids like breastmilk, rice water, weak tea, plain water, lassi, ORS.
- Gave as much of these fluids as the child will take.
- Continue giving those extra fluids until diarhoea stops.
- Extra fluids will prevent the child becoming dehydrated by replacing the water lost in the water stools.

Rule 2. Continue feeding the child.

- Breastfeed more frequently.
- If the child is 4 months or older also give soft foods like rice, kitchri, kheer, banana, potato, yoghurt or whatever the child wants to eat. Add a teaspoon of oil to each serving.
- Ofter smaller amounts of food more often, at least 6 lines a day
- Give an extra meal each day for 2 weeks after diarrhoea has stopped.
- Give freshly prepared foods.

Rule 3. Do not give medicines for diarrhoea, they may be dangerous and should only be prescribed by the health facillity staff.

Rule 4 Take the child to the health facility it the child has any one of the following :

- Blood in the stool
- Fever
- More frequent watery stools
- Becomes very thirsty
- Eats or drinks poorly.

Continue giving fluids on the way to the health facility .

Rule 5. Prevent the child getting a Further episode of diarrhoea by advising the parent to:

- Give breastmilk and no other fluids or foods for the first 4 months of life .

- Never use a feeding bottle, use a cup and spoon instead.

- Wash hands with soap before preparing food or feeding the child.

TEACH PARENT HOW TO USE FLUIDS AND ORS AT HOME:

SHOW PARENT HOW TO PREPARE ORS:

- Pour 1 litre of clean water into a container .

  - Preferably a container like a kettle or jug brought by the parent from their own home so that the 1 litre level can be marked by the health faility staff.

  - Alternatively 4 poa sized glasses can be used.

- Empty one whole packet of ORS into the water and stir with a clean spoon.

- Cover container.

- Throw away any remaining ORS after 24 hour and prepare a fresh litre.

SHOW PARENT HOW TO GIVE FLUIDS AND ORS:

- Give at least one cup after each diarrhoea stool and more if the child wants more.

- Give a teaspoonful every 1 minute for a child under 2 year.

- Give frequent sips from a cup for an older child.

- If the child vomits, wait 10 minutes, and then give the ORS more slowly, a teaspoon every 2-3 minutes.

- If the diarrhoea continues after the ORS packets are used up, tell parent to give other fluids as described in the first rule above and return to the health facility.

ENSURE THAT PARENT CAN EXPLAIN THE 5 RULES AND HOW TO PREPARE AND GIVE ORS BEFORE GOING HOME.

GIVE PARENT 2 ORS PACKETS TO TAKE HOME.

TREATMENT PLAN B
TO TREAT SOME DEHYDRATION

USE CHART BELOW TO DECIDE UPON THE AMOUNT OF ORS REQUIRED TO REHYDRATE THE CHILD IN THE FIRST 4 HOURS.

AGE	Less than 4 months	4.11 months	12.23 months	2.4 Years	5-14 Years	15 Years or older
Weight	Less than 5Kg	5-7-9 Kg	8-10-9 Kg	11-15-9 Kg	16-29-9 Kg	30 Kg or more
Mis. ORS	200-400 mls	400-600 mls	600-800 mls	800-1200 mls	1200-2200 mls	2200-4000 mls
Local Measure						

SHOW PARENT HOW TO PREPARE ORS AS EXPLAINED IN PLAN A.

OBSERVE THE CHILD CAREFULLY AND HELP PARENT GIVE ORS

- Show parent how to give ORS a teaspoon every minute for a child under 2 years frequent sips from a cup for an older child.

- If the child wants more ORS than shown in the chart, give more.

- Encourage the mother to continue breastfeeding.
- Check from time to time to see it parent is having any problems

- If the child vomits, wait 10 minutes and then continue giving ORS but more slowly, a teaspoonful every 2.3 minutes.

REASSESS THE CHILD AFTER THE ORS REQUIREMENT IS COMPLETED USING THE ASSESSMENT CHART, THEN SELECT PLAN A.\, B OR C TO CONTINUE TREATMENT.

- If there are NO signs of dehydration, shift to Plan A, When dehydration has been corrected the child usually passes urine or may also become tired and fall asleep.

- If signs indicating SOME dehydration are still present repeat Plan B, but start to offer soft food and fluids as recommended in Plan A.

- If signs indicating SEVERE dehydration have appeared, still to Plan C.

- Ofter soft foods to children over 4 months of age before they leave.

IF PARENT MUST LEAVE BEFORE COMPLETING TREATMENT PLAN B:

- Show how much ORS to give to finish the 4 hour treatment at home.

- Explain the 5 rules for home treatment in Plan A.

ENSURE THAT PARENT CAN EXPLAIN THE 5 RULES AND HOW TO PREPARE AND GIVE ORS BEFORE GOING HOME.

GIVE PARENT 2 ORS PACKETS TO TAKE HOME.

TREATMENT PLAN C
To Treat Severe Dehydration Quickly

FOLLOW THE ARROWS, IF ANSWER IS "YES" GO ACROSS, IF "NO" GO DOWN

Intravenous fluid therapy should be used in the following cases:

1. Child with 2 or more signs of severe dehydration including at least one "key sign" .
2. Child in a comaioso slate who is unable to drink.

3. Heavy purging where ORS intake is not enough to keep with the water lost in the stools.
4. Uncontrollable vomiting.

Page No. 62 of original document is very difficult to print please give a sketch to print it in another way.

TREATMENT PLAN C

To Treat Severe Dehydration Quickly

FOLLOW THE ARROWS. IF ANSWER IS "YES", GO ACROSS. IF "NO" GO DOWN

Intravenous fluid therapy should be used in the following cases :

1. Child with 2 or more signs of severe dehydration including at least one "key sign".
2. Child in a comatose state who is unable to drink.
3. Heavy purging where ORS intake is not enough to keep up with the water lost in the stools.
4. Uncontrollable vomiting.

START HERE

Can you give intravenous (IV) fluids immediately?

YES →

Start intravenous therapy immediately using Ringer's Lactate Solution (Give 100ml/kg. Use chart below to decide upon the amount and rate.

Age	First give 30 ml/kg in :	Then give 70 ml/kg in :
Infants (under 12 mths)	1 hour #	5 hours
Older children and adults	30 minutes #	2½ hours

Repeat once again if radial pulse is still very weak or not detectable.

- If Ringer's Lactate is not available use 0.9% Normal Saline or half strength Normal Saline with 5% Dextrose instead
- Glucose or Dextrose solutions alone should NEVER be used
- If child is able to drink give ORS by mouth while the drip is set up
- Continue breastfeeding during iv therapy
- Reassess the child every 1-2 hours. If hydration is not improving give the iv more rapidly and refer the child to the hospital
- As soon as child is able to drink start ORS by mouth and remove iv set
- After 6 hours (infants) and 3 hours (older children), assess the child according the assessment chart, then select Plan A, B or C to continue treatment.
- As soon as child is rehydrated start soft food

NO ↓

Is IV treatment available nearby. (within 30 minutes)?

YES →

- Send the patient immediately for IV treatment
- If the patient can drink, provide the mother with ORS and show her how to give it during the trip

NO ↓

Are you trained to use a naso-gastric (NG) tube for rehydration?

YES →

- Start rehydration by the tube with ORS. Give 20 ml/kg/hour for 6 hours (total of 120 ml/kg).
- Reassess the patient every 1-2 hours
- If there is repeated vomiting or increasing abdominal distension, give the fluid more slowly
- If hydration is not improving after 3 hours, send the patient for IV therapy.
- After 6 hours reassess the patient and choose the appropriate treatment Plan

NO ↓

Can the patient drink?

YES →

- Start rehydration by mouth with ORS giving 20 ml/kg/hour for 6 hours (total of 120 ml/kg)
- Reassess the patient every 1-2 hours
- If there is repeated vomiting, give the fluid more slowly
- If hydration is not improving after 3 hours, send the patient for IV therapy
- After 6 hours reassess the patient and choose the appropriate treatment Plan

NO ↓

URGENT: Send the patient for IV or NG treatment

NOTES :

- If possible, observe the patient at least 6 hours after rehydration to be sure the mother can maintain hydration by giving ORS solution by mouth
- If the patient is above 2 years and there is cholera in your area, give an appropriate oral antibiotic after the patient is alert

BEST AVAILABLE DOCUMENT

TEACHING ORT (Oral Rehydration Therapy)

The best and most important treatment for diarrhea and/or dehydration is ORS (oral rehydration solution). You must be able to teach a patient (or a mother if the patient is a child) how to properly make ORS and why it is so important.

Equipment you will need:

1. Black and white ORS picture poster (or the ORS flip chart)
2. Sugar in a storage tin
3. Salt in a small bowl
4. A pan
5. A spoon
6. An aluminum "glass" or water container
7. Half litter measure (or container with milli liter markings on it)

By carefully explaining each picture on the poster, you will be able to teach anyone how to make ORS. Read the directions for each of the eleven pictures and then explain the pictures thoroughly to the mother or patient.

The first message that should be given by the health worker is that the poster pictures are all connected. They all refer to diarrhoea and its treatment. To take only one or two pictures and use them is rather like taking the engine and doors from a car and expecting them to work without all the other parts. Or like expecting a bicycle to work without wheels and a chain.

only when an understanding has been reached that all pictures in the set are as important as each other should the health worker proceed.

It is important to stress that while ORT as a technique is extremely simple, it only works when the correct measures are used. Loose handling of the technique will not only do nothing for a diarrhoeal patient; it can actually harm the person. It is imperative that the philosophy of "more is

better" with respect to the concentration of the constituents of the "home-solution' be clearly spelled out as being dangerous.

xplanation for the ORS picture poster:

Picture 1 (reading right to left)

This is a small healthy child which has diarrhoea. The pool of excreta under the child should be pointed out as a loose stool. Because colour in printing always represents a problem, the colour of the diarrhoea might be misleading. Stress that it is diarrhoea.

Picture 2

This is a small healthy child which is vomitting. Few, if any, people have trouble understanding this picture. Just mention that it is vomit.

Picture 3

This is the same child who has become dehydrated from severe diarrhoea. A number of the respondents saw the child as dead. It is not: but at risk of dying unless something is done about the diarrhoea from which it is suffering. The extension worker might draw the attention of the group to the fold of skin which has been pinched on the child's stomach, and which remains -- a sure sign of dehydration. Also for very young children, the sunken fontanelle is another sure sign of dehydration. Do not dwell too long on this picture, since, it is the "what to do about it" following that is the important message. Simply, ensure that it is understood that the child is very sick from diarrhoea.

Picture 4

Take half-a-litre of unboiled water in an aluminium "glass" or other suitable water container. People appear not to have a problem understanding the message; but they

do have some problems understanding the size of the glass. As the success of the technique depends upon the accuracy of measurement of the constituents, it is imperative that the extension worker always carries a standard half-litre measure with him/her at all times, so that, it can be used to graduate the containers found in the home. Time should be spent on this; and stressing the importance of always using the half-litre container that has been marked by the extension worker. Women can be told that if their own container is broken or damaged, they can go to a neighbour and re-graduate their new container.

Picture 5

Take a handful of sugar from the storage tin. Not everybody uses the same type of sugar storage container. Also, the way in which sugar is taken in the hand is important. If the fingers are turned in towards the palm, the amount of sugar taken is less than needed. Thus, having the finger ends as shown in the picture must be stressed. The hand should be closed but full of sugar. Surprisingly, adult males and adult females appear to be able to take almost identical amounts, even though their hands seem to be different in size. This could be talked about to reassure the group.

Picture 6

Take one three-fingered-pinch of salt from a salt container. The problem that people face with this picture is that they do not readily identify the material as salt. The worker should therefore, first of all say, "this is salt in a little bowl". As the worker is bound to be working in a dry area the salt will very rarely be wet. Wet salt tends to come in lumps; and if this is likely to happen, then the worker should stress that the amount of salt is as if it were dry. Any excess salt from dampness should be shaken off.

Picture 7

Take the half-litre of water, the handful of sugar and the three - fingered-pinch of salt, and mix them together in a pan for giving to the dehydrated child. The problem faced with this picture has been its connection with the other pictures in the set. The worker should thus try to make the connections between the child with diarrhoea, vomitting, being dehydrated and the giving of the mix as shown in picture 7 to that child. This may be the time that the question of using boiled water arises. While the packets all say that boiled water should be used, this is not the case. Few people have boiled and cooled water ready when the child is severely dehydrated; and the important thing is to get the mix which has been made, into the child at the earliest possible moment. Thus, the best and cleanest water available -- or that which is normally used in the home, should be used in the mix. And MAKE SURE IT IS GIVEN TO THE CHILD AS SOON AS POSSIBLE.

Picture 8:

The mother feeds the child with the salt/sugar/water solution:. As the picture cannot convey the fact that the content of the bowl being held by the mother is, in fact, the home solution, it is necessary to say this. The worker should go back to the previous four pictures and make the connection. Also, as the question will arise as to how much of the solution to give, this must also be dealt with in detail. The answer is "as much as the child wants" it is also important that the mothers be told that water should also be given to the child if it wants that as well.

Picture 9:

The mother breastfeeds her child who has diarrhoea. While mothers have no trouble identifying what is happening in the picture: they do indeed have trouble understanding why breastfeeding is shown on this poster. The worker must make this connection dealing with the substantial weight

loss during diarrhoea, and how breastfeeding is, perhaps, the most effective way of getting food back into the child particularly for those who have not yet reached weaning age. stress should be put on never denying the breast to a child with diarrhoea.

Picture 10:

Continue giving soft foods to a child having diarrhoea. Mothers have great difficulty with the relevance of this picture to diarrhoea. This is likely to be because some mothers naturally want to reduce the child's stool output, and think that witholding of food is the best way to achieve this. Here, the worker needs to spend some time explaining that weight loss during diarrhoea is dangerous. However, it must be clearly spelled out that the stool output will increase when food is taken; but that the child is actually absorbing some of the food that is passing. If no food passes, there is nothing for the child to absorb. Foods which are rich in potassium (bananas, coconut water and the like) are very good for the child. The range of foods shown in this picture are suitable, provided they have been made soft enough for the child to eat. The worker must connect diarrhoea; weight loss: dehydration; the need for "home-solution' to rehydrate; and the eating of food (including breastfeeding if the child is still at the breast)all together, for they lead into the next picture;

Picture 11;

here is a healthy child who was having diarrhoea, vomitting and became dehydrated; then the "home solution' was made and given to it Breastfeeding and normal soft foods were given even during the diarrhoea, and the child has -- as a result -- become strong and healthy again.This result -- the normal healthy child -- has only come about provided All the steps in the poster have been followed. This must be stated, so that the connections can firmly be made. At this time, the worker should introduce the idea of the simplicity of the "home-solution" by showing that

it is one measure of water (Neem Seer) with one hand of sugar with one pinch of salt. Anyone can remember that! And all of these things can be found in virtually every home -- or in the neighbour's if you have temporarily run out.

THE TASTE TEST

During training, the health worker must be made to taste the resulting solution. During training of mothers, they must be made to taste the solution in the same way. This will avoid giving a "home-solution" mix where salt and sugar have been mixed, such as might happen where light is poor.

At the end of the discussion, it is adviseable to have one of the participants show how to make, the "home-solution" under guidance. This is likely to be a popular event, and can well be encouraged. The worker can talk about the taste; how it is as salty as tears, and that someone who is not dehydrated is likely not to want to drink it. But watch the dehydrated baby gulp it down!

During the interview/group discussion, the ORS packet will inevitably come under discussion. The worker should avoid any mention of the details of the packet contents beyond saying that it may be better than the home-solution, BUT ONLY IF ACCURATELY MIXED. As there are at least three different sized packets available in the market, will they be able to read the instructions ? If they do not, they are putting the baby at risk. If they can read, then it is advisable to suggest that they use the half litre packet because they, will have the half litre measure already graduated in their homes.

ORS AND DEHYDRATION

Fluid dosage for Dehydrated Patients.

1. Give fluid continuously, as much as possible bit by bit, as long as there is server dehydration.

2. Once the patient improves give the following amounts according to age:

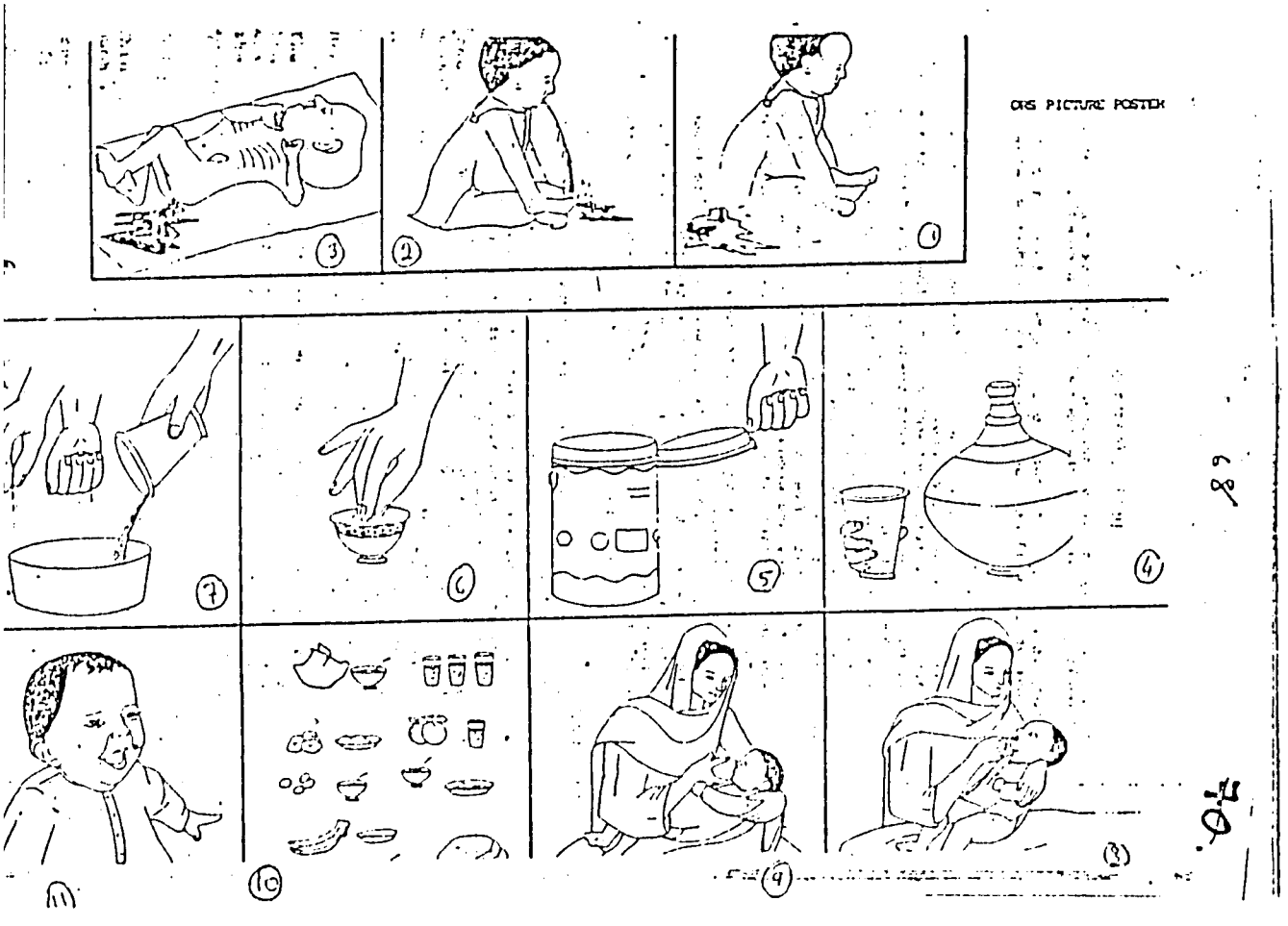
Newborn - 2 months	50ml (1/4 cup)	Per Hour
3 - 11 months	100 ml (1/2 cup)	Per hour
1 - 2 Years	150 ml (1 cups)	Per hour
3 - 5 Years	250 ml (1 1/2 cups)	Per hour
6 - 10 Years	350 ml (2 cups)	Per hour
11 - 15 Years	500 ml (3 cups)	Per hour
Adults	1 liter (6 cups)	Per hour

3. Give more if there is no further improvement.

Give less if symptoms improve and urine production returns to normal

Give an extra does every time the patient vomits or passes a watery stool.

ORS PICTURE POSTER



BEST AVAILABLE DOCUMENT

WORMS

Intestinal worms are a very common disease which is rarely dangerous. Worms are dangerous when they case malnutrition or anemia. Worms are passed from one person to the next by contamination of food or water with feces.

There are two kinds of worms: round worms and segmented worms. There are three kinds of round worms. There are two kinds of segmented worms. These different worms may be distinguished by the patient history and stool examination.

ROUND WORMS

Ascaris

Ascaris is the largest of the round worms and also the most common of any worm infection. The worm is between 15 and 40 cm in length. These worms live in the intestine and shed 200,000 eggs/day.

Hookworms

Hookworms are a smaller round worm. They are about one cm in length. They live in the small intestine and they do suck blood. They can cause anemia. The worm eggs are deposited in the soil in infected stool. These worms, unlike the others, enter the body through the skin, usually of bare feet.

Pinworms

Pinworm infection is common but not dangerous. These are the smallest round worm. They are less than 1 cm in length. The worms live in the rectum. The females travel out through the anus at night and lay their eggs around the anus. The laying of the eggs causes itching around the anus which is the most common chief complaint in children with pinworms.

SEGMENTED WORMS

Beef Tapeworm

The beef tapeworm is the most common segmented worm. It lives in the intestine and may be as large as 5 to 10 meters. Though they are very large, they are rarely dangerous. Beef tapeworms enter the gastrointestinal tract when incompletely cooked infected beef is eaten. It may cause B-12 deficiency, rarely.

Dwarf Tapeworm (H. nana)

This segmented worm is less common than the beef tapeworm. It is much smaller: usually only 2.5 cm in length. The dwarf tapeworm enters the gastrointestinal tract when the eggs are eaten this usually happens to children who play in dirt contaminated by infected feces.

Effect on Health:

A small number of worms in the body does not cause symptoms, so by the time a person actually develops symptoms, the number of worms infecting the person is very large.

Worms can cause a loss of weight in an infected person because they consume the food that a person needs to grow, live, and work. Worms can cause abdominal pain if there are too many in number. They can even make themselves into a ball which may obstruct the intestine.

* Hookworms cause anemia by sucking the blood of an infected person.

* Pin worms cause itching of the anus.

* Worms can even cause diarrhea or vomiting.

Diagnosis:

Intestinal worms lay their eggs in the gut, and are then passed out of the body in the feces, we can see the eggs and larvae under the microscope, where they are easily identified.

Life cycle of the Worm (How Worms are Spread):

Worms breed differently from bacteria, viruses and other germs: they do not multiply inside the body. But once they enter the body, they lay eggs, which are passed out of the infected person's body in his feces.Other animals or humans may then become infected in a variety of ways.

Each kind of worm has a different life cycle. In the case of round worms and pinworms, the worms enter the body via the mouth through dirty food and hands; tape worms enter the body through uncooked meat. Hookworms enter the body through the skin.

Life cycle of Round Worms (ascaris):

1) Adult worms live in the small intestine where they lay large numbers of eggs, about 200,000 per day.

2) Eggs are passed out of the body with the feces into the soil (and can contaminate vegetables).

3) The larvae develop inside the eggs.

4) The eggs are swallowed when they are present in uncooked food. The eggs enter the intestine.

5) After penetrating the intestinal wall, the larvae go to the lungs via the circulating blood, where they grow.

6) The eggs again enter the intestine via the trachea and stomach and grow into adult worms.

The Life cycle of Pin Worms:

1) The adult worm lives in the large intestine. The female migrates to the anus and lays eggs. The eggs contain larvae which can reinfect the patient himself or can infect another person through:

a) Putting the fingers in the mouth after scratching the anus area. This is called autoinfection.

b) After being swallowed, the eggs enter the stomach and small intestine. Then a mature worm develops in the lower small intestine and migrates to discharge eggs.

The life cycle of Tape Worms:

1) Adult worms are found in the intestine of man.
2) Eggs are then passed out of the body in feces.
3) Eggs then contaminate the grass and are eaten by cows
4) Larvae are then produced in the intestine of cow.
5) The larvae enter the bloodstream and are carried to muscles.
6) Infected meat containing the larvae is eaten by humans.
7) The larvae reach the small intestine of the man and develop into adult worms.

The Life cycle of Hookworms:

1) Adult worms attach to the walls of the small intestine by their hooks

2) Female worms lay large numbers of eggs which are passed out of the body with the feces.

3) They develop into larvae in the soil.

4) Larvae penetrate the skin of a new host through the feet.

5) The larvae migrate via the blood to the heart and the lungs.

6) Larvae then grow and enter the trachea, mouth, stomach and small intestines, where they become mature.

A. Methods of Transmission.

The most common means of transmission of intestinal diseases may be referred to as the 5 f"s: feces, fingers, flies, food and fluids. The principal source of the organism which cause intestinal diseases is the feces of man: however these organisms may be present in such foods as beef, pork, fish, poultry and eggs which have been improperly prepared. Food may also be contaminated with these organisms by rodents. The organisms may be transmitted in any of the following ways.

1) Food may be contaminated by infected food handlers who are careless or dirty in their personal habits or by houseflies which carry germs directly from the latrine to the kitchen. Also, germs may be carried directly to the mouth by feces contaminated fingers.

2) Carcasses of beef, poultry and fish may be contaminated with germs from the intestines of these animals by improper or careless dressing prcedures. Eggs can become fecally contaminated by the fowl on the nest.

   Inadequate or improper cooking of these foods permits the germs to survive and infect the consumer. Any source of foods of animal origin which has not been inspected and approved should be \ considered a potential health hazard.

3) Natural sources of water, such as lakes and streams, are often polluted by drainage form latrines and sewers. Springs and wells may be similarly contaminated. In the field any

careless disposal of human waste is a source of danger. Such waste material may drain into a nearby water sources or furnish a breeding place for flies.

4) Rodents frequently urinate or defecate on foods to which they have access and in this way contaminate the foods with disease organisms.

B. Control Measures

The most effective measures for preventing intestinal disease are those which control the reservoir of the diseases and the vehicles by which they are transmitted; however all possible measures must be utilized.

1) All sources of foods must be inspected and must be carefully selected, inspected and protected at all times.

2) Personal hygiene, particularly washing the hands after each visit to the latrine and before eating or otherwise handling food, must be practiced by everyone.

3) Unapproved water sources must be avoided. All water is to be considered contaminated and unsafe to drink unless it has been properly treated and approved for drinking purposes.

4) All human and other wastes must be disposed of properly.

5) Insects and rodents must be effectively controlled to prevent contamination of food and eating utensils.

6) Protect food from flies and dust.

7) Bathe frequently; cleanliness is very important in the control of worms.

8) Cut fingernails short, especially those of children

9) Keep children from playing in the dirt where feces are passed.

10) Do not let children go barefoot.

11) Eat only well cooked meat.

Worms are associated with diarrhea, abdominal pain, anorexia, weight loss. Diagnosis is made by finding eggs and segments in the stools.

Signs and symptoms

- worms in the stool: round or segmented
- mild abdominal pain
- abdominal swelling may occur
- itching around the anus at night may occur in children
- MALNUTRITION or ANEMIA may be present in severe case
- sometime worms cause itching of the skin with no other symptoms (see skin, itching, p....)

Laboratory

- Stool examination of a fresh stool sample should be performed.

- Be able to identify all of the worms listed above in a stool sample laboratory time will be provided (see lab manual).

Treatment: (Refer to drug formulary)

Raind worms - vermox or leavmisol (mebendayole or Ketrax) segmented Worms Niclosamide Cyomesan.

If niclosamide is not available, mebendazole may be given for segmented worms the dose is triple that for round worms.

In cases of infection by H. nana (dwarf tapeworm), repeated treatment may be required. In these cases, the first day's dose is as above - on each of the next six days only one dose is given.

Prevention

- hand washing with soap
- teach to dispose of feces away from water supply and food.
- Teach parents not to allow barefooted children to play in feces.
- do not eat meat that is undercooked: meat should not be raw in the center.

HYPERACIDITY AND PEPTIC ULCER DISEASE

General consideration

Digestion of food in the stomach is aided by the secretion of enzymes and acids from the gastric mucosa. When 1) the amount of acid secreted is increased or, 2) the resistance of the mucosa in the stomach and upper portion of the duodenum is reduced, irritation, inflammation and eventually ulceration can occur. Irritation and inflammation alone is called "hyperacidity" (or dyspepsia or heartburn). When ulceration occurs it is called " peptic ulcer disease" or " peptic ulceration". The most common site for ulceration is at the beginning of the duodenum.

The causes underlying these conditions are complex and vague.
However, there are some factors which are frequently related such as:

1. Emotional stress.

2. Certain drugs especially steroids, aspirin, indomethacin, ibuprofen.

3. Alcohol, large amounts of coffee or tea.

4. Trauma or infections.

Men are affected more frequently than women. Children are rarely affected.

Clinical Picture

The typical picture is that of a 40-60 year old man with a history of occasional mild to moderate pain just below the breast-bone (" epigastric pain"). The pain usually comes on about one hour after eating. It is relieved by food or antacids. The pain is usually worse in the afternoon and evening.

Signs and symptoms

- burning epigastric pain
- decreases with food or antacids
- may occur at night and awaken from sleep
- there may be mild epigastric tenderness on exam or the exam may be normal
- There is no fever
- black stool from stomach bleeding may occur (severe gastritis or ulcer)

Complications

1. Bleeding from the ulcer resulting in dark stools and eventually anemia is the most common serious complication.
2. Perforation (a hole clear through the gut wall) will result in peritonitis (infection and/or inflammation of the lining of the abdominal cavity - peritoneum). This is an emergency situation requiring immediate transfer to a hospital where abdominal surgery can be performed the perforation.

Obstruction due to edema and/or scarring of the pylorus is seen occasionally.

Management

The patient and his family should be told about the nature of the condition. The importance of relieving stressful conditions should emphasized.

The usual diet can be taken except for coffee, tea, cola and alcohol. Avoid any food known to cause pain. Otherwise no diet restrictions have been show to be effective.

Frequent small meals are better than few large meals.

Treatment

- Stop things that cause gastritis
- one antacid tablet 1-2 hours after meals and before bed for 2 weeks.

- if black stools, two antacid tablets between 1 and 2 hours after meals for 4 weeks.

- if the patient must take aspirin, have the patient crush the aspirin and take only with meals

Follow-up

- gastritis may require repeated treatment - have the patient return

- if there is no improvement after treatment - increase the dose to two tablets
- do a stool examination to look for worms

Refer for evaluation if the symptoms are not improved within 2-3 weeks, or if a complication occurs.

- colicky pain
- loss of appetite
- pain may go to back

ACUTE ABDOMEN

Acute abdomen (peritonitis or rigid abdomen) is a rare but very dangerous disease. Acute abdomen is infection of the lining of the abdomen with bacteria from the gastrointestinal tract or the skin. These things can lead to acute abdomen:

- Penetrating abdominal trauma.
- Rupture of the gastrointestinal tract
- Appendix (appendicitis)
- Stomach (ulcer).
- Intestine (typhoid fever).
- Gall bladder due to blockage by stones.
- Strangulated hernia.

Signs and Symptoms

- The patient is extremely ill.
- Severe diffuse abdominal pain.
- Firm abdomen that is very tender.
- Percussion of abdomen causes severe, sharp pain.
- Vomiting is common. Inability to eat or drink.
- Dehydration is very common and can cause death.
- Shock may be present.
- +/- fever.

Treatment

- Nothing by mouth.
- Intravenous rehydration. Often requires multiple liters
- Antibiotics:
  AMPICILLIN: IM or IV - high dose and
  CHLORAMPHENICOL IV divided 4 times/day - high dose.
- Insert a nasogastric tube and empty the stomach each hour until the patient improves (syringe or foot pump)

AFTER DOING THE THINGS LISTED ABOVE:

- TRANSPORT the patient to a hospital capable of providing surgery.

- If transport is delayed, begin to feed him two days after gas is passed from the anus and the appetite has returned.

APPENDICITIS

An acute inflammation of the appendix. The inflamed appendix may burst and cause an abscess or peritonitis if it is not treated.

Sings and Symptoms

Patient usually complains of a central abdominal pain at first. After some hours the pain moves to the right iliac fossa and is constant. The patient loses his appetite from the start of the disease. There may also be:

- Mild fever
- Pulse faster than normal
- Abdomen NOT distended
- Abdomen may not move with respirations
- Tenderness and rebound tenderness in right lower quadrant, and tenderness on right by rectal exam.

Later, if it is not treated, an abscess will from with a tender mass in right lower quadrant, or general peritonitis develops.

Treatment

- Nothing by mouth
- IV Fluids: one liter NORMAL SALINE q 8 hrs
- AMPICILLIN 500 mg IV q 6 hrs.
- Transport to hospital for surgical treatment as soon as possible.

ACUTE CHOLECYSTITIS

An inflammation of the gallbladder, usually caused by the presence of stones resulting in blockage of the passage from the gallbladder into the intestine.

Signs and symptoms

- FEMALE * FAT * FERTILE * FLATULENT * FORTY

- Biliary colic - sudden upper abdominal pain that increases in waves and moves to right upper quadrant. May radiate to back, right flank or shoulder. Pain usually lasts several hours and stops. In some cases pain remains. In acute attack, muscle spasm and guarding in right upper quadrant may be present.

- History of recurrent milder pains, gas, and intolerance of fatty foods often is present.

- Fever, rapid pulse, sweating.
- Nausea and/or vomiting.

Treatment

- Nothing by mouth
- IV fluids: one liter NORMAL SALINE q 8 hrs
- AMPICILLIN 500 mg IV q 6 hrs
- HYOSCINE by N-G tube or SOSEGON IM for severe pain
- Transport to hospital.

INTESTINAL OBSTRUCTION

This is present when the food and fluids in the intestine cannot go through a part of the intestine. It becomes blocked and stool cannot pass to the outside. The intestine above the part which is blocked contracts more than usual and secretes more fluids than usual and then dilates (gets bigger).

Causes

Hernia, previous abdominal operation cancer of the intestine, parasitism (ascaris bolus), swallowing of a large foreign body.

Symptoms

- Abdominal pain, usually central, which lasts for about half a minute and which then goes away only to come back every few minutes.

- Repeated vomiting.
- Constipation.

Signs

- Dehydration occurs if the condition has been present for more than a couple of hours. Fast pulse, low blood pressure, little or no urine passed.

- General signs of peritonitis occur if the obstruction is strangulated (blood supply to the intestine is damaged).The intestinal wall starts to die and is attacked by bacteria from inside the bowel which spread through the bowel wall into the peritoneal cavity.

- Abdomen

Inspection:

- Presence of distension.
- Abdominal wall does not move well with respiration.
- Intestinal movements can sometimes be seen through the abdominal wall.

Palpation:

- Tenderness is present only if the obstruction is strangulated. At first, tenderness is only over the affected area. Later, when general peritonitis develops, the tenderness spreads to the whole abdomen.

- You may feel a mass. It may be the affected length of intestine or a cancer or other mass which is causing the obstruction.

Treatment

- Transfer to hospital urgently. It is necessary for the patient to undergo an operation to remove the cause of the obstruction if the patient will agree to surgery.

- While waiting for transfer, treat like this:

a) Nil by mouth. Insert a tube into the stomach and aspirate all the fluid every hour.
b) Give IV fluids.
c) Treat for peritonitis if this is present (see PERITONITIS)

GASTROINTESTINAL BLEEDING

HEMATEMESIS

Causes Peptic ulcer.
Gastritis.
Cancer of stomach.

Signs and Symptoms Vomiting of blood.
Rapid pulse, hypotension, shock.
See specific causes for specific signs and symptoms.

Investigations Take pulse, temperature, weight and BP.

Treatment
- If more than 300 ml, or 1 cup, has been vomited, it is an emergency. Put an IV drip up immediately in case the patient bleeds again and needs resuscitation. Give IV fluids as necessary for shock.
- Insert an NGT and aspirate till the stomach is empty. Then, aspirate frequently. When there is no more bleeding, give ANTACID 2 tablets every hour.

- Transfer to hospital in case he bleeds again and needs blood transfusion.
  See also specific diseases for specific therapy.

MELENA

Causes

Hemorrhoids.
Anal fissure.
Dysentery.
Cancer.
Peptic ulcer.

Signs and Symptoms

Passage of black and tarry stools secondary to blood being mixed with it.
See also specific causes for additional signs and symptoms.

ASCITES

Ascites:

The accumulation of excess fluid within the peritoneal cavity. It is frequently seen in patients with cirrhosis of the liver and other forms of severe liver disease.

Signs and Symptoms:

- usually first noticed by the patient because of increasing abdominal girth (circumference)

- may have shortness of breath (with increased fluid accumulation, the diaphragm becomes elevated)

- may have bulging flanks and the presence of shifting fluid "wave" in abdomen on physical exam.

Treatment

- Salt restriction in diet.
- Strict bed rest.
- Needs to be referred to hospital/doctor for treatment to remove fluid.

GENITOURINARY

KIDNEY INFECTION (PYELONEPHRITIS)

Kidney infection in an uncommon, but serious problem seen most often in women, especially during pregnancy. It usually occurs after a bladder infection. It may also follow renal colic (kidney stone).

Signs and Symptoms

- Constant fever, usually high.
- Unilateral flank pain (patient lying quietly).
- Sharp pain with percussion of flank (one side more than the other).

- +/- Pain to deep palpation, unilateral upper abdomen.
- burning on urination.
- +/- nausea, vomiting.

Treatment

- TRIMETHOPRIM/SULFAMETHOXAZOLE normal dose for 10 days.
- Pregnant Women: AMPICILLIN normal dose for 10 days.
- Encourage PO fluids 30-40 glasses/day.
- ASPIRIN or PARACETAMOL for fever.
- Bedrest.

Return to clinic if vomiting or not any better after 1 day.

- If vomiting:
- Hospitalize. PROMETHAZINE q 6 h p.o. or IM prn.
- AMPICILLIN IV: Normal dose until taking p.o. fluids.
- IV fluids, at TWICE maintenance rates* until taking fluids orally. Then, take p.o. fluids and p.o.antibiotics (AMPICILLIN) full course = 10 days.

* Maintenance Rates : Children - 100 cc/hour/day
Adult - 50 cc/hour/day

BLADDER INFECTION (CYSTITIS)

Bladder infection in quite common in females but rarely seen in men. It is usually not dangerous, but if untreated, can lead to serious kidney infection.

Signs and Symptoms

- Pain with urination,
- Frequent urination, even at night.
- Urge to urinate soon after voiding (small amounts).
- +/- dark or red urine (blood).
- +/- mild discomfort midline lower abdomen (especially) to paloation).
- No fever.

Treatment

Pregnant female:
AMPICILLIN normal dose for 7 days.

Others:

TRIMETHOPRIM/SULFAMETHOXAZOLE normal dose for 7 days. Or, AMPICILLIN 3 gm all at once, or normal dose for 7 days.

- Drink fluids - 15-20 glasses/day.
- Follow up. If recurrence of symptoms, come back to clinic.

RENAL COLIC (KIDNEY STONES)

Renal colic is an uncommon problem occurring in older children and adults. It is characterized by sudden severe flank pain. During an attack, the pain often comes and goes, though it may become constant. There is often a history of similar attacks.

Severe (rare)

signs and Symptoms

- Sudden, severe, unilateral flank pain; may radiate to the groin.

- Patient often unable to lie still because of the pain.

- +/- nausea and vomiting.

- +/- dark or red urine. Blood dipstick for blood if available.

- No fever.

Treatment

- P.O. fluids up to 15-20 glasses/hour for 3 hours or until relief from pain. If vomiting, IV one liter in one hour.

- PENTAZOCINE nor mal dose IM PEN.
- +/- Antispasmodic. Hyoscine (scopolamine) one tablets
- Patient may leave clinic when free from pain
- Instructions:
- Continue to drink lots of fluids for several days.
- Increase fluid intake when doing heavy work.
- If mild pain persists, may leave clinic with above instructions plus PARACETAMOL.

Mild (more common)

This is a more chronic type of renal colic where the pain is less intense; more of a deep aching pain, not sharp or severe. It must be differentiated from muscular back pain.The pain of renal colic is NOT MADE WORSE BY MOVEMENT. A "+" dipstick for blood helps confirm the diagnosis.

Treatment

- Drink lots of fluids 30-40 glasses/ day until pain is gone

- ASPIRIN for pain for 5 days.

D. Urinary Retention

This occurs when the urethra is obstructed and the bladder becomes progressively more distended causing severe pain. Usually occurs in young boys with obstructing bladder or urethral stone, or in elderly men with BPH (benign prostatic hypertrophy) where the urethra is compressed by the prostate. If untreated, can result in severe kidney damage and/or bladder rupture.

Signs & Symptoms:

1. Patient wants to urinate but is unable.
2. Pain in lower abdomen (often severe).
3. Palpation of lower abdomen elicits urge to urinate.

Treatment:

1. Children with bladder stones:

   a. Sedate patient with 5 mg. diazepam po or by rectum.
   b. Examine penis for stone.
   c. If stone is palpable, milk stone out.
   d. If stone not palpable, attempt to pass foley catheter into bladder thus pushing stone into bladder.
   e. Fluids.
   f. Refer if possible.
   g. Give trimethoprine/sulfa normal dose x 7 days.

2. Adult Males:

   a. Lubricate sterile urinary catheter and pass into bladder.
   b. Leave catheter in place for Nor more than.
   c. Trimethoprim/sulfa normal dose for 7 days.
   d. Refer when possible for surgery.

HYDROCELE

An accumulation of loculated fluid into the pouch of peritoneum which is residual in the inguinal canal or scrotum after the testicle has descended (prior to birth). Usually this pouch of membrane obliterates itself but in this condition a zone of membrane persists open, and clear fluid collects in it forming a mass--usually somewhat soft and very smooth. There are no symptoms.

Examination:

In a dark room an otoscope bulb pressed against the mass will shine light through the clear fluid, thus proving the mass is not solid.

Treatment

None
Surgery is necessary only if there is a co-existing hernia

TESTICULAR TORSION

"Torsion of the testicle" often refers to the twisting of the spermatic cord, with a characteristic rotation of the testicle.

Signs and symptoms:

- sudden onset of pain, accompanied by scrotal enlargement and edema
- The testicle, which appears to be elevated (because the cord is shortened by twisting) is exquisitely tender.
- (differential diagnosis between acute epididymitis and torsion of the testicle may be difficult.

Treatment:

- Medicate for pain
- REFER to hospital immediately. (Approximately 4 hours of torsion appears to be the limit after which the testicle is irreversibly damaged.) Needs to have surgery.

UNDESCENDED TESTICLES

This is a fairly common disorder in children where one or both testicle are absent from the scrotum at birth. The testicles may still be located in the abdomen from where they should have migrated at or just prior to birth.

About 3% of all male newborns have undescended testes, but in over 50% of these cases the testicles descend by the second month and in 80% of these cases by the end of the first year.

Signs and Symptoms:

- absence of one or both testicles in the scrotum at birth up to five years of age.

Treatment:

- If the testicle(s) have not descended by five years, refer to a hospital to be seen by a doctor. Surgery may be needed to prevent tissue damage of the testicle.

INFECTIOUS DISEASES

MALARIA

General Considerations

Malaria is one of the most common infectious diseases in the tropical and subtropical world. It is caused by a plasmodium parasite which lives in the human blood stream, and is spread between humans by mosquitos in the following life cycle:

1. The female anopheles mosquito bites a person who has malaria, and sucks up blood containing immature Plasmodia parasites.

2. The immature plasmodia slowly mature into an adult which then can be transmitted when the carrier mosquito bites an uninfected person.

3. As the plasmodia circulates in the new victim's bloodstream, it is filtered out by the liver. The adult plasmodia settles into liver cells and reproduces many new parasites until the liver cells rupture, releasing the undeveloped plasmodia into the bloodstream.

4. Throughout the bloodstream, the undeveloped plasmodia get into red blood cells (RBCs), develop to maturity, and reproduce many new parasites until the RBCs rupture. This releases the many new plasmodia to attack more RBCs.

5. This cycle is repeated many times. The person is now an infected carrier of malaria, and when bitten by a female anopheles mosquito, passes on the disease.

There are actually 4 different types of Plasmodia parasites. Each show the life cycle events, listed above, but each differs in the number of new parasites reproduced in each cycle. For example, Plasmodium falciparum reproduces billions of offspring parasites in each cycle, causing a malignant malaria which is severe, with a fast progression, and often fatal. In contrast, Plasmodium vivax does not reproduce such a huge number of parasites in each life cycle, so it causes a more chronic malaria. The other, rarer types of Plasmodia - ovale and malariae - also cause a benign malaria.

Epidemiology

There are 3 major factors which determine how much malaria there will be in a community. The first is the type of malaria present. Second is the number of mosquitos. Third, is the number of infected and susceptible persons in the area.

1. There are 2 different types of malaria that we will be concerned with: benign malaria and malignant malaria. You should be able to differentiate one type from the other based on the signs and symptoms and determine which is the more common type in your area.

Malignant malaria is caused by a parasite called Plasmodium falciparum. Because this parasite needs a certain length of time in very warm temperatures (above 21 degrees C) to develop within the mosquito, it is most commonly found in the tropics and during the summer in the subtropics. Malignant malaria is then often seasonal in occurrence and tends to occur in epidemics (in sudden outbreaks of severe cases in all ages).

Benign malaria is caused by Plasmodium vivax in most cases.

contrast to malignant malaria, benign malaria is a much less severe disease. Parasites causing benign malaria have less severe disease. Parasites causing benign malaria have less specialized survival needs , and thus are more wide spread and occur endemically (in a constant, relatively high number of mild and moderate cases).

2. The number of mosquitos also determines how much malaria can spread in a community. Because mosquitos carry the disease from one person to another, if the number of mosquitos is significantly reduced, the number of malaria cases will also be reduced. Three conditions determine the number of mosquitos in the area:

   a. Temperature and Humidity: It must be warm and humid enough for the mosquitos to live.

   b. Breeding places: Mosquitos need swampy or wet areas to breed.

   c. Mosquito pool and life expectancy: There must be enough mosquitos living long enough so that a certain number survive to incubate and transmit the malaria parasites.

3. The third factor in the spread of malaria through a community is the number of infected and susceptible persons in the area.There must be a certain number of infected people who happen to be bitten by a mosquito, and a certain number of uninfected, susceptible people who will get malaria when they have been bitten by an infected mosquito.

	Plasmodi[illegible]x	Plasmodium Falsipournce
Hepatic life span	7 days to 1 year	7 - 28 days
RBCs involved	Only immature RBCs are involved (small percentage)	All RBCs can be involved (large percentage)
Body Location	Evenly distributed in blood and spleen	Tend to accumulate in deep organs (kidney, lung, liver and brain) causing capillary blood flow obstruction.
Microsco[illegible] appear[illegible]e	Round gametocytes	Banana shaped gametocytes
Chlo[illegible]oquine resistance	None noted	Occurs in many countries. Not yet in Afghanistan.

Clinical Picture

Before reading further, be sure you have reviewed the skills of examining: conjunctiva for anemia, the skin for jaundice, and the size of the spleen.

Signs and Symptoms

All 4 types of malaria have a similar, recognizable pattern of signs and symptoms. We will discuss the "classic" symptoms, and indicate any distinguishing features between the different types. You will see that the symptoms correlate directly with the parasite's life cycle within the body.

The first symptoms are general tiredness and loss of appetite, a headache, and an irregular low fever. There is often vomiting, which may be the first symptom in a child. Although similar to many viral illnesses, these symptoms continue and gradually worsen, instead of resolving, during the next 2 to 3 days.

The fever then gets higher, may 'spike" at high temperatures irregularly for a few days, then takes on a regular cycle of typical "malarial paroxysms". First, the patient feels cold and has a hard, shaking chill for 20 to 60 minutes. This is the "cold stage". Toward the end of the chill, the temperature begins to rise and the patient temporarily feels better. Then, the patient feels very hot, with temperature rising up to 40-42 C for 3 to 8 hours. This is the "hot stage" Nausea, vomiting, and diarrhea often accompany the fever. Finally, the fever "breaks" as the patient sweats profusely. This leaves the patient thirsty and exhausted. This paroxysm occurs every other day in Plasmodia falciparum, vivax and ovale, and every 4th day in Plasmodium malariae. The malarial paroxysm correlates directly with the parasitic life cycle in its human host. The patient has chills (cold stage) just as the red blood cells rupture. The fever (hot stage) starts and rises as the released immature parasites get into other red blood cells and start dividing again. The first paroxysm is the most severe; following cycles become progressively less severe (except in falciparum).

The patient develops anemia because red blood cells are ruptured in each paroxysm. The anemia is seen as paleness in the conjunctiva, lips, and under the tongue. It is especially common in children, who simultaneously become lethargic (disinterested in what goes on around them) and unable to eat or suck.

Secondly, both children and adults develop mild <u>jaundice</u>. When the red blood cells rupture in the bloodstream, they release greenish-yellow pigment of destroyed hemoglobin, which shows as yellowish skin. (note: This is hemolytic jaundice, caused by rupture of blood cells. It can be differentiated from liver-caused jaundice, because hemolytic jaundice is not associated with bile in the urine).

Thirdly, all age groups often have an enlarged, tender spleen. The enlarged spleen may or may not be tender, depending

COURSE AND COMPLICATIONS

1. Benign Malaria

In the benign malaria (Plasmodium vivax, ovale, malariae), the paroxysms of chills, fever, and sweating become less severe. The complications and chronicity and/or recurrence.

If untreated or improperly treated, benign malaria will continue to produce mild fever symptoms, but the anemia will become progressively severe. The jaundice also will continue. The enlarged spleen will change from very tender to nontender and hard. These continuing symptoms lead to the chronic, mild disability and lack of well being which decreases work capacity.

Relapse

Even if it is properly treated, benign malaria can be difficult to cure: relapses are common. The mild, cyclical fever paroxysms can start again even though the person has not been re-exposed to malaria.

2. Malignant Malaria

Plasmodium falciparum is called "malignant malaria" because it progresses so quickly, leading to severe complications and often death unless treated quickly. This type of malaria is different from benign because (1) there are huge numbers of parasites in the bloodstream, and (2) those parasites make the outer surface of the red blood cells sticky, so the cells clump and clog vessels all over the body. The following complications occur:

1. Very High fever: Because of the massive infection, the temperature may rise to 41.5 C. The patient will lose consciousness, have generalized seizures (especially children) and die unless cooled down and immediately treated for malaria.

2. Cerebral Malaria: Clogged vessels throughout the brain cause a sudden onset (less than 24 hours) of severe headache and confusion. This is twitching of the facial muscles, which progresses to generalized seizures (not brought on by loud noises, in contrast to tetanus seizures). The patient loses consciousness and goes into a coma. Cerebral malaria progresses quickly. If treatment is not started at the earliest sign, the patient will die.

3. Shock: Because so many parasites are present, there is rapid, massive destruction of red blood cells, leading to severe anemia. Often there is also vomiting and diarrhea. The combination of anemia and fluid loss from the gestro-intestinal tract leads to shock. The patient has a fast, weak pulse and low blood pressure. He must immediately be treated for shock and malaria.

MALA

Malaria is common infectious disease, especially in northern Afghanistan. It is caused by parasites which destroy red blood cells. The parasites are transmitted from one person to another by mosquitoes. If the patient lives in the mountains, he may recently have returned from the lowlands.

The main symptom is high fever, but the clinical picture is variable.

Treated with chloroquine, people get well quickly. Not treated adequately, malaria can cause prolonged illness or even death.

Type I

Signs and symptoms:
New onset of:

- fever
- sweating
- over all body pain
- chills
- general malaise
- nausea and vomiting

Treatment:

1. Chloroquine normal dose for 3 days (if the patient vomits his pills, give promethazine orally or IM; wait 30 minutes and repeat chloroquine p.o.) Tell the patient to come back if not feeling better after 24 hours. If patient returns with high fever, consider typhoid fever (p.92).
2. Encourage fluids.

Type II Instruction:

The history is very important in diagnosing Type II malaria: it will often be the best clue to the diagnosis: The patient will tell you he has had the illness at regular intervals ('every afternoon"." ery tow days"). He may describe the following:

Signs and symptoms:

Stage 1:	Chills with fever (often with headache, nausea, vomiting).
Stage 2:	increasing fever up to 41 C, often with prostration.
Stage 3:	Sweating with subsiding fever (feeling much better). Anemia.

Enlarged spleen.

Treatment

Chloroquine normal dose for 3 days (if patient vomits his pills: give promethazine orally or IM; wait 30 minutes and repeat chloroquine p.o.). Treat anemia with iron.

Type III

An infrequent but very dangerous, rapidly progressive form of malaria which must be treated promptly and adequately, or the patient may die.

Signs and Symptoms:

-sudden severe headache
-high fever
-vomiting
-confusion, semiconsciousness or unconsciousness (coma)
-seizures.

Treatment:

1 Hospitalize patient until he is well enough to walk.
2. Chloroquine normal dose for 3 days.

Route of administration!
If able to drink water without choking: give chloroquine tablets.

If unable to drink water: place a nasogastric tube (p.57 give chloroquine through NG tube - crush and dissolve or give as chloroquine syrup.
3. For fever aspirin or paracetamol.
4. Also treat for meningitis (impossible to tell the difference)Chloramphenicol: High dose for 3 days - reduce to normal dose for 7 more days (a total of 10). See treatment of meningitis.

Prevention

Your area may have malaria eradication teams to help either stop an epidemic or try to eradicate endemic malaria. But you must detect the endemic or epidemic problem, and may have to take the first steps in prevention before a team arrives. This subject is covered in more detail in the Community Health Section. See the formulary for Chloroquine dosing for prophylaxis.

As discussed in Epidemiology, malaria is only carried between infected and non-infected humans by the female anopheles mosquito. So, the incidence of malaria in a community depends on the number of infected humans (the human pool of malaria). We also, mentioned that malaria can occur endemically or epidemically in a community. Endemic, when there are always quite

a few cases of malaria in the community and enough mosquitos survive year-round to keep passing the disease, means a constant large human pool and a small mosquito pool. Also, in an endemic area, there are adults who have become immune or tolerant and get either very mild cases or do not seem to get malaria at all despite many bites by infected mosquitos. In this same endemic community are people who are very susceptible to getting malaria, e.g., children under 5 years, or visitors who were never exposed to malaria before.

In contrast, epidemic malaria, affecting everyone in the community,creates a sudden large human pool of malaria victims. Epidemic malaria, often occurring seasonally (when the temperature is just, right for a number of mosquitos to breed and live long enough to transmit this type of malaria), creates a sudden large pool of breeding, surviving mosquitos.

There are 2 basic principles in preventing the spread of malaria although the actual tactics used may vary with the type of malaria in your community. First, you must decrease the human pool of malaria, and secondly, decrease the mosquito pool of carriers.

PATIENT EDUCATION - DECREASING THE HUMAN POOL OF MALARIA

1. Diagnose and treat malaria promptly, and effectively. If the treatment does not seem to help a fever, and you have repeated the protocol to rule out other causes of fever, you should refer the patient.

2. Give prophylactic medication to susceptible people (particularly children under 5 years old) in an endemic area. This decision to give prophylaxis may have to be made with advice from your supervisor or the malaria eradication team. The dosage for children is 5mg/kg given once per week.

3. Educate your patients about the signs of malaria and the need for complete treatment.

4. Elimination of standing water around buildings.

BEST AVAILABLE DOCUMENT

COMMUNITY EDUCATION - DECREASING THE MOSQUITO POOL OF CARRIERS

1. Work with community members to find and drain or fill swampy breeding areas to prevent new mosquitos from hatching.

2. Use residual insecticides (DDT) to kill the remaining mosquito population. Again, you may need the advice or assistance of the malaria eradication team in spreading the insecticide.

3. Teach the community to use mosquito netting and repellents to avoid bites.

4. Elimination of standing water around buildings.

The 3 steps above are most useful in epidemic situations. In an endemic area, very few mosquitos are needed to keep transmitting malaria between the many infected humans. Thus, attempts decreasing the mosquito pool are ineffective unless you achieve and maintain nearly total eradication.

In summary, during an epidemic you would use all the tactics above to decrease the human and mosquito pools. In endemic areas where it would be unrealistic to totally eradicate the mosquito pool, your efforts may be directed primarily toward decreasing the human pool.

Review questions

1. Place a check in front of the group(s) of people who are a high risk for getting malaria.

---infants

------visitors and travellers

----children

------elderly people

----adults

------elderly people

BEST AVAILABLE DOCUMENT

2. Briefly describe the life cycle of the malaria parasite in humans and mosquitos.

3. Discuss the difference between an endemic and an epidemic disease.

Read the following statements and determine if each is true or false. If it is true, put a "T" in front of it. If the statement is false, put a "F" in front of it.

4. ---Once a person develops an immunity to malaria, he is immune for the rest of his life.

5. The spread of malaria through a community is determined by the type of parasite, the number of mosquitos and the number of susceptible persons.

6. Malaria parasites reproduce in the human's liver and red blood cell, causing the cells to rupture.

MENINGITIS

Meningitis is the inflammation of the membranes covering the brain and spinal cord. Those membranes - the meninges - are tough, fibrous sheaths that protect the central nervous system. The meninges can become infected by almost any bacteria or virus. Meningitis can result from a spreading bacterial infection. The most common cause is by one of the types of bacteria that can also cause sore throats., middle ear infections, or pneumonias. The symptoms are the similar regardless of which bacteria or virus causes the meningitis. Meningitis can also be caused by tuberculosis, especially in children aged 1 to 5 years. In this case, the symptoms may have a more gradual onset. Regardless of which type of infection causes meningitis. When the meninges become infected they become inflamed, so any movement which stretches the meninges becomes very painful. As a defense against this pain, the body's muscles in the neck, back and legs tighten to "splint" or prevent movement of the spine and the meninges. Therefore, a patient with meningitis is very uncomfortable and sick, with a fever from the widespread infection and severe pain

BEST AVAILABLE DOCUMENT

with movement of their neck or back. Unless treated, the patient may become drowsy, semicomatose or even comatose and may have seizures.

Etiology:

The type of organism causing infection is related to a number of factors. It is important to remember that any microorganism can produce disease in an occasional patient of any age.

Seventy percent of bacterial meningitis is caused by 3 organisms:

(1) Diplococcus pneumonia (the most common overall); (2) Hemophilus influenza type B; and (3) Neisseria meningitides.

The most common agent in children under the age of 4 years is H.flu. N. meningitides is common in older children and young adults and often occurs in epidemics. Most of the remaining cases are due to streptococcus and staphylococcus. Infants under 2 months old are most often infected with gram negative organisms, particularly escherichia coli or beta-hemolytic streptococcus. Fungal infections are frequently found in patients with malignancies, chronic illness and immunosuppressive medication. Tuberculous meningitis may occur at any age, but is more commonly seen between the ages of 3 months and 3 years.

Epidemiology:

Meningitis occurs all over the world, in all ages. the bacteria. virus, or TB causing meningitis is usually passed in droplets of salvia, when people breath and cough near each other. Bacterial meningitis usually spreads through the bloodstream. from a distant site of infection. Head trauma may precede bacterial meningitis. A child with severe burns may develop meningitis due to staph or pseudomonas. Central nervous system infections have also been noted more frequently in malnourished children and in those who are already weak or sick. Children exposed to someone having tuberculosis are likely to get tuberculous meningitis.

BEST AVAILABLE DOCUMENT

Clinical Course:

The clinical presentation depends on the invasive organism and the age and health of the patient. Bacterial, viral and sometimes tuberculous meningitis pursue a fulminant course over a few days. Meningitis resulting from fungi and cancer typically has a more gradual onset and slower evolution. In the latter types, the course is often long, over a period of weeks and months, whereas viral and bacterial infections become apparent in days or even hours.

The history should carefully detail information about recent exposures to infections, insects and animals, recent or chronic illnesses, trauma, rashes, weight changes and medications. Neurological review may uncover small changes pointing toward the more slow types of meningitis.

Bacterial meningitis may be preceded by several days of upper respiratory or GI symptoms. In some children, especially young infants, signs of meningeal irritation may be minimal; only irritability, restlessness, and poor feeding may be noted. Fever generally is present; its absence in a child with signs of meningeal irritation, however, is common.

Inflammation of the meninges generally is associated with nausea, vomiting, loss of appetite, photophobia, neck rigidity, and headache which is severe and constant. Headache results from inflammation of the pain sensitive meninges and larger cerebral blood vessels. It is usually generalized, quite intense, continuous and throbbing. It is worsened by movement and coughing or straining. Similar inflammatory changes produce the painful neck and muscle spasm in the occipital areas. This meningismus is quite characteristic and virtually pathognomonic(with this sign, indicative of this particular disease) of meningitis. The older child may appear confused and may complain of back pain. Frequently Kerning and Brudzinski signs are noted. Back pain occurs when the lower leg is passively extended on the already flexed thigh (kerning's sign). neck flexion may cause the supine patient to involuntarily flex at the hip (Brudzinski's sign).

BEST AVAILABLE DOCUMENT

As the patient becomes sicker, he will be irritable, drowsy, and then disoriented. He will be confused and act strangely. The patient may also have had a seizure in the past few days. Finally, the patient can become semicomatose and then comatose. General examination is directed to infections of the scalp, ears, throat, chest and skin. Lymphadenopathy, cardiac murmurs, organomegaly and rashes are specifically sought. Special note is made of trauma to the head, neck or spine. Drainage of fluid from the ears, orbits or nasopharyngeal areas may point to a leak of cerebral spinal fluid. Palpation of the scalp, mastoids and sinuses may reveal tenderness, swelling or excess warmth. Examination of the skin may reveal petechiae - small bright red spots on the skin that do not blanch (turn white) when you press them. These petechiae result from bleeding into the skin. You may also see larger areas of bruising. During examination, be sure to observe the patient's level of consciousness - awake, drowsy, confused, barely arousable., not arousable.

KERNING'S SIGN

With thigh already flexed at 90 degrees, attempts to straighten the leg at the knee which causes thigh, back, neck and head pain is an indication of meningeal irritation. Resistance to the attempted extension is also noted.

BEST AVAILABLE DOCUMENT

BRUDZINSKI'S SIGN

With patient lying down, an attempted flexion of the neck which causes an involuntary flexion of the knee, ankle and/or hip is an indication of meningeal irritation.

General Measures:

Bacterial meningitis is a medical emergency and requires immediate confirmation and institution of therapy. Tuberculous meningitis also requires urgent attention while in fungal meningitis a few hours are not usually critical. In viral meningitis therapy is supportive so long as a bacterial process has been clearly ruled out.

General measures include reducing the fever with sponging and paracetamol or aspirin. An NG tube will minimize aspiration if consciousness is depressed. Adequate hydration must be maintained with avoidance of salt-free solutions, which tend to increase cerebral edema if present.

Seizure precautions may need to be observed. Treatment with Diazepam may be required.

If possible, refer all suspected cases to the hospital (after initiating treatment with the proper antibiotics if the hospital cannot be reached immediately).

<u>Treatment</u>

- CHLORAMPHENICOL: High dose for 3 days: Then reduce to normal dose for a total of 10 day treatment.
  - -Administration: Give tablets if tolerated. If vomiting, attempt IV. If IV unsuccessful, give AMPICILLIN IM:

 BEST AVAILABLE DOCUMENT

children: High dose
adult: 2 gm every 6 hours.

Begin oral AMPICILLIN, high dose, when taking fluids. If fever remains high after 2 days change to oral CHLORAMPHENICOL - high dose.

-CHLOROQUINE (treat for severe malaria, it is frequently impossible to distinguish from meningitis)
-For fever ASPIRIN or PARACETAMOL.
-Rehydrate if patient is dehydrated.

2. Viral Meningitis: At present, there is no specific drug therapy and the vast majority of cases resolve with supportive therapy. But if you are not aware of a negative culture result, you must treat the patient as per above (for bacterial meningitis).

SEPTICEMIA

Cause.

- Bacteria or virus that invades the blood and causes severe sickness. Also follows trauma, surgery, delivery and is a complication of many sicknesses.

Symptoms

- The patient is very ill. There is high fever, tachycardia, fast respirations, headache, vomiting, delirium and coma.
- The patient can quickly go into shock.
- Take a careful history from the family.

Signs

-Examine the patient carefully for:
-neck stiffness
-chest infection
-acute abdomen
-kidney infection
-wounds, bites, skin infections
-infected injection
-infected cord stump in new born babies.

BEST AVAILABLE DOCUMENT

Investigations

- Take pulse, temperature and weight.
- Test the urine.
- Monitor for shock
- Look at the teeth and mouth.

Treatment for Septicemia:

1. Give patient IV fluids.

2. Give CHLORAMPHENICOL for 14 days:
   a. Give high dose IV for 5 days or till fever decreases.
   b. Give low dose orally for remainder of the 14 days.

3. Give AMPICILLIN for 14 days:

   a. Give high dose IM/IV for 5 days.
   b. Give low dose orally for 9 days.

4. Give a full course of CHLOROQUINE if malaria is a possibility.

5. If the patient is in a coma:
   a. Pass a catheter.

6. If the patient has an acute abdomen or delivery complication refer to a surgeon immediately.

Complication

-Shock; kidney failure; heart failure.

Prevention

-Clean and dress all wounds carefully, especially burns.
-Admit any patient you are worried abut and ask a colleague to look at him also.

BEST AVAILABLE DOCUMENT

CHICKEN POX

Cause

-Herpes virus that also causes cold sores, mouth ulcers.conjunctivitis and corneal ulcers, shingles.
- Spread by coughing and sneezing, and the fluid from vesicles.

-Epidemic sickness.

Symptoms

-Usually a mild sickness that is only serious in children with malnutrition.

Signs

- Initially
  - -headache: fever; dry cough; sneezing.
- After 2 days.
  - -macules appear on body and face; they become papules, then vesicles and are very itchy.
  - The vesicles burst and the fluid dries as a crust.
  - Groups of macules/papules/vesicles/crusts come and go on the face and trunk for about a week and then disappear.

Investigation

- Take pulse, temperature and weight.
- Monitor all children for malnutrition.

Treatment

- As for all viruses;
  - Rest in bed.
  - Drink plenty of fluids and ORS
  - Continue eating a soft diet.
  - Show mothers how to sponge babies with fever.
  - PARACETAMOL for pain and fever.
  - PROMETHAZINE if itching is preventing sleep
  - CHLORPHENIRAMINE.
- Wash the child daily with warm, soapy water to remove crusts. Use a separate towel and put it in the sun to dry. The crusts are infections.

BEST AVAILABLE DOCUMENT

Complications

Malnutrition.

Children who were malnourished before getting chicken pox can get meningitis, pneumonia and heart failure.

Prevention

- Cover the mouth when coughing and sneezing.
- Breastfeed children until 2 years old.

TYPHOID FEVER

Typhoid fever is a highly infectious disease characterized by gradually increasing fever (often with relative bradxcardia), headache, and abdominal symptoms. It is transmitted from person to person by unclean hands or, indirectly, by contact with stool of an infected patient.

Signs and symptoms - early

- continuous, increasing fever
- occasional chills
- headache, malaise
- anorexia
- abdominal complaints
- nose bleeding

Signs and symptoms - late (7 days):

- constant, high fever
- related bradycardia
- abdominal pain, abdomen may be distended
- may have obtundation, stupor
- "pea soup" diarrhea

Complications (usually in untreated cases)

- abdominal pain, abdomen may be distended
- may have obtundation, stupor
-"pea soup" diarrhea.

BEST AVAILABLE DOCUMENT

Treatment

-CHLORAMPHENICOL tablets at high dose. (If CHLORAMPHENICOL is not available, AMPICILLIN or TRIMETHOPRIM/SULFAMETHOXAZOLE may be given).

Antibiotics should be given for 15 days after the day when the fever disappeared.

- Treat fever and dehydration when present.
- Isolate patient. Wash hands carefully after contact with patient.

Note: If the patient is no better after 24 hours of treatment, treat for malaria .

Prevention

-Wash hands with soap before touching food and after passing stool.

-Keep fingernails short

-Use latrines.

-Don't wash the anus in running water.

-Protect food from flies and wash dishes with soap.

CHOLERA

Cause

-Bacteria that are spread by carriers.

- Epidemics when food or water are contaminated by the faces of carriers. Symptoms produced by a TOXIN which acts locally in the gut and does not enter the blood.
- Death is from dehydration only.

Symptoms

- Initially vomiting and diarrhea.

-A few hours later, profuse watery diarrhea.

-No fever, No abdominal pain, No blood in the stool.

Signs

- Severe dehydration.

-Shock.

BEST AVAILABLE DOCUMENT

Investigations

- Take pulse, temperature and weight.
- Monitor the patient for shock.
- Monitor children for malnutrition.

Treatment

- This is aimed at preventing dehydration and shock.
- ORS after every stool.
- NORMAL SALINE IVI for hypotensive patients.
- Continue eating and continue feeding babies.
- Give patient Tetracycline for five days 1/2 gram orally every 6 hours
- For the whole village:
  - Isolate the village.
  - Boil all water before using it.
  - Wash hands with soap before handing food and after passing stool.
  - Bury all faeces.
  - Make sure everyone knows how to make and use ORS.

  - Give all contacts of the patient TETRACYCLINE for 5 days, but they must do all the above also. for children under 8 years old CONTRIMOXAZOLE should be given instead of TETRACYCLINE.

Complication

- Dehydration.
- Uncontrolled epidemic.
- Worsening of malnutrition.

Prevention

- Wash hands with soap before eating and cooking
- Use latrines and wash hands.
- Keep fingernails cut short.
- Breastfeed children until 2 years.
- Continue to feed sick children.

BEST AVAILABLE DOCUMENT

HEPATITIS

Hepatitis is an uncommon disease caused by viral infection of the liver. It is contagious. It is spread by contamination of food or water with the feces or urine of an infected person. Injections with needles which have been used on an infected person can also spread the disease. The symptoms of hepatitis last for 4 to 6 weeks.

Clinical Picture

The varies from asymptomatic infection without jaundice to a alminating disease with death in a few days. There is insidious onset of general malaise, much pain, fever, nausea and vomiting with severe anorexia. Many patients develop clinical jaundice, tenderness over the right upper quadrant a palpable enlarged liver and bile in the urine. Occasionally there may be pale stool associated with skin itching - but this is transient.

Signs and symptoms

- jaundice
- right upper quadrant pain
- enlarged tender liver
- fever less than 39 degrees
- dark urine
- loss of appetite, nausea, vomiting.

BEST AVAILABLE DOCUMENT

Complications

1. Severe fulminating hepatic necrosis and liver failure may occur, with the patient getting progressively jaundiced, drowsy with irrational behavior, slipping gradually into coma; patient must be referred.

RABIES

Rabies is a viral infection of the central nervous system transmitted by contamination of a wound with saliva from a rabid animal if, symptoms develop, it is virtually 100% fatal . It is a world wide public health problem. In Asia, usually the vector is a dog. How the virus travels from the wound to the brain is poorly understood. The virus may multiply in the muscle then move up the nerve and into the brain where it destroys the brainstem and medulla.

Transmission is by both animals and humans. Rabies spreads from the brain, down nerves, to the salivary glands. Not only is a bite from a rabid animal dangerous, but also scratches, because animals lick their claws. In general, if a biting animal does not die with in 10 days rabies is unlikely.

Clinical picture in humans:

The incubation period is extremely variable. Usually it is 20-180 days. The length of incubation is related to the location of the bite, with the longest period being for bites on the head, and the shortest for bites on the legs. It is also shorter in children.

Signs in humans:

Prodromal phase - lasts 2 - 10 days with non-specific symptoms of fever,malaise, headache, loss of appetite, anxiety, and pain at the wound site.

BEST AVAILABLE DOCUMENT

Acute neurologic phase - symptoms are those seen in animals of the "furious" type. There is also the symptom of hydrophobia, which means a fear of water. Any patient with this symptom has rabies.

Any attempts to swallow liquids, even saliva, results in spasm of the pharynx and aspiration. Eventually there is a psychologic component which makes the sight of water terrifying. Also currents of air across the face lead to violent spasms.

The typical case of rabies would consist of symptoms of hyperactivity, disorientation, strange combative behavior, alternating, with periods of calm in which the patient is completely conscious of what is happening to him. He complains of sore throat and may have seizures. Paralysis develops at the end of this acute, neurologic phase. The patient may die of cardiorespiratory arrest, and if not, will go into a coma and develop cardiac abnormalities leading to death.

Diagnosis of rabies

- History of animal bite
- Pain and tingling at the wound site
- Hydrophobia
- Pain and difficulty swallowing with a lot of thick sticky saliva.

Management of Rabies

Once a person has developed the symptoms of rabies there is no treatment to save him. If someone has just been bitten, aggressive local wound care should be practiced. Use simple removal by soap and water with large amounts of solution. Catheters should be inserted for irrigation of puncture wounds. After scrubbing, application of hydrogen peroxide or 70% alcohol may be use.

BEST AVAILABLE DOCUMENT

Tie ordocage the animal for a week. If the animal dies before the week is up take the bitten person at once to a health center where he can be given a series of antirabies injections, if available. (Only a few people have ever survived once they developed the symptoms of rabies. It is virtually 100% fata.

MUSCULOSKELETAL

ACUTE MUSCULOSKELETAL PAIN

OVERUSE SYNDROMES

Pain due to excessive use of a joint or muscle is a common problem. The patients are usually active and otherwise well. The pain is limited to one part of the body. If the patient appears to be in much pain, look for more serious disease such as fractures, dislocations and septic arthritis.

Signs and Symptoms

- pain with motion
- minimal or no limitation of movement
- point tenderness
- unilateral
- no swelling, redness, fever
- often history of repetitive or abnormal use.

BEST AVAILABLE DOCUMENT

Treatment

- ASPIRIN normal dose for 7 days.
- Rest the area or the body that hurts.

Caution: Never use DEXAMETHASONE tablets for this problem, they are more likely to harm than help patient.

SPRAINS AND STRAINS

Cause

- Trauma to joints, muscles or ligaments

Symptoms

- Pain; swelling; loss of function,

Signs

- Swelling; tenderness,

Investigation

- Take pulse, temperature and weight.
- X-ray if suspect fracture (if at a hospital).

Treatment

ASPIRIN for pain and fever.

- Elevate limbs to relieve swelling
- Alternate hot and cold COMPRESSES to relieve pain and swelling.
- Splint joints until the pain is better.
- Put a firm bandage on the area to give support.
- When the pain is gone, begin gentle physiotherapy.
- Rub VABELINE/MENTHOL into the skin to relieve skin and muscle pains.
- Put arm in a sling to provide support.

Complications

- Contractures of joints if severe.

BEST AVAILABLE DOCUMENT

Prevention

- Nil

LOW BACK PAIN

Low back pain refers to pain of musculoskeletal origin. It is a very common problem primarily affecting adults. I may be mild or severe. Low back pain is mild when there is minimal limitation of movement. Low back pain is severe when there is significant of movement and or sciatica.

Signs and Symptoms

- pain over lower back, worse with movement
- spasm of paravertebral muscles
- +/- limitation of motion
- often there is a history of strain, heavy lifting, or trauma
- +/- sciatica

Treatment

Mild symptoms

- Avoid strenuous activity or heavy lifting.
- PARACETAMOL normal dose for 7 days.
- ASPIRIN and bedrest as below if no improvement in 7 days

Patient instruction: When bending down, always bend at the knees,never at the waist.

Severe symptoms (often with sciatica)

- Bedrest until 24 hours after the pain is relieved
- ASPIRIN normal dose for 10 days.
- If no improvement after 4 days, give DIAZEPAM (VALIUM), 2.5-5 mg 3 times/day for 4 days.
- For severe pain, INDOMETHACIN 25mg. 3 times daily may be given for 7 days.

Prevention

- Sleep flat on a firm surface.
- Lift heavy objects carefully.
- Demonstrate how to lift properly.

BEST AVAILABLE DOCUMENT

- Sit and stand carefully.
- Don't make sudden movements.
- Eat plenty of fruit and fresh vegetables, and milk, yogurt etc.
- Encourage women to sit in the sun every day.
- Avoid taking medicines for pain unless really necessary.

SPINAL PAIN

Back and neck pain are two of the most common problems that you will see in your clinics.

First we will review the anatomy of the spine, then discuss the pathophysiology of back and neck pain, how to take an appropriate history and do a relevant physical examination. Treatment will be discussed at the end of the section.

History:

Location of the pain is important. Pain caused by mechanical problems, muscle strain or disc pathology without nerve root irritation occurs in the back, buttocks or posterior thighs without radiation below the knees. Pain caused by nerve root irritation usually beyond the knee, often involving the foot. It is usually sharp, shooting and well localized pain.

Pain, worse when bending over, suggests back strain, or disc disease; pain that worsens with extension suggests a degenerative cause.

The most important question in the history of the back pain patient is that of bowel and bladder incontinence. New onset incontinence with back pain suggests a massive central herniation of a disc with pressure on the end of the spinal cord. <u>This is a surgical emergency</u>

<u>Physical Examination:</u>

BEST AVAILABLE DOCUMENT

1. traumatic causes of back pain should be evaluated as described in the Trauma section of the Surgery. If there is a neurological deficit you must stabilize the patient and refer. If there is no neurologic deficit, but there is bony tenderness of the spine, suspect a fractured vertebrae. If you are close to a hospital, stabilize the patient, secure him to a stretcher and refer. If you are a long way from the hospital, treat the patient with bedrest and analgesics for 7 days..

2. With the patient standing, check for scoliosis, local tenderness, muscle spasm, redness or increased temperature of the vertebrae. Check the range of motion in flexion, extension, and lateral flexion. Have the patient walk on his toes--this tests the strength of S1.

3. While sitting, have the patient dorsiflex the big toe-tests L5.

4. Check the knee reflexes, testing nerve roots L3-L4. check the Babinski response. An upgoing toe suggests pathology above the lumbar area i.e. spinal cord tumor.

5. With the patient lying down, examine the abdomen and inguinal region. Check passive straight leg raising. Between 30 and 70 the nerve root will be stretched over a protruding disc. If pain radiates down the back of the leg at less than 60 it is suggestive of nerve root irritation by a protruding disc.

6. With the patient lying face down, check for the only emergency associated with back pain. Sensation between the buttocks is provided by S3-S5 which are also responsible for anal and urethral sphincter tone. Poor anal sphincter tone, urinary or fecal incontinence and absence of sensation between the buttocks suggests a massive central disc herniation which requires surgery within hours to prevent permanent incontinence.

 BEST AVAILABLE DOCUMENT

Treatment:

In most cases where there is severe unilateral or bilateral sensory or motor loss, i.e. foot drop or absence of a reflex on one side, the patient should be referred to a hospital for surgery as prolonged pressure on the spinal nerve may result in permanent problems. Mild cases of disc herniation can be managed the same is mechanical pain or soft tissue pain.

Bed rest should be encouraged when the pain is severe and acute. Remember, that after 3-4 days of bed rest, muscles start to stiffen and weaken; too much bed rest will make a sore back worse.

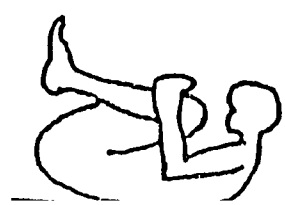
Aspirin or other anti-inflammatory medications can be given, and will offer relief.

Massage of the muscle spasms will help.

Cold compresses with ice, if possible, will help to for the first 2-3 days of acute back pain. After 72 hours hot compresses will be more effective in reducing muscle spasm.

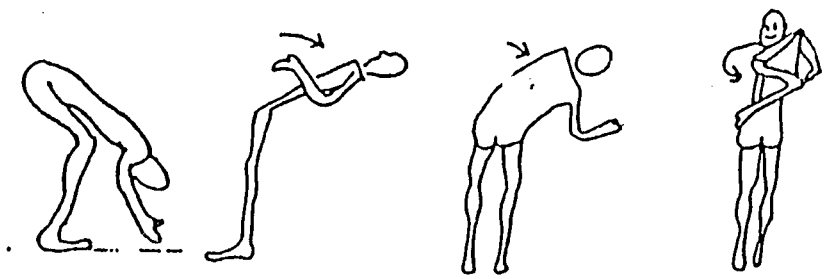
Gentle stretching exercises are often overlooked but are very important.

One of the best exercises to do for acute back pain is to clasp the knees at the chest and roll forward and backward, and side to side to massage the paraspinal muscles.

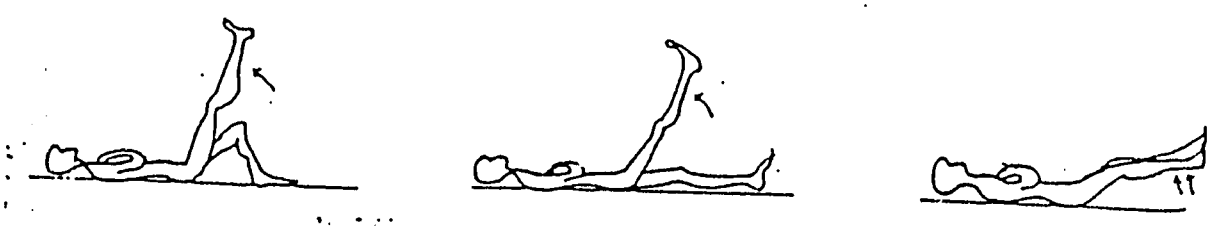


BEST AVAILABLE DOCUMENT

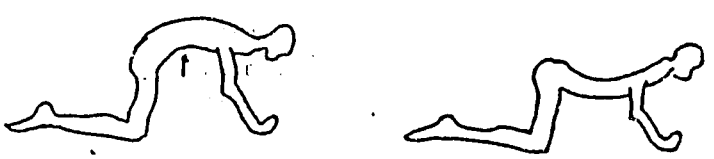
Forward flexion, extension, lateral flexion and rotation are all movements which should be done slowly to stretch the back muscles.



Leg raises stretch the lower back and hamstrings, and strengthen the abdominal muscles. first, do them with one knee bent and progress to single straight leg raising with the stationary leg extended, then to straight leg raising with both legs.



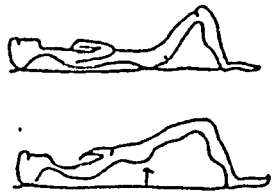
Stretch the back like a cat.



lie face down and lift up with the spinal muscles, using the hands for balance only

BEST AVAILABLE DOCUMENT

Lie face up and push the hips up to the sky. Squeeze the buttock.



Remember that chronic back pain can be symptom of depression, or a reaction to stress. After you have ruled out local and systemic causes of back pain, question the patient about symptoms of stress and depression.

Neck Pain

Neck pain usually results from trauma, especially motor vehicle accidents, and rom neck muscle spasm--often called torticollis.

The pathophysiology of neck pain following a motor vehicle accident involving bony, soft tissue and ligamentous injuries. You must first rule out a bony injury. Serious injury to the cervical spine can usually be ruled out by palpation; a tender spinous process may suggest a fracture; a nontender cervical spine has probably not been fractured.

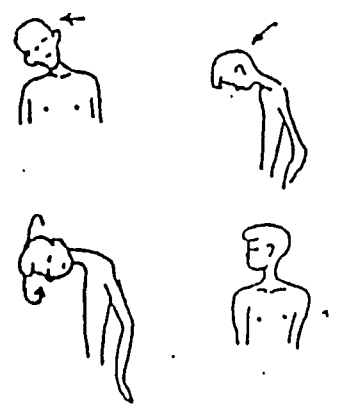
Stretching of the soft tissue structures may result in pain and even hematoma formation. Cold compresses for the first 3 days are helpful. It is usually unwise to immobilize soft tissue injury of the neck. If neck muscle spasm is sever you may want to immobilize the neck with a soft collar made up of a rolled towel. Do not immobilize the neck for longer than 7 days and always instruct the patient to do stretching exercises. The neck collar at night is often the most effective treatment time.

Think of the spine as a door hinge: too much inactivity makes it rusty and stiff. Encourage gentle stretching exercises in the 4 basic neck motions.

BEST AVAILABLE DOCUMENT

Massage is also helpful

Torticollis is a sudden painful spasm of the sternomastoid muscles on one side of the neck, often pulling the head over to one side. The cause is not known and it always gets better within 7-10 days. Massage, cold packs, and stretching exercises help. Aspiring can also be used for severe neck pain



CHRONIC MUSCULOSKELETAL PAIN

Chronic musculoskeletal pain is a very common complaint in Afghanistan, especially in old people. It causes discomfort but is not a serious problem. There are several diseases that present as chronic joint pain. The first, degenerative joint disease, is common. Rheumatoid arthritis, however, is rare.

DEGENERATIVE JOINT DISEASE - (OSTEOARTHRITIS)

This is a common disease of old people. It is caused by wear and tear of the joint. Younger people can be affected if there has been previous damage to a joint. The disease progresses slowly over time despite treatment. The patients are otherwise healthy. Because it is chronic and will last a lifetime, it should not be treated with strong medicines that are potentially harmful (ex.,never treat with (Dexamethasone).

Signs and Symptoms

- pain with joint movement and limitation of movement
- symmetrical distribution of large weight bearing joints
- symptoms are chronic
- no redness, no swelling, no fever

BEST AVAILABLE DOCUMENT

Treatment

- PARACETAMOL normal dose for 7 days
- Explain to the patient that medicines will help with the pain but not cure the disease.
- If there is no improvement, ASPIRIN 2 tablets 4 times/day for 7 days.
- IODEX ointment P.R.N.

RHEUMATOID ARTHRITIS

Rheumatoid Arthritis is an uncommon chronic disease usually found in females of child-bearing age. The disease affects the entire body, but primarily the joints. Joint pain is mild to moderate. Joint deformity, especially of the hands, occurs late and may be severe.

Signs and Symptoms

- Chronic joint pain, multiple small symmetrical joints, especially the hands and wrists.
- moderate boggy swelling
- all fingers may angle abnormally toward the little finger
- low grade fevers <38.5 degrees

Treatment

-ASPIRIN 2 tablets 4 times/day. Follow-up in 1 week. In some cases, you may have to increase the dose to 3 tablets 4 times/day.

Note: Patients with rheumatoid arthritis may require chronic ASPIRIN treatment up to 4 tablets 4 times/day. the ASPIRIN must be taken with food. If there is a history of gastritis, crush the ASPIRIN and take with meals.

BEST AVAILABLE DOCUMENT

SEPTIC ARTHRITIS

Septic arthritis is a rare but very serious disease caused by infection of the joint. Pain develops rapidly; there is usually no history of trauma. Usually a single large joint (especially the knee) is involved, though any joint can become infected. If not treated immediately, septic arthritis can cause destruction of the joint.

Signs and Symptoms

- patients appear ill
- high fever
- tender, swollen, warm joint

treatment

- Begin CHLORAMPHENICOL high dose.
- Immobilize the joint with a splint.
- Elevate the joint.
- Patient should be kept in the clinic for the first 48 hours.
- Reduce CHLORAMPHENICOL to normal dose after the patient is afebrile for 24 hours.
- Treat for 14 days after patient is febrile.

Note. If you can refer the patient to a hospital, do so after immobilization.

OSTEOMYELITIS

Osteomyelitis is a bone infection which occurs in two forms acute and chronic. The acute form, resulting from infection from a distant source (over lying skin is not broken) is uncommon. Chronic osteomyelitis, usually resulting from an old wound with bone fracture, is common in Afghanistan. It is VERY IMPORTANT TO RECOGNIZE ACUTE OSTEOMYELITIS BECAUSE IT CAN BE CURED WITH ANTIBIOTICS. Chronic osteomyelitis, however, is very difficult to cure, not only in Afghanistan but anywhere in the world.

BEST AVAILABLE DOCUMENT

ACUTE

Signs and Symptoms

- fever, chills and sweats
- pain, redness, localized swelling over bone.
- +/- abscess formation (check for fluctuation)

Treatment

- Abscess drainage if present.
- CHLORAMPHENICOL tablets normal dose for 2 weeks
- Bedrest until without fever.
- Immobilize extremity of infection near a joint. (Patient may required hospitalization).
- Patient follow-up in 2 days for re-evaluation. (Check for abscess if not present on first visit.)

CHRONIC

Signs and Symptoms

- pus draining from sinus overlying bone
- +/- formation of abscess if sinus is closed
- +/- redness, swelling surrounding the sinus

Treatment

- Soak wound, wound cleaning.
- If any evidence of abscess (sinus tract closed, pain, swelling) drain abscess.
- Most wound care can be done by patient at home
- instruct on soaking, wound cleaning and give enough supplies for 3-4 days. Return as indicated.
- Antibiotics are rarely indicated in chronic osteomyelitis; if there is fever, swelling and redness around sinus (check for abscess) you may give CHLORAMPHENICOL for one week - normal dose.
- If patient is having much difficulty with his osteomyelitis - pain, inability to use extremity, excessive drainage - and he is going to Pakistan or an Afghan city - you may re comment evaluation for possible surgical treatment. Emphasize, however, that

BEST AVAILABLE DOCUMENT

even with excellent surgical care, chronic osteomyelitis is often not cured.

For Chronic Osteomyelitis, the goal of therapy is to return the patient to an acceptable level of function requiring a minimum of care.

Note:

Chronic osteomyelitis may be caused by tuberculosis. If the patient's over-all condition suggests tuberculosis consider referral for evaluation of tuberculosis.

LOW BACK PAIN/SCIATICA/HERNIATED DISC

OFTEN LOW BACK PAIN IS CAUSED BY STRAIN OF MUSCLES IN THE LOW BACK. SOMETIMES THE NERVES WHICH COME FROM THE LOWER SPINAL CORD AND GO DOWN THE LEG AS THE SCIATIC NERVE BECOME PAINFUL. THIS IS CALLED SCIATICA. SCIATIC PAIN MAY AFFECT THE BACK AND ALSO RADIATE DOWN THE BUTTOCK AND LEG. IT CAN BE CAUSED BY DAMAGE TO A DISC IN THE SPINE WHICH PRESSES ON NERVES GOING TO THE LEG.

SYMPTOMS/SIGNS

- LOW BACK PAIN. SOMETIMES SEVERE
- THERE MAY BE MUSCLE SPASMS IN THE LOW BACK

- IF THE PROBLEM IS CAUSED BY A DISC PRESSING ON NERVE ROOT(S) IN THE SCIATIC NERVE, ONE LEG MAY HURT OR FEEL NUMB AND MAY NOT MOVE WELL. ALSO KNEE AND ANKLE REFLEXES ON THAT SIDE MAY BE LESS ACTIVE. STRAIGHT LEG RAISING MAY GIVE INCREASED PAIN IN BACK AND LEG ("STRAIGHT LEG RAISING" MEANS THAT WITH THE PATIENT ON HIS BACK, THE EXAMINER RAISES THE PATIENT'S LEG ON THE SIDE OF THE PAIN WITH KNEE STRAIGHT).

TREATMENT

- HAVE THE PATIENT REST ON HIS BACK ON A FIRM BET, GETTING UP ONLY TO USE THE LATRINE. AFTER HE IS PAIN-FREE FOR 24 HOURS WITHOUT MEDICATION, WALKING MAY BE ATTEMPTED, THEN GRADUAL PROGRESSION TO FULL ACTIVITY IF NO SYMPTOMS

 BEST AVAILABLE DOCUMENT

RECUR. IF THERE IS SCIATIC INVOLVEMENT, 2-4 WEEKS OF BED REST MAY BE REQUIRED FOR IMPROVEMENT.

- ASPIRIN MAY BE GIVEN FOR PAIN
- WARM COMPRESSES FOR MUSCLE SPASMS
- DIAZEPAM (VALIUM) IN SMALL DOSES (ADULT DOSE, 5 MG TWO OR THREE TIMES A DAY BY MOUTH) MAY HELP SPASMS.

LOW BACK STRAIN AND MOST DISC PROBLEMS HEAL WITH REST. IF PAIN CONTINUES OR THE PATIENT HAS NUMBNESS. OR PARALYSIS OF A LEG,. HE MAY NEED TRACTION OR SURGERY AND SHOULD BE REFERRED TO A HOSPITAL AS SOON AS POSSIBLE.

NEUROPSYCHIATRY

Stress Headache:

Causes Spasm of the head muscles because of stress.

- Depression can cause headache.

(Note ; headache can be caused as side effect of same medicine)

Symptoms
- pain increases during the day.
- pain is felt behind the eyes tamporal areas and forehead.
- Nausea, vomiting and photophobia, not present.

Signs

Fever, Neck stiffness and photophobia not seen

Investigations Pulse, temperature, weight and blood pressure.

Treatment:
- Rest in a quiet room
- cold compresses on Forehead
- Someone else should massage the neck and back.
- Strong tea with sugar
- Two tablets of aspirin
- it should be told to the patient that not to take many medicines.

Complications: Depression, Decreased ability to work.

Prevention: It should be asked about psychiatric problems at home or in working environment and the treatment be sought.

HEADACHE

Headache is a symptom, not a disease.

Simple Headache - a common problem characterized by a history of chronic or recurrent attacks of headache unaccompanied by other signs or symptoms. Physical examination is normal. Patients often have stress related probl ms.

Treatment

- Advise massage of forehead, neck and shoulder muscles.
- Advise application of hot compresses to forehead.
- ASPIRIN or PARACETAMOL.

Complex headache an uncommon problem characterized by new onset of headache, often severe, usually associated with other signs or symptoms.

Signs and Symptoms

- high fever:	See malaria See typhoid
- stiff neck or convulsions:	See meningitis
- Severe high blood pressure:	See hypertension
- localized facial pain or swelling:	see tooth abscess facial cellulitis.

MIGRAINE

Cause

- Spasm of blood vessels in the brain. Recurrent problem in certain patients. Usually begins after

puberty and lasts until middle age. Can be an allergic reaction to foods or medicines.

Symptoms

- This comes in attacks that can last 2 or 3 days. Sudden onset; severe; usually on one side of the head; nausea and vomiting; difficulty with vision.

Signs

- No fever; may be photophobia but no neck stiffness.

Investigations

- Take pulse, temperature and weight.

Treatment

- Rest in a quiet, dark room. Put cold compresses on the forehead. Drink sweet, strong tea. Ask the patient to take notice if the attacks are related to any foods or activities. ASPIRIN or PARACETAMOL.

CONVULSION (Epilepsy, seizure)

A convulsion is violent, involuntary jerking of the body due to massive discharge of electrical impulses from the brain. In infants, fever is usually the cause and the seizure is generally not dangerous. Rarely meningitis may be present, especially when the seizures are repeated or prolonged. In adults with a history of similar attacks, a chronic seizure disorder is the diagnosis. Most convulsions are of short duration and stop by themselves.

Signs and Symptoms

- violent, jerking of the whole body
- unresponsive to voice during the convulsion
- stupor, confusion for short time after convulsion
- +/- bitten tongue (bloody mouth)
- +/- urinary incontinence (check for wet pants)

Treatment

If still convulsing after 5 minutes (By your watch)

- Draw up DIAZEPAM in a syringe: (5 mg/ml, 2ml vial)

Children - per rectum less than 1 year 0.5 ml (2.5mg).
1-4 years 1 ml (5mg).

(No needle, just insert end of syringe)

Adult - 10 mg IM

If no longer convulsing:

- Check for cause of convulsion:

a) If fever

- Do a careful physical exam, checking especially for stiff neck, otitis media, and decreased level of consciousness.
- If the child's general condition is normal he may go home with a recheck in 24 hours.
- If the patient is not alert after the meningitis, treat as meningitis, severe meningitis, treat as meningitis,severe malaria.

b) If no fever and history of previous convulsions, refer to hospital of Pakistan.

COMA

Coma is a state of prolonged unconsciousness. It is very rare but dangerous. It most frequently results from infection and head trauma; in old people, it usually results from spontaneous irreversible brain damage.

Signs and Symptoms

- Patient unresponsive to loud voice.
- Patient does not wake up after being given a hard pinch.

Treatment

- All patients IV Glucose at maintenance levels (unless a child with dehydration).
- If history or signs of trauma:

- Put in quiet place. If after 2 days, patient is unchanged, Continue IV and Reger.
- If fever treat for meningitis and severe malaria.
- Chloramphenicol and Chloroquine

Note:

Transfer patient to a hospital if possible.

PSYCHIATRIC

ANXIETY, AGITATION, and INSOMNIA

These are frequent symptoms in Afghanistan caused by the many stresses of the war (fear, loss of family, uncertain future). These symptoms are usually not serious but can be of great concern to the patient.

Signs and Symptoms

- Sleeplessness
- nervousness
- lack of desire to do things
- generalized fatigue (check for other causes).

Treatment

- Mild

  -Reassurance - explain to the patient the origin of the symptoms, emphasizing that they are a response to stress, not a disease. Encourage the patient to discuss his concerns with his family, friends.

- Severe

  If the symptoms, particularly insomnia, are preventing the patient from performing normal duties (work etc.):

  - Reassurance - above
  - DIAZEPAM 5mg p.o. at bedtime - for 5 days. Caution - repeated courses of DIAZEPAM can actually make the patient worse. Maximum duration 10 days/month.

  (No DIAZEPAM treatment for children).

PSYCHOSIS

Cause

- Reaction to life crises.
- Can be complication of pregnancy, Thyroid disease, brain infections, brain cancer and medicines

Symptoms

- Visual and auditory hallucination; unaware of time or place; thinks he is someone else; says and does strange or socially unacceptable things; paranoia; sometimes very active, sometimes withdrawn.

Signs

- Usually none.
- Examine him carefully for evidence of disease.

Investigations

- take pulse, temperature and weight.
- Monitor his progress by checking his weigh.

Treatment

- Refer him.

Complications

- Disruption of family suicide.

Prevention

- Avoid unnecessary medicines.

DEPRESSION

Cause

- Can be acute, which is usually a reaction to life crises or chronic, the cause of which is unknown.
- Can also follow the delivery of a baby in women.
- Can be complication of medicines, brain infections, brain cancer, goiter and anaemia.

Symptoms

- Loss of interest in surroundings and events;l loss of appetite; wakes early and can't go back to sleep; personal hygiene is neglected; crying; feels miserable.
- Constantly complains of minor illnesses.

Signs

- Especially headaches; chest pain and abdomen pain.
- Loss of weight; poor hygiene.
- Examine him carefully for signs of TB, brain infections and cancer; severe anaemia.

Investigations

- Take pulse, temperature and weight.
- Monitor his progress by taking his weight regularly

Treatment

- Talk to his family to find out what problems there are in his life.

- Do not give DIAZEPAM.

Complications

- Suicide; loss of work and income

Prevention

- Avoid unnecessary medicines.
- DIAZEPAM makes depression worse.

Infectious diseases.

Lesson Plan:

1. Knowledge:
   1.1 Mode of transmission and prevention methods for malaria
      a. Mosquito,

DRUG FORMULARY

The drug formulary is to be used as a reference for determining the correct drug dose and dosage scheduling for various patient age/weight categories. Drugs are grouped according to drug type (ex. antibiotics) and are listed in the text and the formulary under their generic names.

Included in the formulary are comments regarding common side effects and other things to consider when contemplating using a corresponding reference in the text. The health provider should always consult the manual before giving medications; disease management involves much more than simply giving out medications and this can be only obtained by reading the text.

The drug tables are divided up to age categories. The drug dose for each category is based on an average patient weight per age group.

Caution: when determining drug doses, be sure to look at the "dose Form" (mg of drug per tablet or vial) used in the table to see if the drug you are using is the same strength. If it is not, you must adjust the drug dose accordingly. For example: the Dose Form for ampicillin tablets is 250 mg: if your tablet is 500 mg, your must have the number of tablets stated in the table to arrive at the correct dose.

For those health providers who have scales to weight infants, they can calculate the precise dosage using the mg/kg values found in the upper left. Remember, however, that the mg/kg values represent the total daily drug dose and that this must be divided by the number of times per day the drug is given to arrive at the correct dose per administration.

Patient weights used in calculating drug doses:

AGE	1-11 Months	1-4 Years	5-15 Years	Adult
Average 5 Kg Weight		10 kg	30 kg	60 kg

BEST AVAILABLE DOCUMENT

TEASPOON NOTE:

When the text refers to a teaspoon (or tsp), this is a volume usually held in a spoon. although the volume held in different spoons is variable, for medical purposes, a teaspoon means 5ml. the size of a spoon can be checked by drawing up 5ml. of water into a syringe and dropping it into the spoon, and instructing the patient on the necessary adjustments.

ANALGESIC

Paracetamol:

Analigin, Panadol, Parasal, Paracol, Tylenol. Acetaminophen

Action: Analgesic, Antipyretic

Indications:
Headache, tooth pain, fever (especially in children), and muscle pain. alternative to aspirin if patient has aspirin allergy or gastro intestinal disorders (gastritis or gastric ulcer)

Contraidication: Fever disease
No benifit in inflammatory disorders (rheumatic fever, rheumatoid arthritis)

Side Effects:
High dose or unsupervised chronic use can cause liver damage, dizziness and disorientation.

Preparation: 500\mg tab; 120 mg/5ml

Dosage: Normal dose - 40-60 mg/kg/day
5-10 mg/kg/dose

Age	1-11 months	1-4 Years	5-15 Years	Adult
Tablet	Don't give	1/4 tab 4 x / day	1/2 tab 4 x / day	1 - 2 tabs 4 times/day
Syrup	1/4 tsp 4 x / day	1 tsp 4 x / day	1 1/2-2 tsp 4 x / day	

Pregnancy; Lactation: Yes, but not more than 4 tabs/day

Comments:

1. Aceta minophen appears to be relatively non-toxic when used in normal doses.

2. Don't use for self-medication of marked fever (greater than 103.1 F or 39.5 c), fever persisting longer than 3 days or recurrent fever.

3. Better for patients with gastritis

4. Maximum Dose: 1000 mg 4 times/day

Aspirin Tablet

Analgin, ASA. Disprin
Action:

Analgesic (pain-relieving), antipyretic (fever-reducing) antiinflammatory (reduce swelling, heat and redness)

indications:
Fever, Pain (headache, tooth pain, muscle pain, bone pain, joint pain, pain associated with minor surgical injuries), arthritis

Contraindications:

Gastrointestinal pain, biliary and genitourinary pain, gastritis, with an active or history of gastric and peptic ulcer, children less than, 1 year old, uncontrolled bleeding, pregnancy, lactation, patients who bruise easily, patients who are scheduled for surgery.

Side Effects:

Nausea, vomiting, epigastric burning or distress, gastrointestinal bleeding, ringing in the ears, hearing loss, allergic reaction manifested by anaphylactic shock or asthma

Preparation:

300 mg/tab

Dosage:

10 mg/kg/dose OR

Age	1-11 months	1-4 years	5-15 Years	Adult
Normal Dose 40-60 mg/kg/day	Don't give	1/2 tab 4 x / day	1 tab 4 x / day	2 tabs 4 x / day

Pregnancy: Avoid in pregnancy

Lactation: No

Comments:

1. Children with chicken pox or flu - like illness should not be given aspirin (it can lead to more serious disease)

2. Keep out of reach of children - aspirin is one of the leading causes of poisoning in children.

3. Give with food, milk, antacid or large glass of water to reduce gastrointestinal side effect.

4. Medications should be kept in a locked drawer and bottles should be tightly capped because moisture affects the drug.

5. If the drug has a strong vinegar odor, the remaining tablets should be discarded

6. Check carefully on patients with complaints of ringing in the ears or when persistent stomach or abdominal pain occurs.

7. Aspirin do not lower the body temperature of individuals who do not have fever.

8. Aspirin do not prevent the damage to joints but may delay the progressive disability resulting from the disease.

Indomethacin capsules: Indocin, Indocid, Incin

Action: Analgesic, antipyretic, antiinflammatory

Indications:
Pain (muscle pain, bone pain,. rheumatism, pain associated with surgery, injuries), arthritis not relieved by aspirin

Contraindications:
Gastritis, gastric ulcer, gastrointestinal and genitourinary pain, liver disease, children and elderly patients.

Side effects:
Anemia headache, dizzines, nausea and vomiting, visual and hearing loss, allergic reaction

Preparation:
25 mg/capsule

Dosage:

Age	1-11 months! 1-4 Years!5 - 15 Years	Adult
Normal dose	Avoid in children	1 cap 2x/day
High Dose	Avoid in Children	2 cap 3-4/day

Pregnancy: No, also avoid in lactation:

Comments:

1. Indomethacin is a potentially toxic drug capable of causing severe gastrointestinal reactions like bleeding and ulcerations.

2. Gastro intestinal distress may be relieved by administering the drug with meals, milk and antacid

3. use cautiously in patients with liver or kidney disease, heart disease and infections

4. Don't use for simple pain relief - too dangerous!

Pentazocine:

Sosegon, Panafer, Talwin

Indications:
Only for extremely severe pain, such as renal colic and severe injuries

Contraindications:
Emotional instability, head injury, increased intracranial pressure:

Side effects:
Sedation, dizziness, nausea, vomiting, respiratory depression

Preparation: 25 mg/tab; 30 mg injection

Dosage:

age	1-11 months	1-4 Years	5-15 Years	Adult
Normal dose	Dont give	1/4 tab if 3 years every 6 hrs	1/2 tab every 6 hrs	2 tabs every 3-4 hrs
High dose	Dont give	1/2 tab Every 6 hours	1 tab every 6 hours	20-30 mg IM every 3-4 hours

Pregnancy: Yes in last month of pregnancy; only for extreme pain

Comments:

1. Use cautiously in patients with liver or kidney disease.
2. Patients on Pentazocine should not drive nor operate machinery
3. Addiction if given often.

Temgesic

Action: Analgesic

Indications: Severe pain.

Contraindications: head injuries, liver or kidney problem, acute abdominal problems, old patients, asthma, tuberculosis, children under 11 years old.

Side Effects: Drowsiness, nausea and vomiting, constipation, dryness of mouth, hypotension, respiratory depression, drug addiction

Preparation: 0.3 mg/1ml ampule

Age	Adult
Normal Dose	0.3-0.6 mg IM or slow IV injection, repeated every 6-8 hours if required

Pregnancy, Lactation: No

Comments:

1. Patient should be advised not to drive a car or operate machinery
2. Temgesic should not be given to drug abusers or addict
3. Do not give if respiration's less than 16/minutes
4. Do not give if systolic blood pressure is 80mm Hg or less

ANTIALLERGICS AND URI

Chlorpheneramine

Piriton

Indication:

Allergic diseases (seasonal rhinitis and conjunctivitis. allergic skin reactions like solar eczema), allergic reactions to drugs, food, insect bites, generalized itching.

Contraindications:

Asthma, history of difficulty to urinate or defecate (possibility of prostatic hypertrophy), liver disease

Side Effects:

Drowsiness (especially in elderly), excitability (in children, palpitations, thickened pulmonary secretion dry mouth, abdominal pain.

Preparation:

4 mg/tab

Dosage:

Normal dose: 0.35mg/kg/day

Age	1-11 months	1-4 Years	5-15 Years	Adult
Normal Dose 0.35 mg/kg/day	Don't give	1/4-1/2 tab 2 x / day	1/2 - 1 tab 2-3 x/day	1-2 tabs 3-4 x / day

Duration:

3-5 days

Pregnancy:

Yes, after first 3 months

Comments:

1. Patients on this medicine should not drive a car or operate machinery since it may cause sedation:
2. Use carefully in elderly patients, in patients with heart or kidney disease, hypertension and bronchial asthma.
3. Coffee or tea may reduce drowsiness, sour candy may relieve dry mouth.

PULMONARY

Aminophylline: Theo-dur, Adicos, Theodrox, Theophylline

Action: Bronchodilator

Indications: Bronchial asthma, respiratory depression following opiate intoxication, bronchospasm secondary to inhalation of toxic chemical

Contraindication: Liver disease, heart disease, peptic ulcer, diabetes mellitus

Side Effects: Dizziness. headache, palpitations, restlessness, nausea, vomiting, diarrhea

Preparation: 100mg/tablet:

Dosage:

Age	1-11 months	1-4 Years	5-15 Years	Adult
Normal Dose 16mg/kg/day	Do not give	1/4 tab 4x/day	1/2 tab 4x/day	1-2 tablets 4 x / day
High Dose	Do not give	1/2 tab 4x/day	1 tab 4x/day	2-3 tabs 4x/day

Pregnancy Lactation: Yes. Use with caution, only if necessary

Duration: 1. Week

Comments:

1. Reduce dose if vomiting
2. Use with caution, keep out of children
3. Overdose is very dangerous; can result in seizures and death
4. Use carefully in young children; warn elderly patient of dizziness, an common side effects at the start of therapy.

<u>Salbutamol</u> ventolin

Action: Bronchodilator

Indication: Asthma, Bronchospasm with COPD (emphysema), chronic bronchitis

Side effects: Tremor, anxiety, headache, tachycardia, palpitations

Preparation: 2 or 4 mg/tab, 2 mg/5ml syrup

Age	[illegible] Year	6-12 Years	12 Years	Adult
Tab	1 tab 3-4x/day	1-2 tabs 3-4x/day	3-4 tabs 3-4x/day	3-4 tabs 3-4 x/day
Syrup	1/2-Itsp 3-4x/day	1-2 tsp 3-4x/day	3-4 tsp 3-4x/day	3-4 tsp 3-4 x/day

Pregnancy: Necessary in pregnancy until near labor, then contraindicated because it suppresses, uterine contractions

Comments: 1. Avoid in patients with hyperthyroidism

<u>Adrenaline</u>: Epinephrine

Action: Bronchodilation, cardivascular stimulation.

Indications: Acute asthmatic attack, allergic reaction (anaphylaxis), control of bleeding after tooth extraction (dilute!) and severe nose bleeding

Contraindications: Shock (other than anaphylactic shock), heart disease, hypertension, hyperthyroidism, brain damage.

Side Effects: Nervousness, tremors, headaches, palpitations, pallor, coldness of extremities, anxiety.

Preparation: Injection 1 ml/amp = 1mg/amp (1:1000 vial)

Dosage: Injections should be given subcutaneously, IV injections can lead easily to cardiac arrest and should be used only in resuscitation and in severe anaphylactic shock.

Age	1-11 months	1-4 Years	5-15 Years	Adult
Normal Dose 0.01mg/kg/dose subcutaneously	Do not give	0.1 ml give only subcutan-eouslty	0.2-0.25ml give only subcutaneously	0.3-0.5 ml give only subcutaneously
High	the maximum single dose is 0.3 ml to 0.5ml May repeat dose after 15-20 minutes. Give only subcutaneously 3-4 times a day or every 4 hours as needed.			

Pregnancy: Yes, Only in emergency

Comments:

1. use with caution in patient with angina, hypertension and in patients with long-standing bronchial asthma who have developed heart disease.
2. Don't mix with alkaline solution. Use dextrose 5% in water. Normal saline or a combination of dextrose 5% in water solution. Mix just before use.
3. Adrenaline solutions deteriorate after 24 hours. Discard after that time or before solution is dissolved or contains precipitate.
4. Massage site after injection to counteract possible vasoconstriction

DRURETICS

Dyazide

Action:	Diuretic
Indications:	Severe hypertension congestive heart failure
Contraindications:	Anuria, severe or progressive renal disease, severe hepatic disease, hyperkalemia, children. Use cautiously in impaired hepatic function, diabetes, pregnancy or lactation
Side effects:	Anemia, volume decletion and dehydration, hyperuricemia, hyperglycemia
Preparation:	Each tablet of dyazide contains triamterene 50 mg and hydrochlorothiazide 25 mg
Dosage:	Severe Hypertension: 1. Dyazide 1 tablet / day for 7 days. 2. Eliminate salt from the diet 3. Weight reduction 4. Follow - up in 1 week If blood pressure is in the moderate range, stop the dyazide, Recheck in 1 week. If blood pressure is in the severe range, increase in 1 week dyazide to 1 tablet, 2x/day, then recheck in 1 week. 5. Emphasize importance of salt reduction and weight loss.

Congestive Heart Failure	1. Dyazide 1 tablet/day for 1 week but re-emphasize importance of salt restriction. 2. If no better after another week: increase dyazide to 1 tablet 2x/day for 1 week. 3. If still not better, try to refer to a hospital.

EYE AND EAR

Tetracycline Eye Ointment

Action:	Antibacterial
indications:	Conjunctivitis (bacterial), trachoma
Side Effects:	May cause allergic reaction
Contraindication:	None
Preparation:	Ointment (tube)

Dosage:

A. Acute Trachoma
   1. Trimethoprim/sulfa 2 tabs 3x/day x 3 weeks or Tetracycline 250mb 1 cap 4x/day for 3 weeks (for children 8 years old, use Trimethoprim/sulfa instead)
   2. Wash eye with salt and water
   3. Apply ointment in each eye 4x/day for 1 month (2 tubes/patient)

B. Chronic Trachoma:
   Always start with acute trachoma treatment, thereafter give: Tetracycline 25 mg\ 4 caps, 1 day each month only.

C. Conjunctivitis:

1. Wash eyes with salt and water
2. Apply ointment 4x/day in affected eye for 5 days

Pregnancy, Lactation: Yes

Comments:

Children and pregnant women can use tetracycline eye ointment but not tetracycline tablet. Systemic absorption of tetracycline into blood stream from eyes is very little composed to tablet intake.

Chloromycetin	Chloramphenicol eye drops
Indications	Antibiotic
Contraindications	Allergic Reaction
Side Effects:	None
Preparation:	Eye drops

Dosage:

Instill 2 drops to the both eyes every 3 hours. Administration should be continued day and night for the first 48 hours after which the interval between applications may be increased.

Comments:

1. Treatment should be continued for at least 5 days after the eye appears normal
2. Prolonged use can result in over growth of crganisms like fungi.

Fluorescein Sodium	Fluorescite, Fluour - I strip
Indications:	Corneal abrasions nd foreign body in the eye

Side Effect	Stinging, burning, yellow streaks from tears
Preparation:	1% solution, strip

Dosage:

Instill 1 drop of 1% solution followed by irrigation of moisten strip with sterile water. Touch conjunotiva with moistened tip. Flush eye with irrigating solution. Patient should blink several times after application.

Comments:

1. Use with caution in patient with history of allergy or bronchial asthma.
2. Always us aseptic technique.
3. Yellow skin discoloration may persist 6 to 12 hours.

<u>Optisol Eye Drops</u>

Action:	Eye lubricant (artificial tears)
Indications:	Chronic trachoma (to be used with other meds) Decreased tear formation due to other causes, xerophthalmia (together with Vit A tablets)
Contraindications:	Bacterial or fungal infections of eye
Preparation:	Eye drops in bottles
Dosage:	1-2 drops in affected eye 4 x / day
Duration:	Depends on degree of improvement of the patient: usually long term treatment is necessary
Pregnancy, Lactation:	Yes

Glycerin

Action: Emollient, lubricant

Indications: For removal of ear wax, for dry skin and hands, as lubricant for tubes and catheters.

Contraindications: None

Side Effects: None

Preparation: Lotion

Dosage:

Apply undiluted to inflamed dehydrated skin. For impacted ear wax: instill 3x/day for 2 or 3 days to help detach ear wax from wall of canal and facilitate removal. apply liberally to tube and catheters prior to insertion.

Pregnancy, Lactation:

PSYCHIATRIC

Diazepam Valium

Action: Anticonvulsant, sedation, anesthesia, antianxiety, and muscle relaxant.

Indications: Severe anxiety, acute treatment of active seizure, pre-op medications, sedation, muscle relaxant for severe lower back pain, tetanus

Contraindications: Respiratory insufficiency

Side effects: Drowsiness, shock (if given very fast intravenously), respiratory depression

Preparation: 5mg/tab, injection: 2ml/ampule = 10 mg/ampule

Dosage:

Age	1-11 months	1-4 years	5-15 Years	Adult
Normal Dose	Do not give	0.1 - 0.2 mg/kg IM rectally or PO	0.1 - 0.2 mg/kg IM, rectally or P.O.	2-10 mg/dose IM, rectally or PO

Duration 2-3 days

Pregnancy: Avoid in Pregnancy

Comments:

1. Avoid in shock and depression
2. Rapid IV administration can result in respiratory arrest and death
3. Injection medication is especially valuable in anesthesia and for treatment of epilepsy and convulsions

VITAMINS AND MINERALS

Multivitamins

Action: Help increase resistance of the body

Indications: Malnutrition, hepatitis, tuberculosis, anemia, vomiting of pregnancy, pregnancy and lactation.

Contraindication: None

Side Effects: Toxicity in large doses

Preparation: 200mg/tab, syrup, pediatric drops

Age	0-11 months	1-4 Years	5-15 Years	Adult
Syrup	1/2 tsp once a day	1 tsp once a day		
Tablet		1 tab once a day	1-2 tab once a day	1-2 tablets once a day
Pediatric drops	0.3-0.6ml daily			

Pregnancy, Lactation: Yes

Comments:

1. Avoid excessive use of large volume parenteral solutions of multivitamins supplements to prevent hypervitaminosis

2. Chewable flavored multivitamins available for children. Frevent use of these drugs and candy.

3. Liquid preparations may contain varying percentages of alcohol.

4. Warn against over dosing, Encourage patient to eat a well balanced diet

5. Beware of hazards of self-administered megadoes of vitamins

6. Explain possible side effects. These medications are <u>drugs</u> not just harmless vitamins

7. Store vitamins in a cool place in light resistant containers to limit loss of potency.

8. Take with food for best absorption

9. Oral vitamins are as effective, less dangerous, and less expensive than injections.

Ferrous sulfate/Folic Acid Combination

Indication: Anemia (pregnancy, worms, malnutrition, lactation)

Contraindication: Do no use together with antacid and tetracycline: contraindicated in peptic ulcer.

Side Effects: nausea, vomiting, constipation, black stools.

Preparation: 200 mg ferrous sulfate with 0.1 mg folic acid/tab

Dosage: Do not give to children < 1 year old Give to nursing mothers instead

Age	1-11 months	1-4 Years	5-15 Years	Adult
Normal Dose	Do not give OVERDOSE IS FATAL	1 tab once a week	1 tab 2 or 3 x per week	1 tablet 1 or 2 x / day

Duration: 2-6 months depending on severity of anemia

Pregnancy, Lactation: Yes

Comments:

1. Iron is toxic; patients should be aware of iron poisoning in children.
2. Tell patient to continue regular dosing schedule if he misses a dose. Patient shouldn't double the dose
3. Oral iron may turn stools black. This unabsorbed iron is harmless.

4. Give tablets with orange juice to promote iron absorption.
5. Preferably to be taken on empty stomach unless gastric distress occurs.

Vitamin A

Indications: Vit. A defiency (xerophthalmia, night blindness, dry skin), rickets.

Contraindications: Intake with other multivitamins (may cause toxicity due to hypervitaminosis
presence of malabsorption syndrome

Side effects: Intake in excessive doses may cause drowsiness, coma and death

Preparation: Capsules containing 50,000 until (may be variable)

Dosage:

Age	1-11 months	1-4 Years!5-15 years	Adult
Normal Dose	Day 1=2 cap Day 2=1 cap Day 3=1 cap	For all other ages:	Day 1 = 4 cap Day 2 = 2 cap Day 3 = 2 cap

Comments:

1. In pregnant women, avoid doses exceeding 6,000 units daily

2. To avoid toxicity, discourage patient self-administration of dose without specific indications

3. Also emphasize that the patient should not store prescribed vitamins with family or others

4. Watch for side effects if dosage is high

5. Monitor patient closely during vitamin A therapy for skin disorders since high doses may induce chronic toxicity.

6. Protect medicine from direct heat and light.

<u>Ascorbic Acid</u>	Vitamin C
Indications:	Prevention of Vit C deficiency in those with poor nutritional habits or increased requirements.
Contraindication:	NO
Side Effects:	Faintness or dizziness, diarrhea, epigastric burning, kidney stone
Preparation:	100mg/tab

Dosage

Adults	100 mg to 2 grams, depending on severity P.O. daily, then at least 50 mg daily for maintenance.
Children -	100 mg to 300 mg, depending on severity P.O. daily, then at least 50 mg daily for maintenance.
Infants -	50 to 100 mg P.O. daily

Comments: Discourage self - administration for colds. Patient shall be encouraged to take fruit juices instead.

ANTIBIOTICS

Ampicillin	Ampicil, Ampicin, Amfipen, ampisal, Penbritin, Arcocilin, Austrapen.
Action:	Antibacterial
Indications:	Respiratory infections plus fever (pneumonia, bronchitis, tonsillitis, sinusitis, otitis media), urinary tract infections (kidney), infections, cystitis, infected kidney stones), war injuries, meningitis (add chloramphenicol), osteomyelitis, diarrhea and fever, pelvic inflammatory disease, whooping cough, infection after birth, typhoid fever. Ampicillin is not suitable to treat 1. Gastroenteritis 2. Syphillis 3. Trachoma. 4. Doleted 5. Tuberculosis 6. Viral infections
Contraindications:	Penicillin allergy
Side Effects:	Nausea, vomiting, diarrhea (although ampicillin may cause diarrhea, this is not a reason to stop the antibiotic unless the diarrhea is really bad), rash (a mild rash is common after treatment with Aplicillin for 3-5 days; this is not usually serious and if the rash is mild, the ampicillin may be continued, pain or vein irritation at injection site.

Preparation: Capsules = 250 mg/cap
Injection = 500 mg/vial
Suspension = 125mg/5ml suspension

Dosage: 50mg/kg/day in 4 divided doses

High Dose: 100mg/kg/day in 4 divided doses

Dosage:

Age	0-1 mos	2-11 mos	1-5 years	6-10 yrs	11-15 yrs	Adult
Cap 250 mg				1 cap 4x/day	2 caps 4x/day	2-4 caps 4x/day
Susp 125 mg/5ml	1/2 tsp 4x/day	1 tsp 4x/day	2 tsp 4x/day			
Inject. 500 mg/ vial		1/8 vial 4x/day	1/4 vial 4x/day	1/2 vial 4x/day	1 vial 4x/day	1-2 vial 4x/day

Note: Capsules and suspensions must be taken 1 hour before meals; dosage can be doubled in severe cases

Duration: 7-14 days depending on rate of improvement

Pregnancy, Lactation: Yes

Comments:

1. Before giving Ampicillin, ask patient if he has any other drug allergies

2. When given orally, drug may cause GI disturbance. food may interfere with absorption, so give 1 yo 2 hours before meaals or 2 to 3 hours after.

3. Don't give IM or IV unless infection is severe or patient can't take oral dose

4. Dosage should be altered in patients with impaired liver and kidney functions

5. Check expiration data.

Erythromycin:	Erymycin, Erythrocin
Action:	Antibacterial
Indications:	Diphtheria treatment, diphtheria prophylaxis (during diphtheria epidemics, erythromycin should be given to people in contact with infected patients), whooping cough (pertussis), pneumonia and other respiratory tract disease, skin infections; Erythromycin should be used only when simple penicillin cannot be used. Erythromycin is not good for: 1. virus infections 2. urine infections 3. typhoid fever 4. gastroenteritis 5. peritonitis 6. tuberculosis 7. Severe septic infections (war injuries, other septic states)
Contraindications:	Hepatitis and other liver disease
Side Effects:	Abdominal pain, nausea, vomiting, diarrhea, rashes
preparation:	250 mg/tablet

Dosage:

Age	1-11 months	1-4 years	5-15 years	Adult
Normal Dose 30-50 mg/kg/day	Don't give to babies < 10 kg	1/2 tab 4 x / day	1 tab 4 x / day	2 tablets 4 x / day

Pregnancy, Lactation: Yes

Comments:

1. For best absorption, instruct patient to take oral form of drug with a full glass of water 1 hour before or 2 hours after meal.

2. If tablets are coated, they may be taken with meals. Tell patient not to drink fruit juice with medication.

3. Penicillins antagonize antibacterial effect of the drug. Give penicillin at least 1 hour before.

<u>Tetracycline:</u> Tetrasal, Terramycin

Action: Antibacterial

Indications: Cholera, bronchitis (acute and chronic), pneumonia, trachoma-urethritis.

Contraindications: Children < 8 years old (can cause tooth discoloration), hepatitis, tetracycline type allergy.

Side Effects: Nausea, vomiting, diarrhea, dizziness, headache, rashes

Preparation: 250 mg/cap

Dosage

Age	8-15 years	Adult
Cholera	2 caps 4 x / day	4 caps 4 x / day
Non-Cholera Cases	1 cap 4 x / day	2 caps 4 x / day

Duration: Cholera - days
Trachoma - 3 weeks
Others - 7-14 days depending on degree of improvement of the patient.

Pregnancy/Lactation: No

Comments:

1. Use with extreme caution in patients with impaired kidney or liver function

2. use during last half of pregnancy and in children younger than 8 years may cause permanent discoloration of teeth and retardation of bone growth.

3. Effectiveness reduced when taken with milk or other dairy products, food, antacids or iron products. They decrease antibiotic absorption.

4. Tell patient to take each dose with full glass of water or on an empty stomach, at least 1 hour before meals or 2 hours afterward.

5. Check expiration date. Outdated or deteriorated tetracycline may cause kidney poisoning.

Penicillin V: Combiotio

Action: Antibacterial

Indications: Pharyngitis, respiratory tract infection plus fever (pneumonia, bronchitis, otitis media), wounds, minor skin infections tooth infections.

Infections that Penicillin V is not good for are:

1. Gastroenteritis
2. Gonorrhea
3. Syphillis
4. Viral respiratory infections
5. Urinary infections
6. Peritonitis
7. Trachoma
8. Tuberculosis
9. Typhoid fever
10. Typhus

Contraindications: Penicillin allergy

Side Effects: Nausea, vomiting, diarrhea, abdominal pain

Preparation: 250 mg/tablet

Dosage:

Age	1-11 months	1-4 Years	5-15 years	Adult
Normal Dose 15mg/kg/day	1/4 tab 4 x / day	1/2 tab 4 x / day	1 tab 4 x / day	2 tabs 4 x / day
High Dose 30mg/kg/day	1/2 tab 4 x / day	1 tab 4 x / day	2 tabs 4 x / day	4 tabs 4 x / day

Duration: 7-14 days depending on severity of disease and rate of improvement

Pregnancy, Lactation: Yes

Comments:

1. Food may interfere with absorption, so give 1 hour before meal or 2 hours after, Patient should take each dose with full glass of water.

2. Warn the patient never to use left over Penicillin for a new illness or to store Penicillin with family and friends.

3. Before giving penicillin, ask patient if he has had any allergic reactions to this drug.

4. Check expiration date

5. Tell patient to stop the medication if rash, fever or chills develop. A rash is the most common allergic reaction.

<u>Chloramphenicol:</u> Chloromycetin, Comycetin, Oxycetin

Action: Antibacterial

Indications: osteomyelitis, war injuries, meningitis (together with Penicillin, Ampicillin or Metronidazole), typhoid fever, pneumonia, Intrabdominal infections with fever (appendicitis, injuries), post Partum sepsis.

Contraindications: Children < 1 month, pregnancy, breastfeeding, patients with impaired liver or kidney functions.

Side Effects: Anemia, shock in newborn infants (may cause death), nausea and vomiting

preparation: Capsule - 250 mg
Suspension = 125mg / 5ml
Injection = 1 gram/vial

Age	1-11 months	1-4 years	5-15 years	Adult
Normal Dose 50mg/kg/day	1/2 tsp 4 x / day	1 tsp pr 1/8 vial IV 4x/day	1 cap or 1/4 vial IV 4x/day	2 caps 1/2 vial IV 4 x / day
High Dose 100mg/kg/ day	1 tsp or 1/8 vial IV 4 x / day	2 tsp or 1/4 vial IV 4 x / day	2 caps or 1/2 vial IV 4 x / day	4 caps 1 vial IV 4 x / day

Duration: 5 days (in septic states, up to 2 weeks) Typhoid fever : 2-4 weeks

Comments:

1. Don't use in simple infections such a colds; use only when clearly indicated for severe infection.

2. Penicillin counteracts antibacterial effect of the drug. Give penicillin at least 1 hour before.

3. Don't use in child < 1 year unless life threatening illness

4. Drugs poorly absorbed IM

<u>Benzathine Penicillin - G:</u> Penidure, Diamine Penicillin

Action: Antibacterial

indications: Streptococcal tonsillitis, mastoiditis

Contraindications: Penicillin type allergy

Side Effects: Anemia, hypersensitivity

Preparation: Injection - 600,000 IU/vial
- 1.2 million untis/vial

Dosage:

Age	1-11 months	1-4 years	5-15 years	Adult
Normal Dose for 600,000 "U" vial	1/2 - 1 vial a day IM	1 vial a day IM	2 vials a day IM	2 vials a day IM
Normal Dose for 1.2 m "U" vial	1/4 - 1/2 vial a day IM	1/2 vial a day IM	1 vial a day IM	1 vial a day IM

Duration: Streptococcal infection = 1 day

Pregnancy: Yes

Comments:

1. Do not give if there is history of allergy to penicillin.
2. Warn patient never to use left over penicillin for new illness or to share penicillin with family and friends.

<u>Procaine Penicillin</u>: Pronapen, Procaine Penicillin forte

Action: Antibacterial (prolonged action)

Indications: Pneumonia only till P.O. Penicillin can be tolerated; severe tooth absecess - only till able to take penicillin by mouth

Contraindications: Penicillin allergy

Side Effects: Anemia, hypersensitivity, joint pains, convulsions

Preparation: 400,000 IU vial = Procaine Penicillin 300,000 units Benzyl penicillin 100,000 units

Dosage: 50,000 units/kg/day

OR

Age	1-11 months	1-4 years	5-15 years	Adult
Normal Dose	1/2 vial 2 x / day	1/2 - 1 vial 2 x / day	1 vial 2 x / day	2 vials 2 x / day
High Dose	1/2 - 1 vial 2 x / day	1-2 vial 2 x / day	2-4 vials 2 x / day	4 vials 2 x / day

Duration: 7-14 days depending on severity of the disease and rate of improvement

Pregnancy: Yes

Comments:

1. Do not give is there is a history of penicillin allergy
2. Procaine may cause tachycardia, sterile abscess, or allergy
3. Only give by deep IM injections
4. Never give by intravenous route. It can cause death.
5. Check expiration date.

Trimethoprim/Sulfamethoxazole: (Co-trimoxazole) Nicotrim Bactrim, Mactran, Septran, Trimex

Action: Antibacterial

Indications: Urinary tract infection plus fever (pyelonephritis, cystitis, prostatitis, respiratory tract

infection plus fever (bronchitis, pneumonia, otitis media, sinusitis, tonsillitis), typhoid fever bacillary dysentery diarrhea with fever, minor wound infections.

Contraindications: Sulfa-type allergy; children < 1 months old, hepatitis

Side Effects: Nausea, vomiting, diarrhea, anemia, headache, abdominal pain, jaundice.

Preparation: Tablet, syrup

Dosage:

Age	3-11 months	1-4 years	5-15 years	Adult
Normal dose 8-10mg/kg/day	1/2 tsp or 1/4 tab 2x/day	1 tsp or 1/2 tab 2 x / day	1 tab 2 x / day	2 tabs 2 x / day

Duration: Typhoid fever: 14-21 days depending on degree of improvement.
Others: 7-14 days

Pregnancy, Lactation: Notin last trimester and lactation for first 3 months.

Comments:

1. use cautiously and in reduced dosage in patient with impaired liver or kidney function.
2. Most side effects develop with 2 week of onset of therapy
3. Promptly report skin rash, sore throat, fever or mouth sores
4. Note that the "DS" product means "double strength"
5. Don't give to babies < 1 month of age
6. Don't give in last months of pregnancy. Avoid in lactating mothers.

ANTIPARASITIC

Chloroquine	proquine.
Action:	Antimalarial
Indications:	Malaria, all forms; suspected malaria in the case of prolonged fever or coma, amebic liver abscess
Contraindications:	Poor vision (intake may lead to blindness)
Side Effects:	nausea, vomiting, diarrhea, may cause deafness or blindness, shock.
Preparation:	250mg/tab (150mg base) 81 mg/5ml syrup

Dosage: 10mg/kg initially, then 5mg/kg after 6 hours, then 5mg/kg on next day, then 5 mg on day after next.

OR

Age	1-11 months	1-4 Years	5-15 years	Adult
INITIAL DOSE 10mg/kg	1/4 - 1/2 tab 2-5ml syrup (1/2-1 tsp)	1/2 - 1 tab 5-10mlsup (1-2 tsp)	2-4 tab	4 tab
AFTER 6 hrs 5 mg/kg	1/8 - 1/4 tab 1 ml - 2.5 ml	1/4 - 1/2 tab 2.5 ml syrup (1/2 - 1tsp)	1 - 2 tab	2 tab
DAY 2 5mg/kg	1/8 - 1/4 tab 1 ml- 2.5ml	1/4 - 1/2 tab 2.5 - 5 ml (1/2-1 tsp)	1-2 tab	2 tab
DAY 3 5mg/kg	1/8 - 1/4 tab 1ml - 2.5ml	1/4 - 1/2 tab 2.5 - 5 ml (1/2 - 1 tsp)	1-2 tab	2 tab

Pregnancy: Yes, only if you are convinced the patient has malaria

Comments:

1. Choose the lower dose range for smaller children. Unlike some infections, both mild and severe malaria are treated with the same dose. Overdose in fatal.

2. The chart recommends lower dosages, to be safe. If possible, weigh all children less then 12 years, and follow the mg/kg dosages recommended above.

Metronidazole: Flagyl, Metronidazole,

Action: Antiparasitic, antibacterial

Indications: Amoebiasis (stool with blood and mucus, patient has no fever), giardiasis (diagnosed by stool), war injuries (together with penicillin, Ampicillin or chloramphenicol)

Contraindications: None

Side Effects: Nausea, diarrhea, dizziness, headache, dry mouth, darkened urine, (itching)

Preparation: 200 mg/tablet
200 mg/5ml suspension

Dosage:

Age	1-11 months	1-4 years	5-15 years	Adult
Normal dose For Giardia 15mg/kg/day	1/8 - 1/4 tab 3 x / day	1/4 - 1/2 tab 3 x / day	1/2-1 3 x / day	1 tagb 3 x /day
High Dose For Amoeba 35-50 mg/kg/day	1/4 - 1/2 3 x / day 1/2 tsp 3 x per day	1/2 - 3/4 tab 3 x / day 1 tsp 3 x / day	1-2 1/2 tabs 3 x / day 2 tsp 3 x / day	2 tabs 3 x / day

Duration: 5-10 days depnding on severity of symptoms and rate of improvement

Pregnancy, Lactation: Yes, but not during first, 3 months of pregnancy if possible

Comments:

1. Give with meals to minimize GI distress
2. Tell patient metallic taste and dark or red - brown urine are possible.
3. Unnecessary use should be avoided. use cautiously in patients with visual field changes.

Mebendazole: Vermox

Action: Antiparasitic

Indications: All kinds of worms (round worm, hood warm, pin worm)

Contraindications: Pregnancy, children < 2 years old

Side Effects: Occasional, transient abdominal pain and diarrhea in massive infection

Preparation: 10mg/tab.

Dosage:

Age	0-2 years	2-4 years	5-15 years	Adult
Normal Dose round worm	Don't Give	1 tab 2 x / day for 3 days	1 tab 2 x / day for 3 days	1 tab 2 x / day for 3 days
High Dose (Segmented worms)	Don't give	3 tab 2 x / day for a days	3 tab / s 3 x / day for 3 days	3 tab 2 x / day for 3 days

Pregnancy:

Comments:

1. may be used in lactating patients. In case of hookworm infestation, there may be secondary anemia for which ferrous sulfate should be given.

Levamisol: Ketrax

Action: Antiparasitic

indications: Only round Worms.

Preparation: 40 mg/tab

Dosage: 3 tabs as single dose preferably after a light meal

Niclosamide: Yomesan, Taenia - Passin

Action: Antiparasitic

Indications: Tapeworm infestation

Contraindications: Children < 2 years old

Side Effects: Nausea, vomiting, diarrhea

Preparation: 500 mg/tablet

Dosage:

Age	2-6 years	6-15 years	Adults
	2 tabs as a single dose	3 tab as a single dose	4 tab as a single dose

Pregnancy, Lactation: Yes

Comments:

1. Instruct patients to chew tablets thoroughly and wash down with water; for smaller children, the tablets can be crushed and mix with water.

2. Tablets should be taken as a single dose before breakfast.

ANTIFUNGAL

Griseofulvin: Fulvin, Grisovin

Action: Antifungal

Indications: Certain fungal infections not responding to local treatment

Contraindications: Liver disease: hepatitis

Side Effects: GI upset, skin rash, headache, drowsiness, nausea, vomiting

Preparation: 500mg/tab

Dosage:

Age	1-11 months	1-4 years	5-15 years	Adult
Normal Dose	Do not give	Single dose 2 gram	single dose 2-3 grams	single dose 3 grams
TWO TO FOUR WEEK THERAPY 10 mg/kg/day	Do not give	1/8 tab 2 x / day	1/4 - 1/2 tab 2 x / day	1 tab 2 x / day

Pregnancy:

Comments:

1. Two to four week therapy can be tried if single dose (normal dose) therapy fails
2. Take with fatty foods if possible
3. Avoid giving the drug on patients with liver disease

DERMATOLOGIC

Benzyl Benzoate Lotion

Action: Antiparasitic

indications: Scabies

Contraindications: None

Side Effects: Skin irritation and itching, may cause allergic reaction on repeated applications.

Preparation: 25% lotion (300ml) for children, mix 1 part solution with 1 part of boiled water (=12.5% solution).

Dosage:

Day 1	Wash whole body, dry thoroughly, apply Benzyl Benzoate to body from neck to toe. In children < 1 year apply also to scalp. Wash all clothes and bed clothes
Day 2	Wash off Benzyl Benzoate completely after 24 hrs. Change and wash clothes if possible: put clothes under the sun for a day.

Pregnancy, Lactation: Yes

Comments:

1. Do not drink! Do not apply to mucous membranes (eyes, mouth, nose, external genitals)
2. Treat all infected family members = otherwise reinfection will occur

DERMATOLOGIC

Hydrocortisone 1% Cream

Action:	Antiinflammatory
Indications:	Solar eczema, allergic dermatitis, allergic reactions due to insect bites (non-infected)
Contraindications:	Infected skin lesions (bacterial, fungal), tuberculosis, leprosy.
Side Effects:	Delayed wound healing, skin atrophy,
Preparation:	Cream in tubes
Dosage:	Apply thin layer over affected parts 2x/day
Duration:	Up to 1 week only; if no improvement after 1 week, refer
Pregnancy, Lactation:	yes, but not more than 1 month

Comments:

1. Avoid application near eyes.
2. Stop drug if patient develop skin irritation, ulceration or infection.
3. Before applying, gently wash skin. To prevent damage to skin, rub in medication gently, leaving a thin coat.
4. When treating hairy sites, part hair and apply directly to lesion.
5. When changing dressing, inspect skin for infection or irritation and then discontinue drug.

Dettol Soap

Indications: For general hygiene, for washing of dirty wound before applications of antiseptic.

Contraindications: None

Nystatin Nilstat, Mycostatin

Action: Antifungal

Indications: Genital candidiasis (treat both partners) Oral moniliasis (thrush)

Contraindications: None

Side Effects: Transient, nausea, vomiting, diarrhea

Preparation: 100,000 units/tablet

Dosage:

For Genital candidiasis in females: Insert one tablet daily high into vagina for 2 weeks
For Oral Moniliasis: Grind one tablet in previously boiled water and then apply suspension an affected mucosa of the mouth

Hydrogen Peroxide

Indications:

a. Wound cleaning (pure solution should be used)
b. Apply to dressings in order to reduce adherence of old dressing, to wounds (pure solution should be used)

c. Mouth rinsing (dilute 1 teaspoon hydrogen peroxide in 1 glass water)
d. Ear rinsing (dilute 1 part hydrogen peroxide in part water)

Contraindications: None

Preparation: Bottles, 20% solution (450ml)

Dosage:

1. Apply to wound while changing dressing 1-3x/day
2. Rinse mouth 6x/day (dilute)
3. Rinse ear 3x/day until ear wax is dissolved (dilute)!

Pregnancy, Lactation: Yes

Comments:
1. Don't injection into closed body cavities or abscesses; generated gas can't escape.
2. Do not shake bottle. This can decrease the effectivity of the solution.

<u>Vaseline</u>

Action: Skin

Indications: For skin care, back rut

Contraindications: None

Dosage: Rub liberally into the skin 1-3 x / day

Comments:
1. observe for inflammation or infection since vaseline forms an occlusive layer that retain moisture, excludes air and traps skin bacteria.

Vaseline and Menthol

Indication: All body itch, joint pain, back pain

Dose: Rub into the area BID

To mix:
1. Mix 1 part menthol with 10 parts vaseline
2. Heat vaseline first till it melts.
3. Add menthol and stir till dissolved
4. Let it cool

Vaseline and Sulphur

Indication: Infected wounds, scabies, lice

Dose: Rub into the area BID

To mix:
1. Mix 1 part sulphur with 100 parts vaseline
2. Stir well till thoroughly mixed

Gentian Violet

Indications: Skin condidiasis (infections occur in most moist parts of the body like in the axilla, intergluteal fold, groins, intramammary fold, diaper rash, napkin dermatitis, oral moniliasis (thrush), weeping skin lesior (wet dermatitis)

Contraindications: None

Preparation: Crystals, solution (450ml)

To mix: Mix 1 part gentian violet to 100 parts water

Dosage: Apply 2-3 x / day to affected areas

Pregnancy, Lactation: Yes

Comments:

1. Gentian violet colors clothes permanently; however, color in skin and mucosal areas will disappear some days after treatment is finished.

Furacin

Action: Antibacterial

Indications: Skin infections, wound care after surgery, burns.

Contraindications: Kidney failure

Side Effects: May cause allergic reaction, kidney problems if used over large areas of body for prolonged periods

Preparation: Cream tubes

Powder boxes

Dosage Apply (change dressing) 1-2 times daily or apply directly to lesion daily or every few days, depending on severity of burn.

Comments.

1. Clean wound before each dressing change.
2. Avoid exposure of solution at all times to direct light, and prolonged heat.

Savlon

Indications: Emergency sterilization (use concentrate), disintection of wounds, burns (use 1% diluted solution), disinfection of objects 4% dilute), disinfection before injections (dilute 1%)

Contraindications: Allergy, do no apply to mucous membranes

Preparations: Plastic container: 1 liter concentrated solution

1. To mix (1% diluted solution.)
   a. Take empty bottle 500ml
   b. Add 495 ml cool previously boiled water.
   c. Mix with 5ml savlon concentrate changes solution every day.

2. To mix (4% diluted solution)
   a. Take empty 500ml bottle
   b. Add 480ml cool previously boiled water.
   c. Mix with 20ml Savlon concentrate change solution every 24 hours.

Dosage: Apply to wounds or burns as needed

Pregnancy, Lactation: Yes

CHLORHEXIDINE GLUCONATE:	Hibistat, Hibiclens liquid
Action:	Antiseptic
Indication:	Surgical hand scrub, hand wash, hand rinse, skin wound cleaser
Dosage:	Dispense about 5 ml of HIBISTAT into cupped hands and rub vigorously until dry (about 15 seconds) paving particular to nails and interdigital spaces no water or towelling are necessary. Use p.r.n.
Side Effects:	Irritating to eyes. Cause deafness if instilled into middle ear through perforated eardrum.
Comments:	keep out of eyes and ears. do not cleanse skin with alcohol after application.

Potassium Permanganate

Action:	Antiseptic with antifungal properties
Indications:	Weeping skin lesions (wet dermatitis, small wound, abrasicns) Bathing of contaminated wounds (war injuries, only)
Contraindications:	Too strong (concentrated) solution is toxic to tissues (causes burns). do not apply to mucous membranes (eyes, mouth, genitals)

Preparation: Powder (crystals)

To Mix: (Always remember that too weak solutions are ineffective whereas too strong solution can cause burns)
To make a correct solutio, add 1 gram (use spoon to prepare solution since undissolved crystals may cause chemical burn; 1 gram is approximately the weight of cigarette) to 10 liters (this would fill one water bucket) of cool previously boiled water. The solution should be so weak that you can still see the bottom of the bucket through the pink-light people colored water. Stir the solution for at least 10 minutes before application.

Applications: Apply the solution liberally to affected area 2-3 x / day; in other instances, wounds (especially in extremities) may be soaked in the solution for 15-30, min 2-3 x/day

Pregnancy, Lactation: Yes

Comments:

1. Never mix with charcoal or give charcoal as antidote in cases of poisoning, May explode
2. Undissolved crystals may cause chemical burn
3. Stains caused by potassium permanganate can be removed with dilute acids (lemon juice)

Methyl Alcohol

Indications: All kinds of wounds

Contraindications: None

Comments: This is a very irritating solution and causes pain on application to open wounds. It should not be the first choice in treating open wounds.

Liquid Paraffin Emulsion

Indications: Constipation, after operation on anus, rectum

contraindications: None

Side Effects: May inhibit the absorption of fatsoluble drugs and vitamins, in very young and elderly, possible risk of aspiration may lead to pneumonia

Dose: Children = 1 - 2 tsp at bedtime
Adult = 1 - 2 tsps at bedtime
May be increased in frequency and quantity depending on response of patient.

CASTROINTESTINAL

Antacid: Trisil, Magnesium Trisilicate. Gelusil, Trigel

Indications: Hyperacidity, peptic ulcer, relief of heart burn, sour stomach, gastritis, esophagitis, gastric ulcer.

Contraindications: Children < 5 years old, kidney disease, do not use together with the following drugs; Indomethacin, Ibuprofen, Iron, (Ferrous sulfate).

Tetracycline, promethazine, Dexamethasone. Vit A and D.

Side Effects: Diarrhea

Preparation: 500mg./tablet

Dosage:

Age	1-11 months	1-4 years	5-15 years	Adult
Normal dose	DO NOT GIVE	DO NOT GIVE	1/2 - 1 tab 2-3x/day	1-2 tabs 2-3x/day
High dose	DO NOT GIVE	DO NOT GIVE	1-23 tabs 3-4x/day	2 tabs 3-4/day

Duration: Peptic and gastric ulcer: 14 days
Continue therapy up to one month if clinically necessary.

Pregnancy, Lactation: Yes

Comments:
1. Other tablets should be chewed thoroughly before swallowing
2. Avoid taking with other medications. Best taken 1-3 hours after meals and at bed time for 7-10 days.

Hyoscine

Action: Antispasmodic

Indications: Renal, gastrointestinal and biliary colic

Contraindications: Children < 15 years old, glaucoma, history of difficulty to urinate and defecate (possibility of prostatic hypertrophy), heart disease esp with irregular heart rate, pregnancy.

Side Effects: Constipation, dizziness, thirst, dry mouth, headache, drowsiness, fatigue, blurred vision

Preparation: 10 mg/tablet

Dosage

Age	1-11 months	1-4 years	5-15 years	Adult (15 yrs & other)
Tablet	DO NOT GIVE			1-2 tablet every 6 hours PRN

Pregnancy, Lactation: Yes

Comments:

1. Use with caution in hot or humid environments
   Drug - induced heat stroke can develop
2. Give tablets 1 hour before or 2 hours after meals.
3. Instruct patient to avoid driving or operating machinery. Patient should also drink plenty of fluids to help prevent constipation.

<u>Lignocaine Compound</u>

Indications: Relieve pain and inflammation and to promote healing in cases of hemorrhoids (both internal and external), anal fissures and anal inflammation.

Pregnancy: Ointment

Method of Use

Wash the anal area gently and dry with cotton wool. The ointment may then be applied, either on gauze or by means of special applicator. Application should be repeated night and morning and after each bowel movement.

Comments:
Caution using on some inflamatory conditions of the anal area it may be of serious nature.

Bisacodyl:	Dulcolax
Action:	Laxative
Indications:	Chronic constipation, preparation for delivery, surgery or rectal or bowel examination.
Contraindications:	patients with abdominal pain, nausea, vomiting in rectal fissures or ulcerates nemorrhoids.
Side Effects:	Nausea, vomiting, abdominal cramps, diarrhea.
Preparation:	5mg/tab

Dosage:

Adults - 10 to 15 mg P .. in evening or before breakfast. Up to 30 mg may be used for thorough evacuation needed for examination or surgery.

Children - 3 years - 5 to 10 mg P.O.

Children - 2 years - 5 mg P.O.
comments: Tell patient not to take in milk or antacid after taking the medicine.

Promethazine: Phenergan, Avomine

Indications: Severe vomiting due to gastroenteritis, (especially in elderly), allergy, motion sickness.

Contraindications: Patients with peptic ulcer, enlarged prostate, intestinal obstruction, severe head injury, newborns, acutely ill or dehydrated patients.

Side Effects: Drowsiness, hypertension, dry mouth, urinary retention, anorexia, nausea, vomiting

Preparation: 25mg/tab; 50mg/2ml/=ampule

Dosage:

Age	1-11 months	1-4 years	5-15 years	Adult
Normal Dose Tablet	Don't give	1/8 tab 4-6x/day	1/4 - 1/2 tab 4-6	1/2 - 1 tablet 4-6 x / day
Injection			1/4 - 1/2ml deep IM injection	1/2 - 1 ml deep IM Injection

Duration: 3-5 days

Pregnancy: Yes, but only if vomiting is very severe

Comments:

1. Give injections only deep IM. IV and subcutaneous injection are dangerous.
2. Not for children < 1 year old
3. Use cautiously in patients with hypertension, liver disease, asthma and in elderly or severely ill patients.
4. Reduce GI distress by giving food or antacid

5. Warn patient about driving vehicles during therapy

ANESTHETIC

KETAMINE: Ketalar (Ketamine and Atropine are for Doctors only not for OPD clinic workers,

DOSE FROM: 50mg/ml;: 10ml vial

Age	1-11 months ! 1-4 years ! 5-15 years ! Adult
Normal Dose Mg/kg/day	All age groups may be given: 1-2 mg/kg IV or 5-10 mg/kg IM
Comments	Refer to anesthesia book. give slow IV over one minute. 1/3 - 1/2 the initial dose may be repeated as needed every 15-20 minutes. May cause slight respiratory depression, Confusion, hallucinations irradiation at site of injection.
Safety in Pregnancy	Avoid
Indications	General Anesthesia For anesthesia during surgery that does not require skeletal muscle relaxation
Contraindications	Not for patients in whom a significant elevation of blood pressure would constitute a serious hazard head injury, eye operations
Side Effects	Hypertension, respiratory depression, nausea and vomiting.

Atropine: (Ketamine and Atropine are for DOCTORS ONLY - not for OPD clinic workers)

DOSE FORM: 1mg/ml inj

Age	1-11 months	1-4 years	5-15 years	Adult
Normal Dose IM or IV	0.01 mg/kg/dose	0.01 mg/kg/dose	0.2 - 0.4 mg/kg/dose	0.5mg/kg/dose
Comments	Tachycardia. Hypertension, Urinary retention. Fever. Blurred vision. Dry mouth, Anxiety. Constipation.			
Safety in Pregnancy	yes, only if necessary			
Indications	Pre-op medications with diazepam symptomatic bradycardia; anesthetic procedures, renal and gastrointestinal colic (only if other antispasmodics are not available)			
Contraindications	Fast heart rate, history of difficulty to urinate and defecate, use cautiously in infants, children, elderly or debilitated patients.			

Xylocaine 2% (plain)

Action: Anaesthetic

Indication: Minor Surgery

Contraindication: None

Side-effects: Anxiety, convulsions, shock, nausea, vomiting

Dosages for Xylocaine Injection

1. When injecting wxylocaine your must know the maximum safe dose in mls allowed for the person. This is determined by his body weight. You can easily give too much, especially in

a child.

2. For example, the maximum dose of plain lignocaine without adrenaline is 3mg/kg. The maximum dose for a 70 kg adult is thus 210 mg. This is contained in 21ml of 1% plain solution. or 10 ml of 2% plain solution. Because overdosage is so easy, this is an important dose to remember. For a 7kg child the maximum dose of 2% lignocaine is only 1.5ml.

3. Larger volumes of a weaker solution are safer than smaller volumes of stronger ones, because they are less likely to enter the blood circulation rapidly. (example: 10ml or 0.5% xylocaine is safer then 50ml of 1%)

4. To figure our how much xylocaine (plain) you can safely use, either use the following formula or graph.

a. Formula:

$$\text{Maximum dose in mls} = \frac{\text{weight in kg} \times 3\text{mg/kg}}{\text{Percent strength solution} \times 10}$$

Example: Patient weight 70kg
You use xylocaine 2% solution

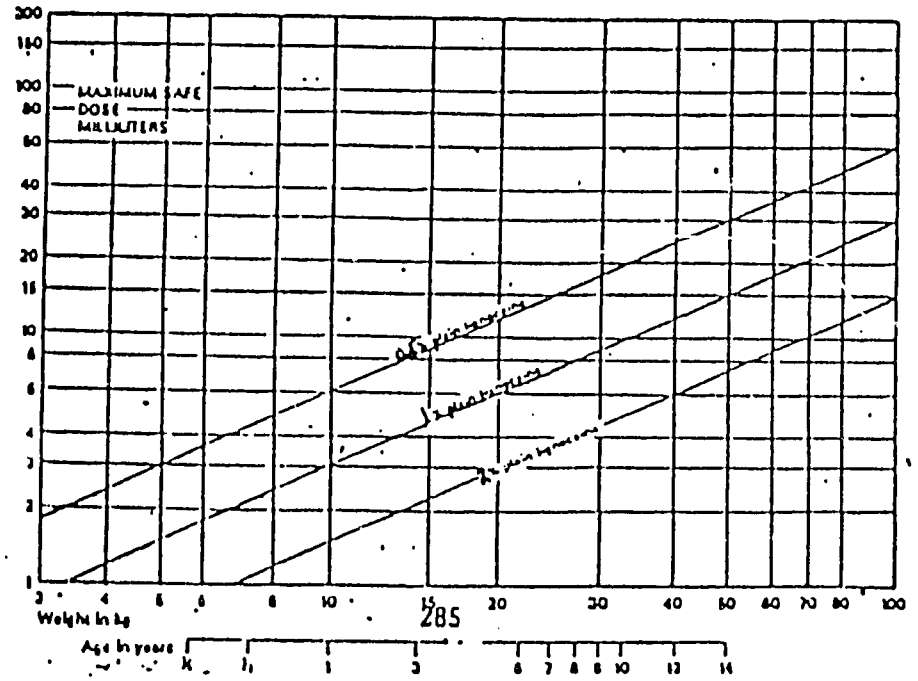
$$\frac{70\text{ kg} \times 3\text{ mg/kg}}{2 \times 10} = \frac{210}{20}$$

$$\frac{210}{20} = 10.5\text{ml xylocaine 2\%}$$
(maximum dose)

b. Graph of xylocaine (plain)

1. Look underneath the sloping line showing the strength of xylocaine.
2. Follow that line across to the vertical line showing the patient's weight, then read off the dose (in mls) on the left hand scale.
3. Note: These are maximum doses, and you may need much less!

MAXIMUM DOSES FOR LOCAL ANAESTHESIA



285

Lignocaine Gel

Action:	Anesthetic
Indications:	For lubricating catheters prior to insertion
Contraindications:	Allergy to lignocaine
Side-effects:	Rash
Pregnancy, Lactation:	Yes
Dosage:	Apply liberally on catheter to allow easy passage.

BEST AVAILABLE DOCUMENT

OBSTETRIC

Methergin

Indications: To control or prevent heavy bleeding after child birth or spontaneous abortion (miscarriage)

Contraindications: Menstruation and menstrual irregularities, induction of labor before delivery of placenta, in patients with hypertension, toxemia of pregnancy, in threatened sportaneous abortion.
Use cautiously in sepsis, obliterative vascular disease, liver or kidney disease, hypertension and heart problems.

Side Effects: Hypertension, dizziness, headache, palpitations, difficulty of breathing, nausea and vomiting

Preparation: 0.125mg/tab

Dosage:

Age	1-11 mos 1-4 yrs 5-15 yrs	Adult
Normal Dose	DO NOT GIVE EXCEPT TO WOMEN WITH POST PARTUM BLEEDING	2 tabs after delivery of the placenta. May repeat if necessary after 1-2 hours, then as needed every 4 hours for 3 days

Pregnancy: Yes, only after delivery, See comments

Comments: Can cause uterine rupture, Do not use for menstrual irregularities. Use prior to delivery can result in death of fetus. Use prior to delivery of placenta can prevent its delivery. Also consider injury or infection as causes of bleeding. Duration of use may be 3 days or may be increased to 1 week.

MISCELLANEOUS

Oral Rehydrating Solution (ORS)

Action: Corrects water and electrolyte loss in diarrhea

Indication: Diarrhea, dehydration

Contraindication: None

Preparation: Packets

Dosage:

1. Take 1 liter boiled water (1 typical teapot = 1 liter water)
2. Mix with 1 packet of ORS (stir well)
3. Prepare new every day (mixture keeps only 24 hours)

Give ORS mixture: If severe vomiting, give frequently in little amounts or feed through tube, Give as much as possible. For cholera, you may need even for small children 2-3 liters per day! If ORS is not available, use named ort solution or rice water

Duration: Until all signs and symptoms stop

Pregnancy, Lactations: Yes

ORS AND DEHYDRATION

Fluid dosage for Dehydrated Patients

1. Give fluid continuously, as much as possible, bit by bit, as long as there is severe dehydration.
2. Once the patient improves, give the following amounts, according to age:

Newborn - 2 months	50ml (1/4 cup)	per hour
3-11 months	100ml (1/2 cup)	per hour
1-2 years	150ml (1 cup)	per hour
3-5 years	250ml (1 1/2 cups)	per hour
6-10 years	350ml (2 cups)	per hour
11-15 years	500ml (3 cups)	per hour
Adults	1 liter (6 cups)	per hour

3. Adjustment
   Give more if there is no further improvement
   Give less if symptoms improve and urine production returns to normal
   Give an extra dose every time to patient vomits or passes a watery stool.

MISCELLANEOUS

Allgipan Cream

Action: Analgesic

Indications: Strains, sprains, stiffness, sciatica, low back pain, arthritis.

Contraindications: Broken or irritated skin, burns (Children under 12 years old)

Side Effects: Skin rash, burning, blistering

Preparation: Cream

Dosage: Apply with gentle masage 2-3 x / day

Pregnancy, Lactation: Yes

Comments:

1. This medicine is absorbed through the skin, prolonged increased application may cause toxicity.
2. Discontinue medicine of rash or redness occurs.
3. Do not apply near the eyes, open wounds, mucous membranes.
4. Do not wrap or bandage treated area

MISCELLANEOUS

DENTAL ZEO WITH CLOVE OIL

Indication

Dental caries - topical pain control

MISCELLANEOUS

Formol, Paraformaldehyde Tablets

Sterilization with Formol tablets

A. How Formol tablets work:

1. Formol tablets work by heat breaking down the tablets to form a poisonous gas which kills the microbes.

2. the best container to use is made of metal, as metal conducts heat. The heat is needed to make the tablet turn to gas.

3. the container must be AIR-Tight so that the poisonous gas will circulate to all parts of the container, but not escape outside the container.

4. For all things to be sterilized, especially gauze sponge dressings, pack them loosely so that the air can circulate around them.

5. As the Formol tablets break down into gas, they will turn to powder in about 6-7 days. Check the tablets when the container is empty, and put in a new tablet if the old one has turned to powder.

B. Warning about Formol tablets: Formol Tablets are Poisonous!

1. They can kill you if you swallow them. Mark the outside of your Formol tablet bottle with "Do Not Swallow - Poison!"

2. Keep the bottle in a safe place away from other medicines, and away from other people, especially children.

3. Do not touch the tablet directly with your fingers - try to handle them with a piece of gauze. Wash your hands well after you use the tablets.

4. Because formol is a poisonous material, watch for skin reactions on patients when doing their dressing.

C. How to use Formol tablets:

1. For any metal container 9 inches in diameter or less, only ONE Formol tablet is needed. for a larger container, place Two tablets inside.

   A. Round metal cans or drums are good to sterilize gauze sponges (dressings).
   B. metal boxes with tight lids are good for metal instruments.

2. you can tell if you have enough Formol tablets inside to properly sterilize by the Very Strong Smell produced by the Formol gas.

3. Wrap the formol tablet in a thin piece of gauze and attach it with a piece of tape to the inside cover of the container.

4. Remember to seal the container tightly so the Formol gas will not escape.

5. Label the outside of the container with the Date and the Time.

6. For proper sterilization, it is best to leave the container closed for 24 hours.

7. Proper sterilization can also be achieved if you put the container:
   a. outside in the sun for 6 hours
   b. outside on a hot, sunny day for 2-4 hours
   c. inside for 24 hours
   d. inside next to a stove/fireplace for 6 hours.

MISCELLANEOUS

Coopex Powder

Action: Insect killer-for cockroaches, moths, bedbugs, fleas, lice, ants

How to use: Sprinkle directly from container into corners of rooms, drains, beds, under carpets

Comments:

1. Do not sprinkle near food or drinking water.

MISCELLANEOUS

Menthol Inhalation (Crystals)

Action: Loosens sputum and clears the nose

Indications: Chronic and acute bronchitis, colds, hay fever, influenza

Preparation: Crystals

To Mix:

1. Put 2 crystals or pieces of menthol into a tea glass of hot water, Stir well.
2. Make liquid menthol by adding 1 gram (1 level teaspoon) menthol crystals to 20-30 ml methyl alcohol and dissolve. Then add up to 100 ml of alcohol.

For Inhalation:

Add 20 drops of menthol liquid to 1 tea glass hot water, or 1 teaspoon menthol liquid to large bowl of hot water. Hold head over bowl or glass with a towel covering head and in inhale vapors

Dosage:

Inhale vapors 4 x / day when ever necessary

INTRAVENOUS FLUIDS

Normal Saline 0.9% in Water

Indications:

Bleeding, shock, diabetic coma and dehydration.

Contraindications:

Hypertension

Side Effects:

Too much can lead to retention of water, sodium and chloride excess and potassium deficiency.

Preparation:

500ml, 1000 ml bottles

Dose:

Depends on fluid and caloric requirements

LACTATED RINGER'S

Indication	Correction of fluid loss in bleeding, shock and dehydration and for metabolic acidosis
Contraindication:	Hypertension, kidney impairment
side-effects:	Fluid retention, sodium and chloride excess
Preparation:	1000 ml bottles
Dose:	Depends on fluid and caloric requirement.

STERILE WATER FOR INJECTION

Indication:	For preparing injectable medication from powder.
Preparation:	5cc ampules
Dose:	As directed for medication mixing

GLOSSARY - VOCABULARY

-A-

Abdomen The part of the body that contains the stomach, liver and guts. The belly.

Abnormal Different from what is usual, natural or average, Not normal.

Acute Sudden and short lived. An acute illness is one that starts suddenly and lasts a short time. The opposite of 'chronic'.

Acute abdomen An emergency condition of the abdomen that often requires a surgical operation. Severe pain in the belly with vomiting and no diarrhea may mean an acute abdomen.

Allergy, allergic reaction A problem such as an itching rash, hives, sneezing and sometimes difficult breathing or shock that affects certain people when specific things are breathed in, eaten, injected, or touched.

Amoebas Tiny animals that live in water or in the gut and can only seen with a microscope. The can cause diarrhea, dysentery and liver abscess.

Analgesic Medicine to calm pain.

Anemia A disease in which the blood gets thin for lack of red blood cells. Signs include tiredness, pale skin and lack of energy.

Antacid Medicine to control too much stomach acid and to calm stomach upset.

Antibiotic Medicine that fights infections caused by bacteria.

Antihistamine Medicine used to treat allergies such as hayfever and itching. Also helps to control vomiting and causes sleepiness.

Antiseptic A soap or cleaning liquid that prevents growth of bacteria.

Antispasmodic Medicine used to relieve cramps or spasms of the gut.

Anus The opening at the end of the gut between the legs. The asshole.

-B-

Bacteria Tiny germs that can only be seen with a microscope and that cause many different infectious diseases.

Blood pressure The force or pressure of the blood upon the walls of the blood vessels (arteries and veins); it varies with the age and health of the person.

Bronchi The tubes leading to the lungs through which air passes when a person breathes.

Bronchitis An infection of the bronchi.

-C-

Cataract An eye problem in which the lens of the eye becomes cloudy, making it more and more difficult for the person to see. The pupil looks gray or white when you shine a light into it.

Catheter A rubber tube used to drain urine from the bladder.

Cavity A hole or spot of decay in a tooth where bacteria have got in and destroyed part of the tooth.

Centigrade (C) A measure or scale of heat or cold. A healthy, person's temperature (normal temperature) is 37 C. Water boils at 100 C. and freezes at 0 C.

Chronic Long term or frequently recurring, (compare with acute). A chronic disease is one that lasts a long time.

Coma A state of unconsciousness from which a person cannot be awakened. It is caused by disease, injury or poison, and often ends in death.

Conjunctiva A thin protective layer that covers the white of the eye and inner side of the eyelids.

Constipation Dry, hard, difficult stools (bowel movements) that do not come often.

Contagious disease A sickness that can be spread easily from one person to another.

Contaminate To dirty, stain, or infect by contact. A syringe that has not been boiled is often contaminated and can cause infections even though it looks clean.

Contractions Tightening and shortening of muscles. The strong contractions of the uterus when a woman s in labor help to push the baby out.

Convulsions An uncontrolled fit. A sudden jerking of part or all of a person's body, as in meningitis, or epilepsy.

Cornea The clear outer layer or 'window' of the eye, covering the iris and pupil

Cramp A painful tightening or contraction of a muscle.

-D-

Deficiency Not having enough of something, a lack.

Dehydration A condition in which the body loses more water than it takes in. This lack of water s especially dangerous in babies.

Diarrhea Frequent runny or liquid stools.

Discharge A release or flowing out of fluid, mucus, or pus.

dysentery Diarrhea with mucus or blood. It is usually caused by an infection.

-E-

Epidemic An outbreak of disease affecting many persons in a community or region at the same time.

-F-

Fahrenheit (F) A measure or scale of heat and cold. A healthy person's temperature (normal temperature) is 98.6 F. Water freezes at 32 F. and boils at 212 F.

Feces Stools, shit; the waste from the body that is moved out through the bowels in a 'bowel movement'

Fetus The developing baby inside the womb.

Fever A body temperature higher than normal.

Folic acid A nutritious substance found in leafy green vegetables.

Follicles Small lumps.

Fracture A broken bone.

-G-

Gauze A soft loosely woven kind of cloth used in bandages.

Generic name The scientific name of a medicine, as distinct from the brand names given it by different companies that make it.

Genitals The organs of the reproductive system, especially the sex organs.

Germs Very small organisms that can grow in the body and cause some infectious diseases; micro-organisms.

Glucose A simple form of sugar that the body can use quickly and easily. It is found in fruits and honey, and can be bought as a white powder for use in rehydration drinks.

Goiter A swelling on the lower front of the neck (enlargement of the thyroid gland) caused by lack of iodine in the diet.

Gram (G) A metric unit of weight. There are about 28 grams in an ounce There are 1000 gm. in a kilogram.

-H-

Heartburn A burning feeling in the lower chest or upper part of the stomach.

Hemorrhage Severe or dangerous bleeding.

hemorrhoids Small painful bumps or lumps at the edge of the anus or inside it. These are actually swollen or varicose veins.

Hernia An opening or tear in the muscles covering the belly that allows a loop of the gut to push through and form a ball or lump under the skin.

History (medical history) What you can learn through asking questions about a person's sickness - how t began, when it gets better or worse, what seems to help, whether others in the family or village have it, etc.

Hives Hard, thick, raised spots on the skin that itch severely. They may come and go all at once on move from one place to another. a form of allergic reaction.

Hygiene Actions or practices of personal cleanliness that lead to good health.

Hypertension High blood pressure.

Hyperventilation Very rapid deep breathing in a person who is frightened.

-I-

Immunizations (vaccinations) Medicines that give protection against specific disease, for example, diphtheria, whooping cough (pertussis), tetanus, polio, tuberculosis, measles and smallpox.

Infection A sickness caused by bacteria or other germs. Infection may affect part of the body only (such as an infected finger) or all of it (such as measles).

Infectious disease A disease that is easily spread or communicated (passed from one person to another); contagious.

Inflammation An area that is red, hot, and painful, often because of infection.

Insomnia A condition in which a person is not able to sleep, even though he needs and wants to.

Intestinal parasites Worms and tiny animals that get in people's intestines and cause diseases.

Intestines The guts or tube-like part of the food canal that carries food and finally waste from the stomach to the anus.

Iris The colored or dark part of the eye around the pupil.

-J-

Jaundice A yellow color of the eyes and skin. It is a sing of disease in the liver, gallbladder, pancreas or blood.

-K-

Kidney Large, bean shaped organs in the lower back that filter waste from the blood forming urine.

Kidney stones Small stones that form in the kidneys and pass down to the urinary tube. They can cause a sharp pain in the lower back, side, urinary tube, or lower belly. In the bladder they may block the urinary tube and make urination painful or impossible.

Kwashiorkor Severe malnutrition caused by not eating enough protein. A child with kwashiorkor has swollen feet, hands and face, and peeling sores.

-L-

Labor The sudden tightening or contractions of the uterus that means the baby will soon be born.

Laxative A medicine used for constipation that makes the stools softer and more frequent.

Liter (L) A metric measure equal to about one quart. A liter of water weights about one kilogram.

Loss of consciousness The condition of a sick or injured person who seems to be asleep and cannot be awakened. Unconsciousness.

-M-

Malnutrition Health problems caused by not eating enough of the foods that the body needs.

Mastitis (breast abscess) An infection of the breast, usually in the first weeks or months of nursing a baby. It causes part of the breast to become hot, red, and swollen.

Menopause The time when a woman naturally stops having monthly bleeding, usually between the ages of 40 and 50.

Menstrual bleeding, menstruation Monthly bleeding in women.

Migraine A severe throbbing headache sometimes on one side of the head only. It often causes vomiting.

Milligram (mg) One thousandth of a gram.

Milliliter (ml) One thousandth of a liter.

Miscarriage (spontaneous abortion). The death of the developing baby or fetus in the womb, sometimes followed by heavy bleeding with clots.

Morning sickness Nausea and vomiting that occur especially in the morning in the early months of pregnancy.

Mucous A thick slippery liquid that moistens and protects the linings of the nose, throat, stomach, guts and vagina.

-N-

Nausea Stomach distress or upset; feeling like you need to vomit.

Normal Usual, natural or average; Something that is normal has nothing wrong with it.

Nutritious Nourishing. Nutritious foods are those that have the things the body needs to grow, be healthy and fight off disease.

-O-

Obstruction A condition of being blocked or clogged, An obstructed gut is a medical emergency.

Oral By mouth. An oral medicine is one taken by moth.

Organ A part of the body that is more or less complete in itself and does a specific job. For example, the lungs are organs for breathing.

Otic Having to do with the ears.

Ounce A measure of weight equal to about 28 grams. There are 16 ounces in one pound.

Ovaries Small sacs in a woman's belly next to her womb.

-P-

Palpate To examine carefully using the fingers and hands.

Pannus Tiny blood vessels that appear in the top edge of the cornea in certain eye diseases, like trachoma.

Paralysis Loss of the ability to move part or all of the body.

Parasites Worms and tiny animals that live in or on another animal or person and cause harm. Fleas, intestinal worms and amebas are parasites.

Parenteral Not by mouth but by injection.

Pelvis Hip bones.

Peritoneum The thin lining between the guts and body wall. The bag that holds the guts.

Peritonitis A very dangerous inflammation of the peritoneum. The belly gets hard like a board, and the person is in great pain, especially when he tries

Pharmacy A store that sells medicines and health care supplies.

Placenta (afterbirth) The dark and spongy lining inside the womb where the fetus joins the mother's body. The placenta normally comes out 15 minutes to one half hour after the baby is born.

Postpartum After childbirth.

Postpartum hemorrhaging Heavy bleeding of the mother after childbirth.

Prevention Action taken to stop sickness before it starts.

Prostate gland A firm muscular gland at the base of the man's urinary tube, or urethra. Often in older men the prostate becomes enlarged, causing difficulty in urinating.

Pterygium A fleshy growth that slowly extends from the edge of the eye onto the cornea.

Pulse The number of times a person's heart beats in one minute.

Pupil The round opening or black center in the iris of the eye. It gets smaller in bright light and bigger int the dark.

-R-

Rate The number of time something happens in a given time.

Rehydration drink A drink to correct dehydration, which you can make with boiled water, sugar, salt, and bicarbonate of soda.

Respiration Breathing. The respiratory system includes the bronchi, lungs, and other organs used in breathing.

Respiration rate The number of times a person breathes in one minute.

Retardation Abnormal slowness of thought, action, or mental and emotional growth.

Rhinitis An inflammation of the lining of the nose, often caused by allergies.

-S-

Sanitation Public cleanliness involving community efforts in disease prevention, promoting hygiene, and keeping public places free of waste.

Septicemia An infection of the blood, sometimes called 'blood poisoning'.

Shock A dangerous condition with severe weakness or unconsciousness, cold sweat, and fast, weak pulse. It is caused by dehydration, hemorrhage, injury, burns, or a severe illness.

Side effects Problems caused by using a medicine.

Signs The things or conditions one looks for when examining a sick person, to find out what illness he has.

Sinus trouble (sinusitis) Sinuses are hollows in the bone that open into the nose. Sinusitis is inflammation causing pain above and below the eyes.

Spontaneous abortion (miscarriage) The death of the developing baby or fetus in the womb, sometimes followed by heavy bleeding with blood clots.

Sputum Mucous and pus (phlegm) coughed up from the lungs and bronchi of a sick person.

Sterile 1. Completely clean and free from living micro-organisms. Things are usually sterilized by boiling or heating. 2. Sterile also means permanently unable to have children.

Sterilization 1. To sterilize instruments, bottles or other things by boiling or heating in an oven. 2. Also a permanent way of making a man or a woman unable to reproduce (have children).

Stomach The sack-like organ in the belly where food is digested. In common language stomach is often used to mean the whole belly or abdomen.

Symptoms The feelings or conditions a person reports about his sickness.

-T-

Thermometer An instrument used to measure how hot a person's body temperature is.

Topical For the skin. a topical medicine is to be put on the skin.

Tract A system of body organs and parts that work together to do a special job; for example, the urinary tract cleans the blood and gets rid of urine.

Transmit To pass on, transfer, or allow to spread from one person to another.

-U-

Ulcer A break in the skin or mucus membrane; a chronic open sore of the skin, the surface of the eye, the stomach, or the gut.

umbilical cord The cord that connects the baby from its navel to the placenta on the inside of the mother's womb.

Urethra Urinary tube or canal. The tube that runs from the bladder to the hole a person urinates from.

Urinary tract The system of organs concerned with the formation and getting rid of urine-such as kidneys, bladder and urinary tube (urethra).

Urine Liquid waste from the body, piss; pee.

uterus The sac inside a woman's belly were the baby is made. Womb.

-V-

Vagina The tube or canal that goes from the opening of a opening of a woman's sex organs to the entrance of her uterus.

Vaginal Of or relating to the vagina.

Vitamins Protective foods that our bodies need to work properly.

Vomiting Throwing up the contents of the stomach out of the mouth.

-X-

Xerosis or xerophthalmia Abnormal dryness of the eye due to lack of vitamin A.

HISTORY AND PHYSICAL EXAM

COURSE OBJECTIVES

To help the student achieve basic knowledge and skills in:

1. Eliciting an accurate and through history.
2. Winning the patient's confidence and placing him at ease.

MEDICAL HISTORY

The medical history is an account of the events in the patients life that have relevance to his mental and physical health. It may be offered spontaneously or gathered by skillful probing. The parts of the medical history follow a standardized sequence. Following is an outline of the complete history.

1. Patient identification: This includes name, age, sex, marital status and occupation. If the patient is very ill another person will have to provide any information needed.

2. Chief complaint: This is the principal symptom or symptoms that led the person to seek medical attention. Example: a 34 years old man has had abdominal pain and vomiting for one week. This is generally obtained by asking the patient "Why did you come to the clinic" or "tell me about your problem."

3. History of present illness: (story of the patient's problem) This is a directed Interview with the patient about his symptoms. You want to get a good idea of the way the problem happened and has progressed or influenced their life. Start the patients narrative by saying "tell me about your problem," or "what may I help you with today." Listen to the story without interruption. After the general outline becomes apparent, interject questions designed to establish the nature of the symptoms, [illegible] medication, the chronology, the disability. By asking certain questions, you can find out many facts about the disease. You need to obtain the following information about each symptom:

a) Body Location: Where is it? Is it in one place or does it radiate to another location?

b) Quality: What is it like? Describe the symptoms, i.e. burning, sharp, or dull pain.

c) Quantity: How intense are the symptoms? To what extent do they influence the patient?

d) Timing: When did this problem start? How long does it last? Does it come and go or stay the same? Is the problem getting better or worse? Was there something just before the start of illness that may have caused it? For example, an accident, eating certain food, a fight, an argument, a dream, or a curse. This information is important because it often gives an idea about the cause of the problem and what the patient believes has caused the problem.

e) Setting: When does it happen? For example while walking, eating, at a certain time of the day or with certain activities? the association of factors that influence the symptoms. Always ask: "what makes symptoms worse and what makes symptoms better? Have you ever had a problem like this before?" If yes, "tell me about it." This is important to establish if the problem is a recurrent illness such as gastritis or asthma.

f) Review of Systems: Review of related body systems or symptoms. The main problem and it's history usually suggest that there is one "organ system" involved. An organ system (such as the heart, lungs, kidney, gastrointestinal or reproductive tract) has a set of symptoms and physical findings that go along with it. The list of symptoms that go with each system will be covered in the next section.

g) Treatment: "Have you received treatment for this problem?" If yes, "What kind? "Did you notice any change with this treatment."

4. Past medical history:

a) General health and medical problems in the past. This includes hospitalizations, surgeries, injuries, immunizations, or medical care provided for illness in childhood or as an adult. This include women's health: Number of pregnancies, live births, babies born early or dead, children now living, problems with pregnancy or delivery.

b) Allergy. (rash, swelling or trouble breathing).
-drugs?
-food?
-animals?
-plants?

5. Family History:

The health of the family affects the patient. Sometimes other members of the family have illnesses like theirs. This may be because the disease is contagious, like tuberculosis, Impetigo, scables or hepatitis. Because of this you should ask about the health of the people living with the patient.

6. Social History:

This is the part of the history where you get an idea about the environment (physical conditions of home and community) the patient lives in. Ask about the disposal of waste, availability of clean food and water, and the exposure to harmful substances.

7. Medications:

Ask about the name, dosage and frequency of any medications the patient is taking or has taken often in the past. This includes tobacco, hashish, or opium.

8. Review of Systems:--list of all the symptoms that go with each "organ system".

This is the last part of the interview. You will look for any important symptoms that might have been missed as well as clarify historical points about the current problem. Explain to the patient that you must ask a long list of questions. They will only have to say yes or no if the symptom goes with their story. Each area must be asked. It is best at first to proceed sequentially so that the process becomes routine and nothing is left out. Each topic is followed by the questions to ask.

General: How has your general health been? Appetite? weight gain or loss? Energy level? Do you have any problem during sleeping? If sleep is poor describe in what way. Any fever?

Skin: Rashes? Itching? Spots or sores? Describe the body parts involved.

Head: Itchy scalp, head trauma, headache.

Eyes: Has your vision changed? In what way has it changed? Is there a difference in the vision of the eyes? Any complaints such as itching, watering purulent discharge, or pain?

Ears: How is your hearing? Is it the same on both sides? Pain or discharge? Past infections? Ringing sounds or dizziness? Blocked ear?

Nose and throat: Congestion now or seasonal? Nosebleeds? Frequent sore throat? Voice change? Teeth problems? Sores in mouth? Difficulty with swallowing? Swollen glands in neck?

Lungs: Cough? Is cough chronic or acute? Do you cough up mucus (sputum)? If so, what is the color and quantity? Is there any blood in the sputum? Do you have any difficulty breathing? Wheezing? Pain with breathing?

Cardiovascular: Chest pain? Where, type, radiation? Is it related to activity or eating? Shortness of breath related to pain? Palpitations or skipped beats? Leg pains or cramps related to walking or rest? Do your feet or legs swell?

Musculoskeletal: joint pain, loss of range of motion, prior history of trauma, pain on exertion.

Urinary: Burning on urination? Urinating more or less frequently? Urgency (need to go in a hurry)? Difficult to start a stream of urine? Dribbling at the end of urination? Pain in the back, flank or bladder area? Change in the color of urine? Blood in the urine? Past history of infections or stones? Incontinence?

Neurologic: numbers, tingling, paralysis, dizziness, stiff neck.

PHYSICAL EXAMINATION

Before you begin:

a. Have all of your equipment ready:

Thermometer - oral or rectal, depending on age of the patient

Blood pressure cuff (sphygmomanometer)

Watch with second hand

Stethoscope

Otoscope

Tongue depressors

Vaseline

Plastic gloves

Cotton

Alcohol

Arm circumference band - for pediatric patients 1-5 yrs

Scale available - infant and adult scales

b. Examination area:

Be sure your exam area provides some degree of privacy, is not too cold or too hot (as possible to control), and you have a comfortable seat for the patient.

Be sure you have adequate light.

c. Abreviations

CN Cranial Nerves
ROM Range of Motion
TM Tympanic Membrane

General Appearance

Inspect a patient's general appearance beginning as you greet him.

		NORMAL	ABNORMAL
a.	State of health	Awake and active Site comfortably	Tired, worried or sad. Face shows pain, holds an area of pain, moves as though in pain.
b.	Nutrition	Good weight for height.	Extreme thinness, obesity

c.	Behavior	Normal reactions to questions and situations.	Unusual behavior, strange actions of the hands, shaking nervous.
d.	Level of Consciousness	Alert and awake Correct answers to easy questions. Knows who he is, where he is, and what time it is.	Lazy appearing, tired. Incorrect answers to easy questions. Does not know who he is, where he is, or what time it is.
e.	Patient's speech	Clear speech	Low voice, hoarseness, loss of voice, difficulties with speech.
f.	Ability to walk	Smooth walk, no need for assistance.	Inability to walk well.
g.	Comfort of body movement.	Comfortable remove-ing clothing, or following instructions during exam.	Uncomfortable with normal activity.

Vital Signs

While you are obtaining the patient's pulse, respirations and blood pressure, you can take the patient's temperature. This process will ensure a quieter time and assist you in hearing the blood pressure reading.

Temperature:

Use oral, rectal or axillary temperature reading, depending on the age and severity of illness of the child. If you have an older child on whom you would normally do an oral temperature,

but who is breathing only through their mouth you should do an axillary temperature.

Technique for examination:

Be sure you shake the thermometer sharply to cause the mercury to go below normal (37' or 98.0'). Remember that the normal axillary temperature will be 1' lower, and the normal rectal temperature will be 1/2 to 1' lower than an oral temperature.

Oral - place the thermometer under the tongue and have patient close lips around it--make sure they do not clamp down on it with their teeth! Leave in place for at least 3 minutes.

Rectal - lubricate thermometer with vaseline and have parent hold thermometer in rectum for a minimum of 5 minutes.

Axillary - place thermometer in the armpit and clamp the arm to the side. Hold in place for 5 minutes.

Arterial Pulse Rate:

You will remember that the pulse is created by the blood being forced through arteries by each contraction of the heart.

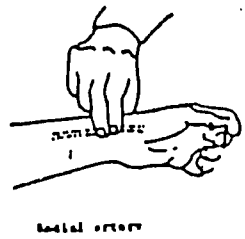
Technique of Examination:

Pulse rate is recorded as the number of beats/minute. The pulse rate can be counted in a number of locations. The radial arteries is the most common site.

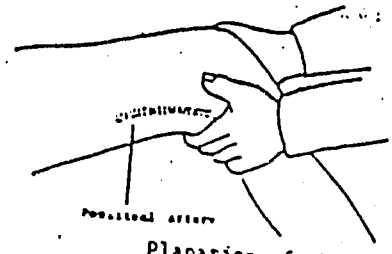
Radial artery pulse - With the pads of your fingers, press against the skin of the wrist over the site of the radial artery until pulsation is detected. Normal range at rest is approximately 70-90 pulsations per minute. Note the rhythm of the pulse on your record.

Other arterial locations where pulse can be felt are shown on the drawing below:

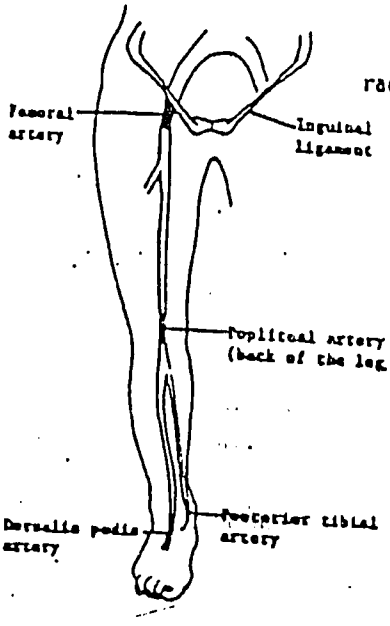
Age	Pulse
<1	140
1	120
2	100
4	90
Adult	60-80

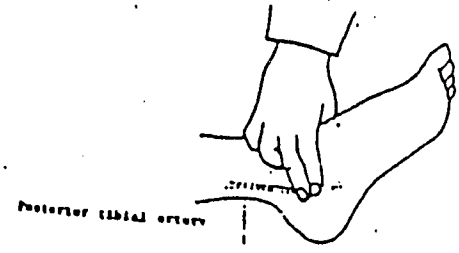


Palpation of the right radial pulse.

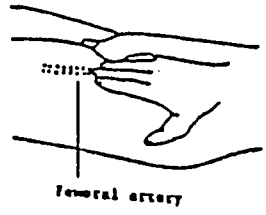


Plapation of the right popliteal pulse.





Palpation of the right dorsalis pedis pulse.



Palaption of the right femoral pulse.

BEST AVAILABLE DOCUMENT

Common Abnormalities

Increased Pulse Rate - the most common clinical situation which causes the pulse to increase is fever. Excitement, fear of other emotional situations will also cause the heart to beat faster and as a result the pulse rate will increase. Such emotional effects on the pulse must be kept in mind when recording the pulse.

Rapid, weak pulse is usually the result of shock. Circulating blood volume has been decreased which makes the pulse feel weak. The heart beats faster to circulate what volume there is in an attempt to continue to carry the needed oxygen to the body. By moving the limited blood volume, faster, the blood returns sooner to the lungs to let off waste gases and pick up more oxygen.

Rapid, pounding pulse is usually the result of fright or hyperthyroidism. Fright causes the heart to beat faster forcing the normal blood volume through the arteries faster which results in more blood passing through a certain amount of space than would happen during normal circulation. With hyperthyrodism, there is an increased heart rate. In both cases, when compared to the feeling of a normal pulse, the "pounding pulse" of fear or hyperthyroidism feels very strong and often times can be easily seen.

RESPIRATIONS:

Respirations are measured by inspection.

Technique of examination:

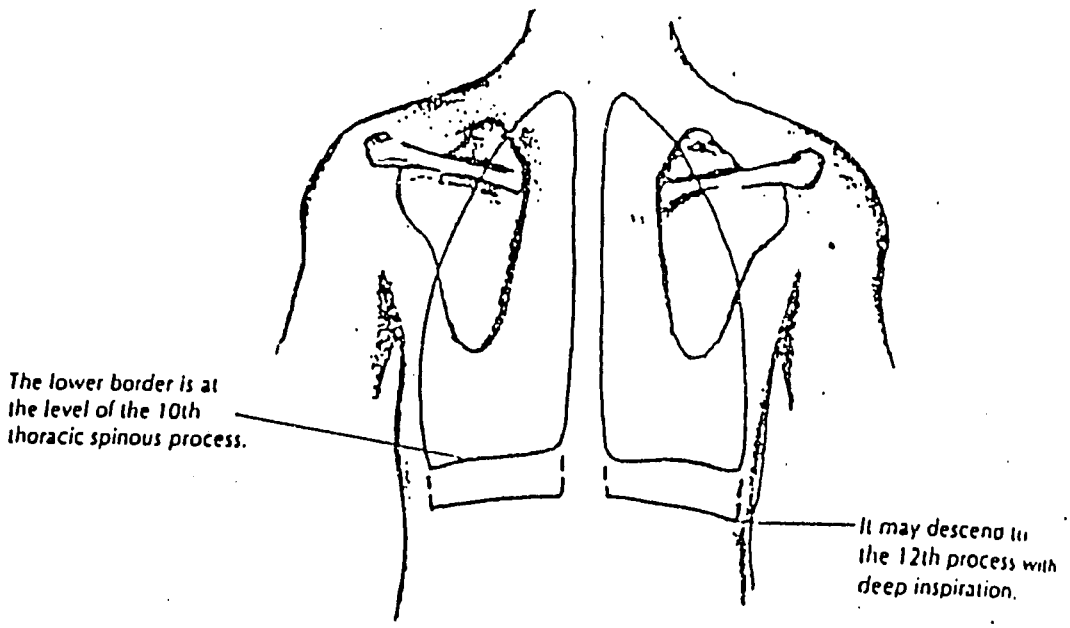
Observe the rise and fall of the patient's chest and the ease with which breathing is accomplished.

Count the number of respirations in one minute.

Observe the regularity and rhythm of the breathing pattern.

Note the depth of breathing and whether the patient uses accessory muscles (shoulders rise to help inspiration).

Note whether the nostrils of the nose move in and out more than normally during breathing (flared nostrils).



BLOOD PRESSURE:

Make sure your blood pressure cuff is in good working order and does not have any air leaking from it, and that the control valve is working well. The cuff width should be 1/2 the circumference of the arm.

Technique of Examination:

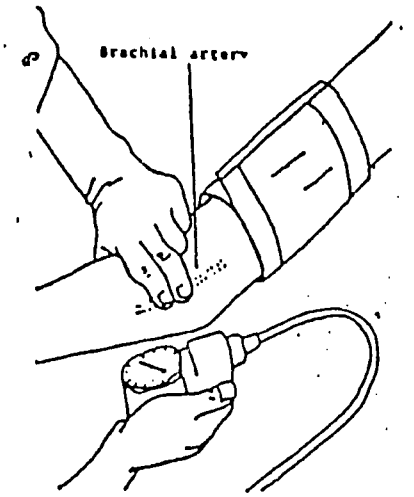
The patient's arm should be slightly flexed and comfortably supported.

The arm should not have any clothing over the antecubital area.

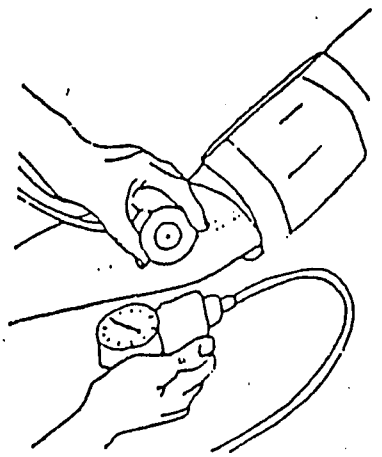
BEST AVAILABLE DOCUMENT

Apply the cuff snugly and securely.

Place the fingers of one hand over the brachial artery.



Place the bell of the stethoscope over the brachial artery-inflate the cuff to the level of 220 on the dial, slowly release the control valve and listen for the beginning beats. Note the beginning of the beats and when the beats stop. This is the systolic and diastolic reading.



BEST AVAILABLE DOCUMENT

Repeat the process to make sure your reading is correct. If any concern exists regarding the reading, repeat the process in the other arm.

Record the reading as: 120/80 or whatever your reading might be.

Be sure you record all the vital signs as soon as you finish.

Examining the Skin:

You will inspect and palpate the skin. This is done throug the physical examination. Be sure to include the conjunct skin inside the mouth, the hair, and the nail beds. Feel abnormal skin areas that are not seen.

	NORMAL	ABNORMAL
a. Color of skin	Normal color	Yellow, red, blue, or white abnormal color.
b. Skin lesions. Location Type Number Color change Itchy Edges-sharp? ?Old scars	Normal skin	Skin patch or lesion which is abnormal
c. Check eyes, hands, and legs for edema.	No edema	Edema of eyes, hands, or legs

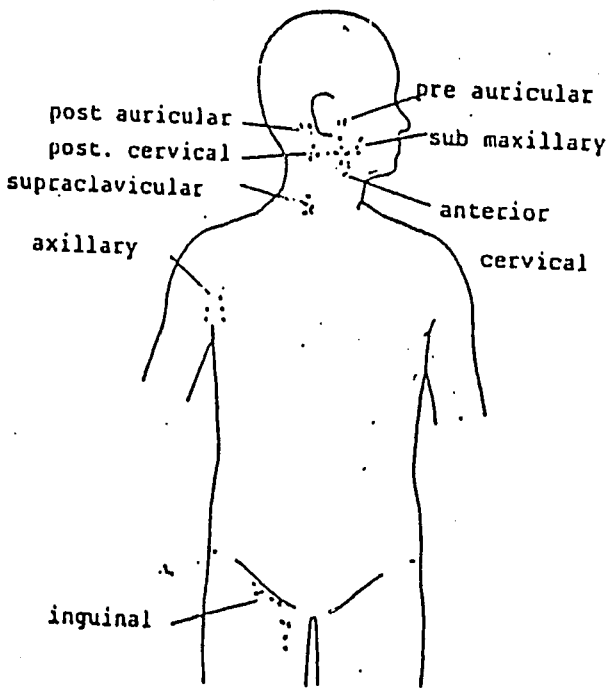
d.	Check moisture of skin	No abnormal sweating or dehydration	Abnormal sweating or signs dehydration. Tenting of skin.
e.	Check hair	Normal hair, grey hair with age.	Abnormal loss of hair thin hair, abnormal color, hair easily broken, lice.
f.	Feel skin temperature	Normal temperature	Skin feels abnormally abnormally hot or cold
g.	Feel skin texture	Smooth, soft skin	Rough, thick, swollen or scaling skin
h.	Palpate abnormal areas of the skin	No tenderness	Tenderness of an area of the skin

Examining the Lymph Glands

You will inspect and palpate the lymph glands. This is done throughout the physical examination. Inspect the lymph glands for enlargement, drainage, or redness. Palpate the lymph glands for enlargement or tenderness.

		NORMAL	ABNORMAL
a.	Inspect for enlarged or red lymph glands	Lymph glands not enlarged or red	Large, swollen, or red lymph glands
b.	Palpate for enlarged lymph glands. Note: Describe abnormal lymph glands, by side.	Lymph glands not enlarged	Large, swollen lymph nodes

c.	Palpate if gland is hard or soft		Hard or soft lymph glands
d.	Palpate for tenderness lymph glands	No tenderness of lymph glands	Tender lymph nodes

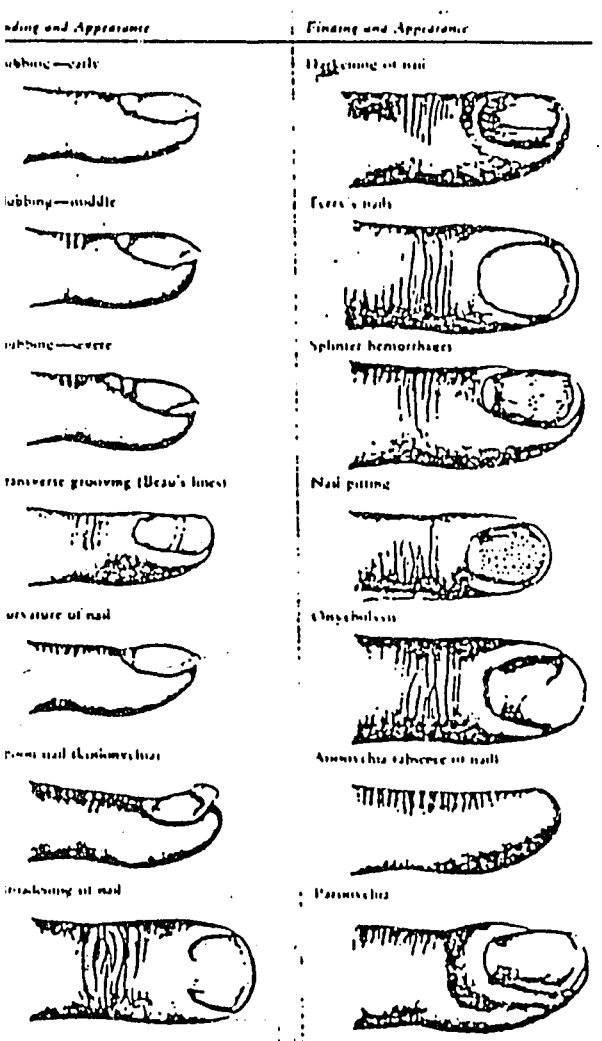


Examination of the Hands and Arms

You will inspect and palpate the hands and arms. The patient usually sits for this procedure. This is often used to introduce the patient to the idea of the examiner touching him--the first part of the physical exam. If this is done thoroughly and professionally, the patient will know that the rest of the exam will be done in a similar manner. The examiner gets a chance here, early in the exam, to know if the patient feels uncomfortable about being physically examined.

BEST AVAILABLE DOCUMENT

		NORMAL	ABNORMAL
a.	Inspect and palpate the hands	Normal hands for age and activity level	Abnormal shape. Abnormal skin exam. Poor ROM, poor coordination, lack of normal strength
b.	Inspect and palpate the arms	Normal arms for age and activity level	(see as above)



BEST AVAILABLE DOCUMENT

Examination of the Head

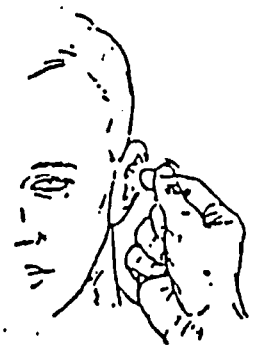
You will inspect and palpate the head and percuss the sinuses. The patient's head is usually examined while the patient is sitting.

		NORMAL	ABNORMAL
a.	Examine the hair	Normal Hair	Loss of hair, broken hair, missing hair, thin or coarse hair
b.	Examine the skull	No swellings, depressions, breaks in the skin, or tenderness	Swelling, depressions, breaks in the skin, skull tenderness
c.	Examine the face	Relaxed, normal face	Abnormal facial expression, asymmetrical facial expression.
d.	Ask the patient to move specific facial parts	Normal, smooth movements of the face	Facial paralysis, abnormalities seen with movement
e.	Percuss the sinuses	No sinus tenderness	Sinus tenderness

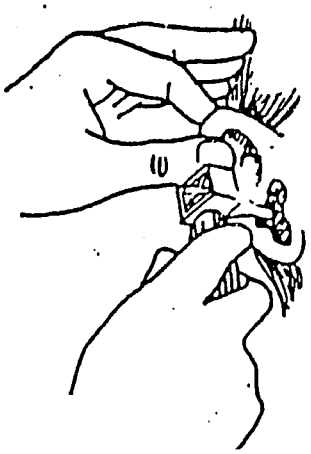
Examination of the Ears

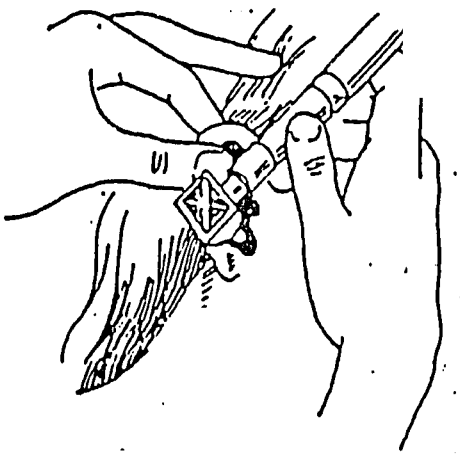
You will test the patient's hearing and inspect and palpate his ears. The ears are usually examined with the patient sitting.

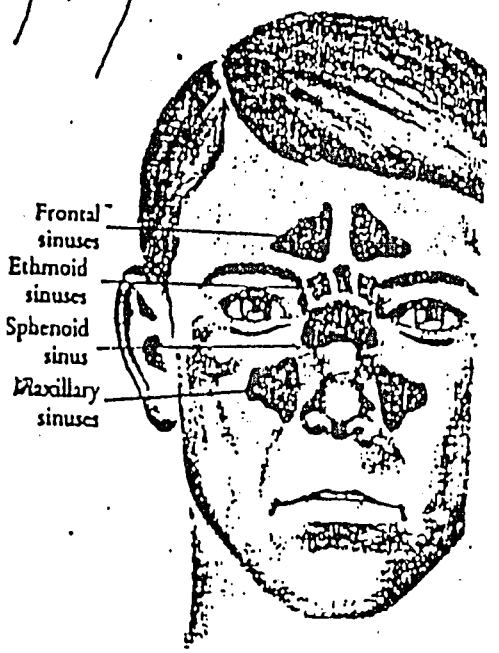
		NORMAL	ABNORMAL
a.	Fingerrub test: -Examine patient in a quiet room. -Check how well you can hear your finger rub. -Check how well the patient can hear the finger rub	Ability to hear the finger rub at the same distance as the Medic	Inability to hear the finger rub at the same distance as the Medic
b.	Examine the ears externally.	Normal ears, no lumps, pus or lesions. No enlarged lymph glands and no mastoid bone tenderness	Ears appear different from each other. Pus, skin lesions, lumps, redness. Enlarged or tender lymph glands. Mastoid bone tenderness
c.	Examine the ear canal	No redness, discharge, or tenderness	Redness or discharge. Tenderness when pinna is gently pulled upwards.
d.	Examine the ear tympanic membrane (eardrum)	No redness, discharge	Redness or discharge. Fluid behind the TM, abnormal anatomy of TM, Pain with gentle pressure over tragus of ear



BEST AVAILABLE DOCUMENT







Examination of the Eyes

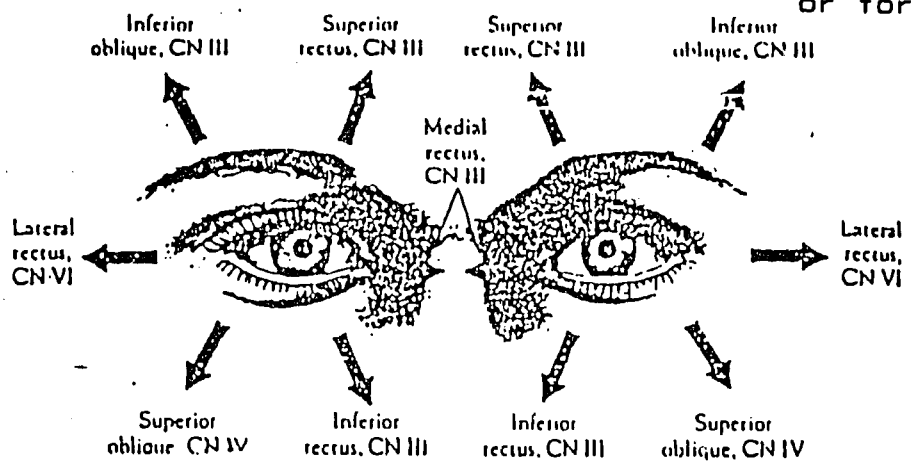
You will test the patient's vision and inspect his eyes. This examination is usually done with the patient sitting or standing.

	NORMAL	ABNORMAL
Print reading test: Tell the patient to cover one eye and then the other while reading a printed page.	Ability to read normal sized print	Inability to read normal sized print.

BEST AVAILABL

b.	Finger test: Tell patient to count the number of fingers held up by you at arms length first with one eye and then the other	Ability to see all held up	Inability to see fingers, or fingers are blurred
c.	Inspect for bulging of the eyes	Eyes do not bulge	Bulging eyes
d.	Examine upper and lower eyelids	No redness, swelling, puffiness or drooping of the eyelids.	Red, swollen or puffy eyelids. Drooping eyelids. Tearing or pus from eyelids. Follicular hypertrophy
e.	Examine eye movements: Move your fingers to both sides & up and down, asking the patient to follow with his eyes and while not moving his head	Normal eye movement in all directions. Intact CN III, IV, VI	Inability to follow the object normally in all directions.

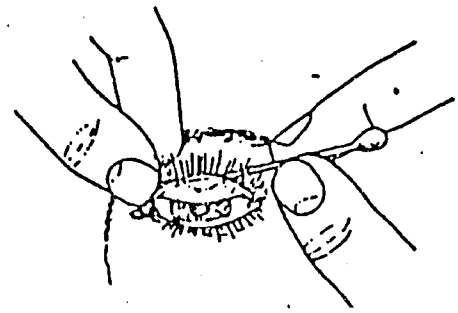
f.	Examine the conjunctiva of both eyes and compare them	Normal conjuct-unctiva	Red conjunctiva or Pale. Pus present. Roughness, dryness, or foreign body.

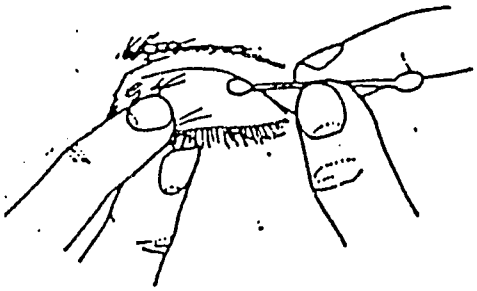


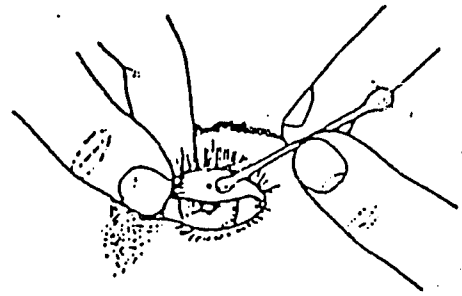
		NORMAL	ABNORMAL
g.	Examine the sclerae and compare them	Normal sclerae	Red or yellow, or ulcerated sclerae
h.	Examine the corneas and compare them, from the side and front	Normal corneas	White spots or lacerations. Blood vessels
i.	Compare the size and shape of the pupil. Test for pupil reaction to light	Normal round pupils which contract normally	Irregularity shaped or differing in size. Poor reaction to light test.
j.	Examine the lenses. Shine a light at an angle through the pupil	Lenses not visible	White, cloudy lens

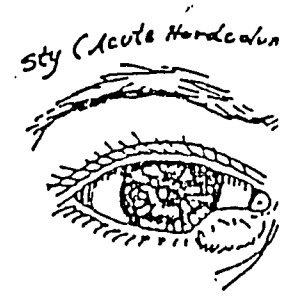
BEST AVAILABLE DOCUMENT

-Location and Removal of a Foreign Body: Place the wooden end of the cotton tipped applicator across the top of the back part of the upper lid.









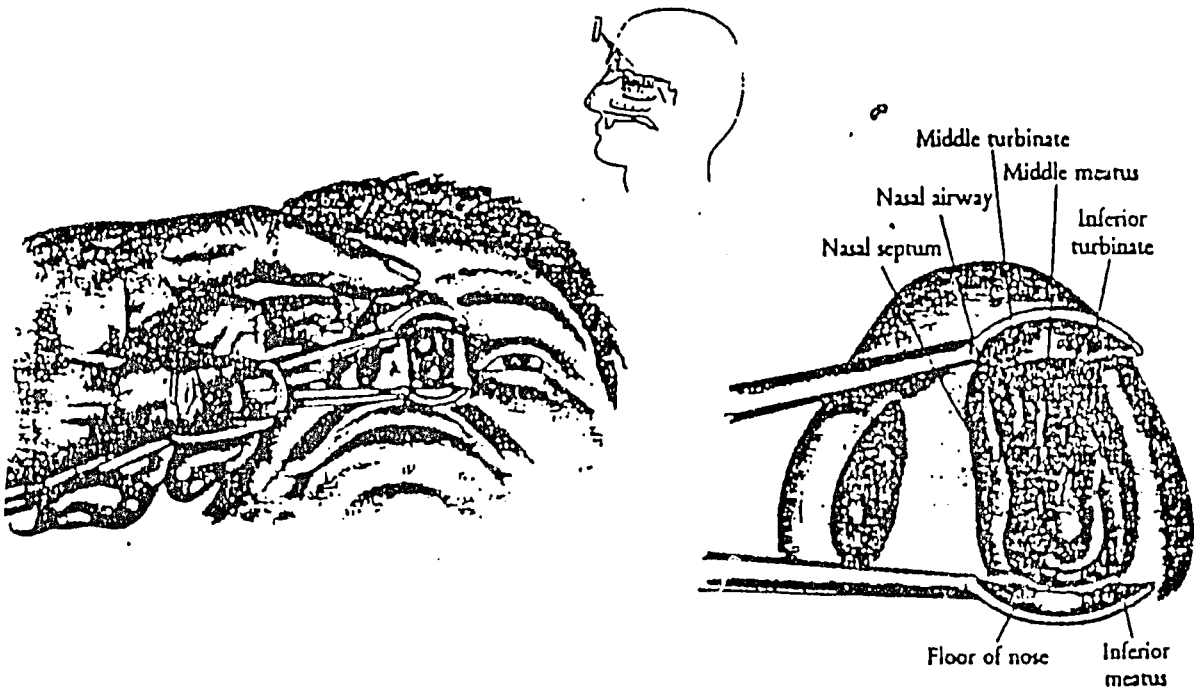
Examination of the Nose

You will inspect and palpate the nose. This is usually done with the patient in a sitting position.

		NORMAL	ABNORMAL
a.	Examine the nose externally. Close one nostril and then the other, asking the patient to breathe in	Nostrils do not flare. Nostrils are open	Flaring nostrils. Difficulty breathing through nostril when opposite one closed
b.	Look into each nostril with a light, if necessary use a large otoscope speculum to look into both nostrils.	Normal (pink) appearing anatomy and color	Abnormal anatomy. Redness. Blood. Dryness. Skin lesion present. Foreign body. Drainage

BEST AVAILABLE DOCUMENT

c.	Ask if any difficulty with ability to smell	Able to smell strong odors	Damage to CN I (Olfactory)



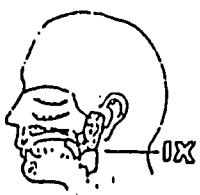
Examination of the Mouth and Throat

You will inspect the mouth, palpating it if necessary. You will inspect the throat (and smell the breath). This is usually done while the patient is sitting.

		NORMAL	ABNORMAL
a.	Examine the lips	Normal color, moist	Abnormal color, dry, lesion on lip
b.	Examine the skin inside the mouth (the cheek)	Normal color, moist	(Same as above) Increased or decreased saliva. Tenderness or swelling of cheek ...

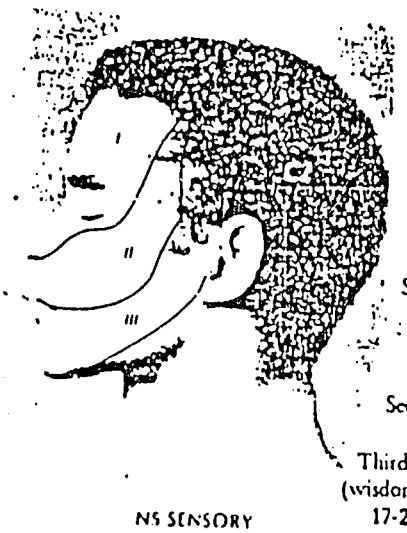
BEST AVAILABLE DOCUMENT

c.	Examine the gums	Normal color	Red, swollen, bleeding gums or lesion. Tenderness or swelling.
d.	Examine the teeth	White teeth	Black or brown teeth, stained, loose, or painful teeth
e.	Ask the patient to stick his tongue out and against each cheek	Good strength (CN XII)	Unable, or no strength (Nerve damage).
f.	Examine the throat. Ask the patient to swallow	Pink, moist throat. Small pink tonsils. (CN IX & X CN V)	Red or swollen tonsils or throat. Discharge on tonsils or throat. Foreign body unable to swallow

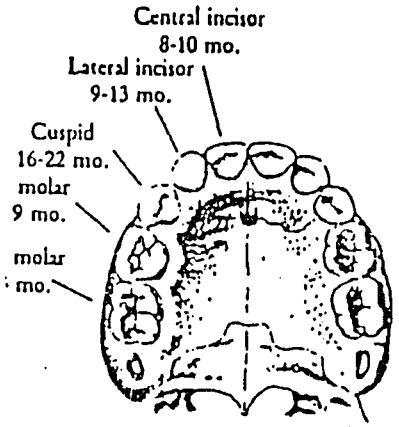


g.	Ask the patient to clench his teeth	good strength (CN V)	unable, no strength (Nerve damage).
h.	Check sensation on each side of the face	Able to feel	Unable to feel (Nerve damage).
i.	Smell breath	Food smells on breath	Bad smell, or smell of fruit on breath
j.	Ask patient to smile and raise eyebrows.	CN VII Able to do so	Nerve damage

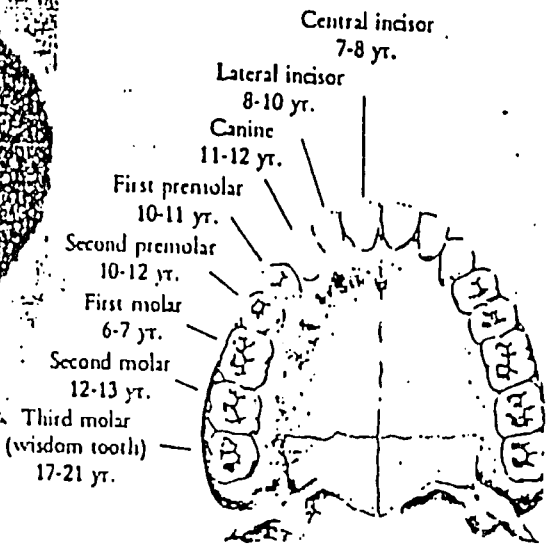
BEST AVAILABLE DOCUMENT



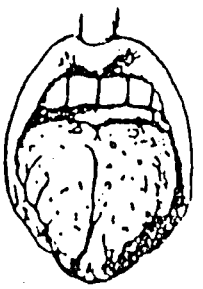
12TH NERVE PARALYSIS



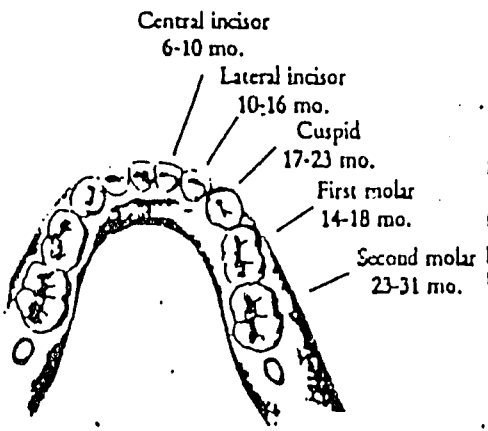
UPPER DECIDUOUS TEETH



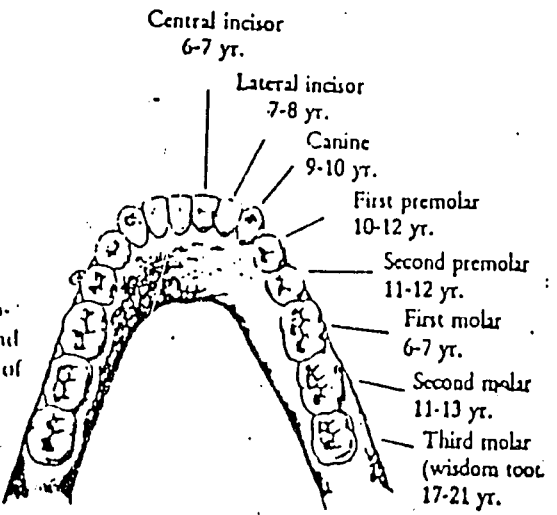
UPPER PERMANENT TEETH



Paralysis of the 12th cranial (hypoglossal) nerve produces atrophy and fasciculations of the involved half of the tongue. Deviation toward the paralyzed side occurs when the tongue is protruded.



LOWER DECIDUOUS TEETH

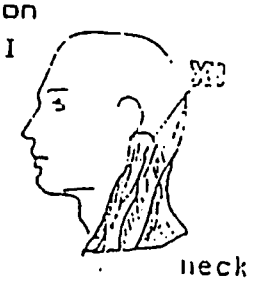


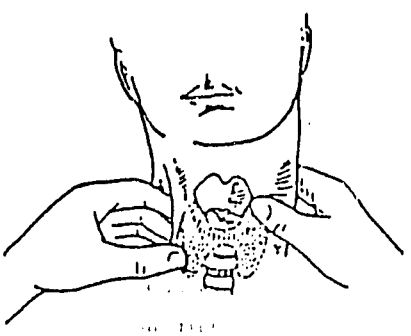
LOWER PERMANENT TEETH

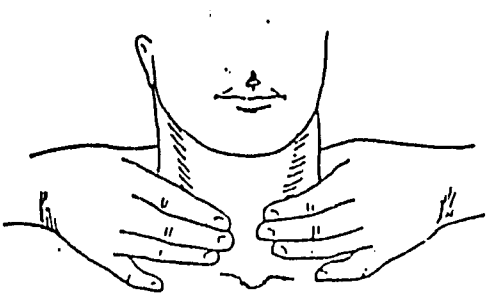
BEST AVAILABLE DOCUMENT

Examination of the Neck

You will inspect and palpate the neck. This exam is normally done with the patient sitting.

		NORMAL	ABNORMAL
a.	General inspection of the neck	Normal posture. Thyroid gland not visible	Head tilted. Lump or swelling of neck. Head in abnormal position compared to neck visible thyroid or scar
b.	Ask patient to perform ROM of neck and turn head against resistance (have patient push cheek against your hand)	Normal range of motion CN XI 	Inability to perform ROM, tenderness with ROM, stiffness
c.	Palpation of the neck	Normal neck anatomy	Muscle tightness, tenderness of spine, lumps of spine, neck.
d.	Palpate the thyroid gland	Normal thyroid	Enlargement of thyroid, lumps on thyroid or tenderness



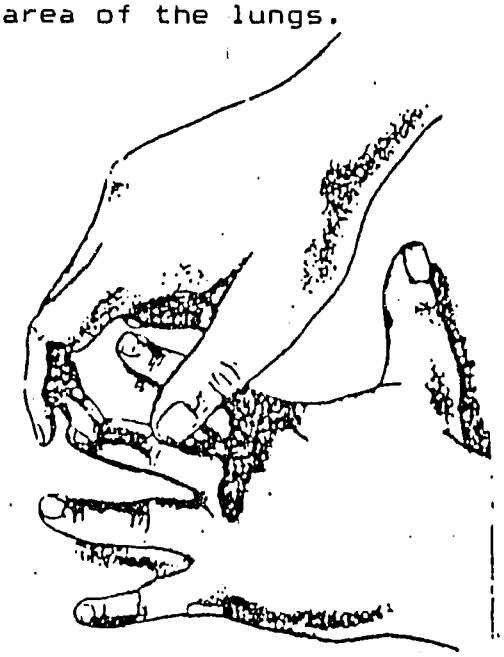


BEST AVAILABLE DOCUMENT

Examination of the Respiratory System

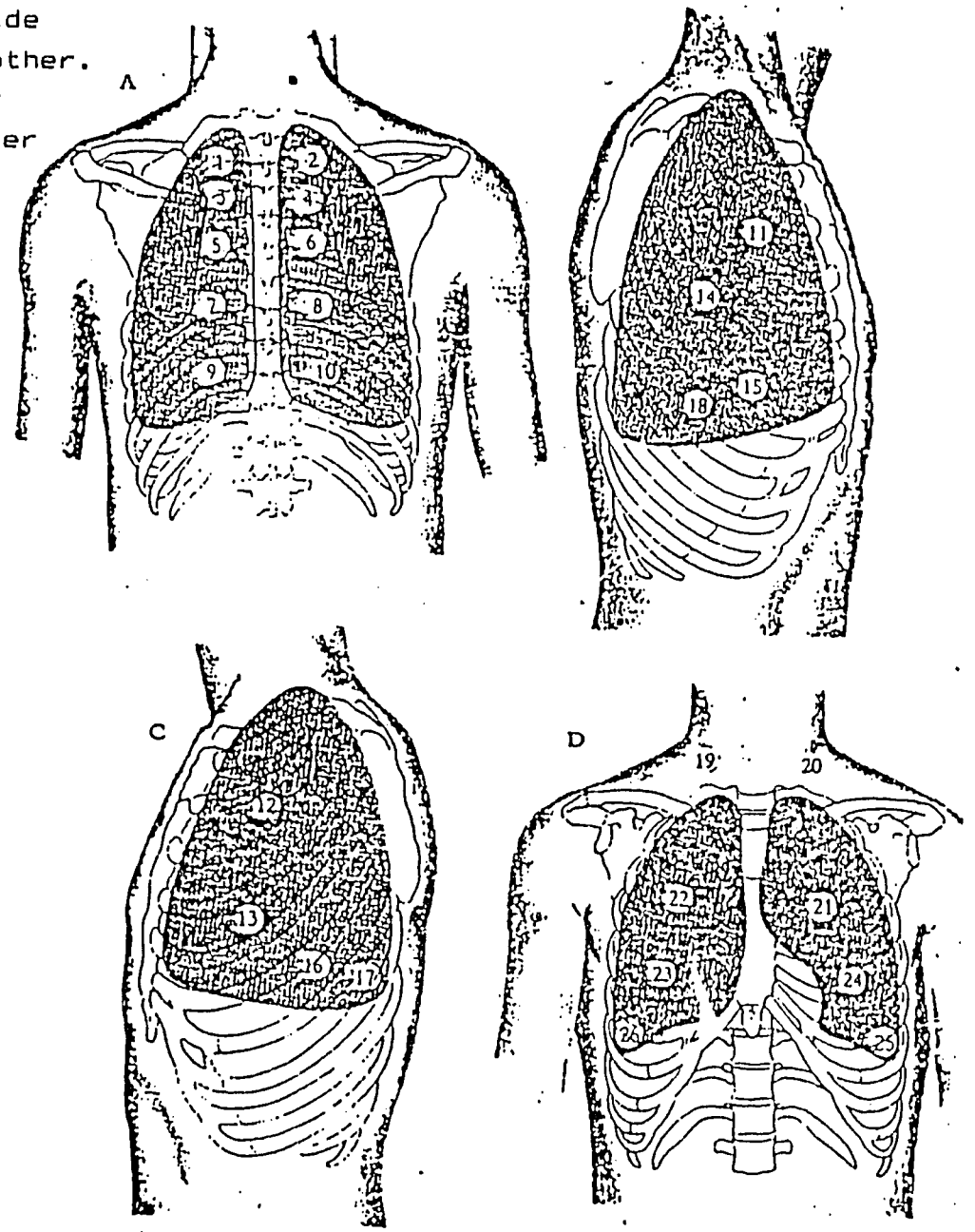
You will inspect, palpate, percuss, and auscultate the respiratory system. The patient is normally sitting for this Examination. The patient should expose his chest for this exam. Be sure to compare one side of the chest to the other. Start from the shoulders downward.

		NORMAL	ABNORMAL
a.	Examine the patient's breathing	Normal rate of respiration. Easy steady respirations. No sputum	Weak respirations or rapid. Difficulty breathing. Shortness of breath while talking. Cough. (Sputum)
b.	Examine for cyanosis of the skin	No cyanosis	Cyanosis of lips, inside of mouth or nailbeos
c.	Examine the chest first inspect and then palpate	Normal chest	Barrel chest. Uneven chest expansion. Intercostal muscle retraction. Chest wound, lumps, tenderness
d.	Percuss the chest to find out if the lungs are full of air, fluid or pus. Note: Percuss first the front and then the back of the chest	Deep normal sound of air-filled areas Heart dullness left of sternum Liver dullness on right lower side of chest.	Dull percussion over area of the lungs.



BEST AVAILABLE DOCUMENT

Auscultate the lungs. Note: Ask the patient to take deep breaths through open mouth. Listen at each spot for two breathes. Compare one side with the other. Listen for change after cough	Breath sounds heard in all parts of lungs. Longer inspiration than expiration	Decreased breath sounds Prolonged expiration. Rales rhonchi, wheezing



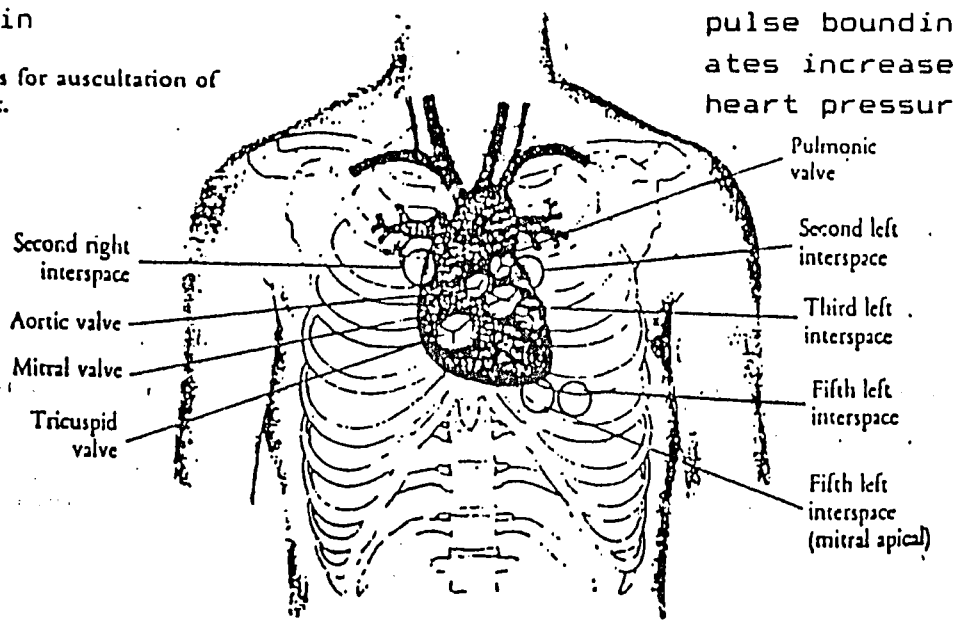
BEST AVAILABLE DOCUMENT

Examination of the Heart

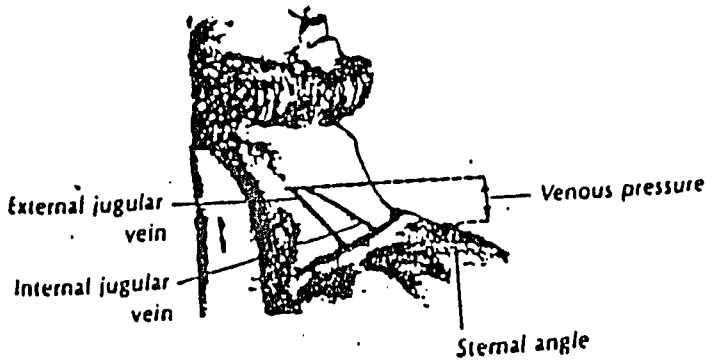
You will inspect, palpate, and ascultate the heart. Usually this examination is done with the patient in a sitting position.

		NORMAL	ABNORMAL
a.	Inspect area over heart	Slightly visible, apical pulse	Obvious bounding, or irregular pulse. (Note edema or cyanosis if seen elsewhere).
b.	Feel and locate the apical pulse	Apical pulse, 5th left ICS, MCL	Apical pulse outside it's normal location
c.	Auscultate the heart	Normal heart rate and rhythm	Irregular rate or rhythm. Murmur. Heart rate greater than 100 or less than 60 in adult.
d.	Check jugular vein		If protruding and pulse bounding indicates increased right heart pressure

Areas for auscultation of heart.



BEST AVAILABLE DOCUMENT



Examination of the Abdomen

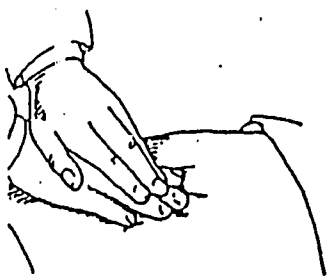
You will inspect, auscultate, palpate, and percuss the abdomen. You will palpate the liver, spleen, kidneys, and bladder. You will inspect the anus. This examination is performed with the patient lying on his back with his arms by his sides. Ask him to bend his knees and to place his feet flat on the table. This helps relax the abdominal muscles.

Note: Auscultate the abdomen before palpating it to keep the bowel sounds unchanged.

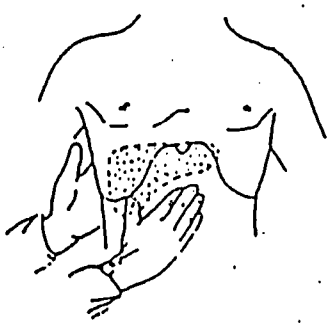
		NORMAL	ABNORMAL
a.	Inspect the abdomen.	Normal flat or slightly rounded shape	Irregular abdominal shape. Scars. Distended blood vessels on abdomen.
b.	Auscultate the abdomen. Note if bowel sounds are increased or decreased, or present	Normal bowel sounds in all quadrants	Absence of sounds in all quadrantslisten for one minute. Decreased or increased bowel tone

BEST AVAILABLE DOCUMENT

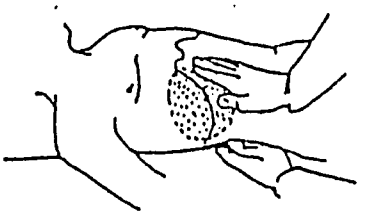
c.	Palpate the abdomen, including the liver, spleen, and kidneys. Note: Palpate areas of complaint of pain last. With organ enlargement estimate organ size heart	No masses, no tenderness. Liver, spleen, kidneys, and bladder not palpable	Abdominal mass, tenderness. rebound tenderness. Enlarged or tender liver, spleen kidneys, or bladder.



Palpation of the abdomen



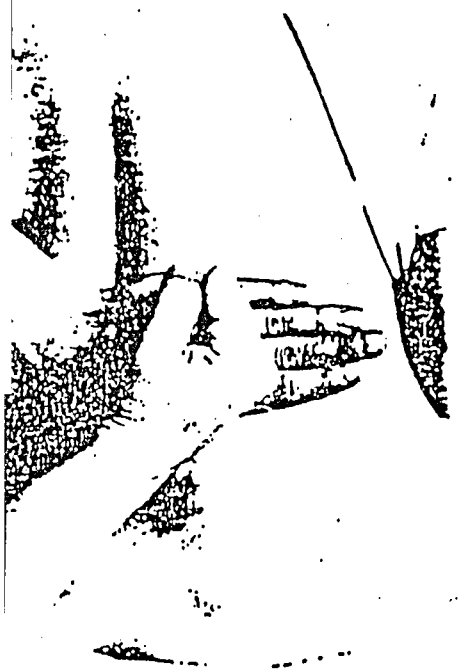
Palpation of the liver

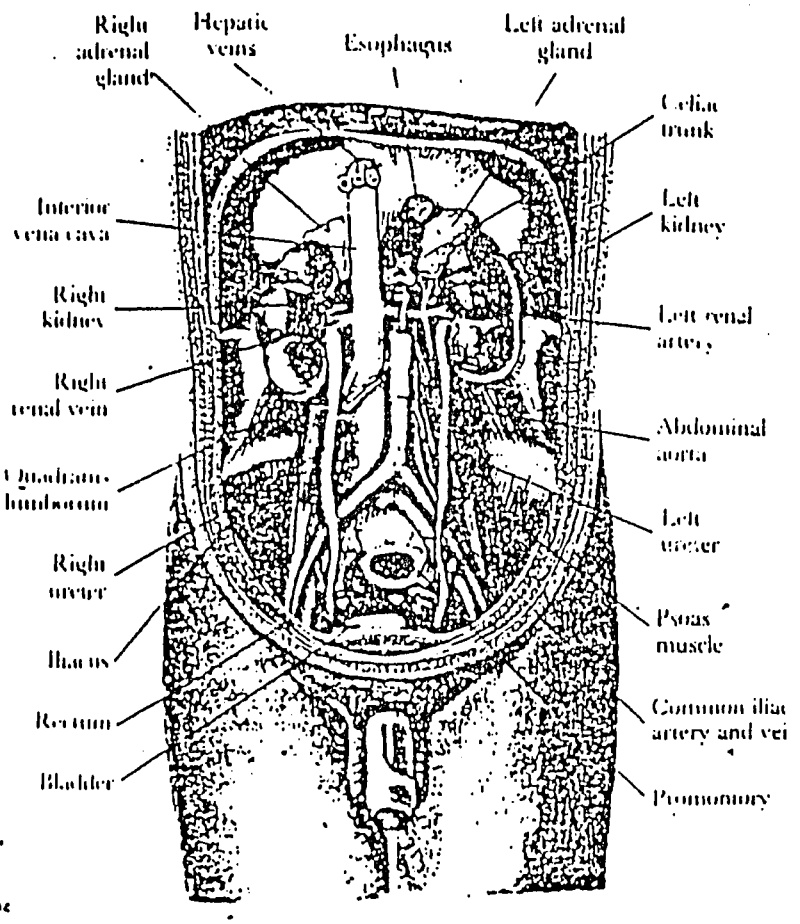


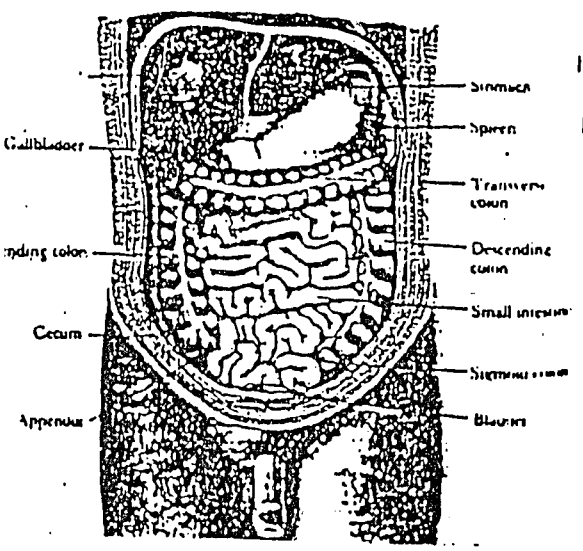
d.	Percuss the abdomen. Note: Patient sits for CVA percussion.	Normal percussion	Shifting dullness for ascites, tenderness with costo-vertebral angle percussion

BEST AVAILABLE DOCUMENT

e. Inspect the anus Normal appearance Enlarged anal vessels (hemorrhoids), irritation or anal fissures





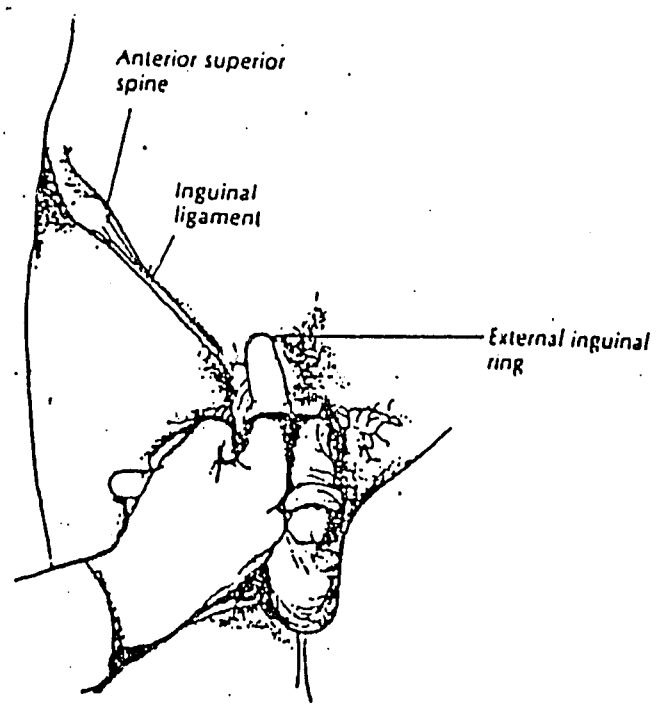


Examination of the Male Genitals

You will inspect the male genitals and if there is any question of urinary infection or prostate problems, you will palpate the genitals. If there is any swelling of hernia, you will check for these.

BEST AVAILABLE DOCUMENT

		NORMAL	ABNORMAL
a.	Inspect the male genitals	Normal appearance	Skin lesions, redness, swelling. Foreskin will not retract. Lump, soreness, discharge.
b.	Palpate the male genitals	Normal anatomy	Abnormal anatomy. Tenderness of testes or spermatic cord
c.	Palpate the prostate gland	Normal anatomy	Soft tender prostate gland. Enlarged or irregular gland
d.	Check for hernias	There is no viscus protruding through the oval external ring when examined digitally	Visible swelling. Unable to push back into place.



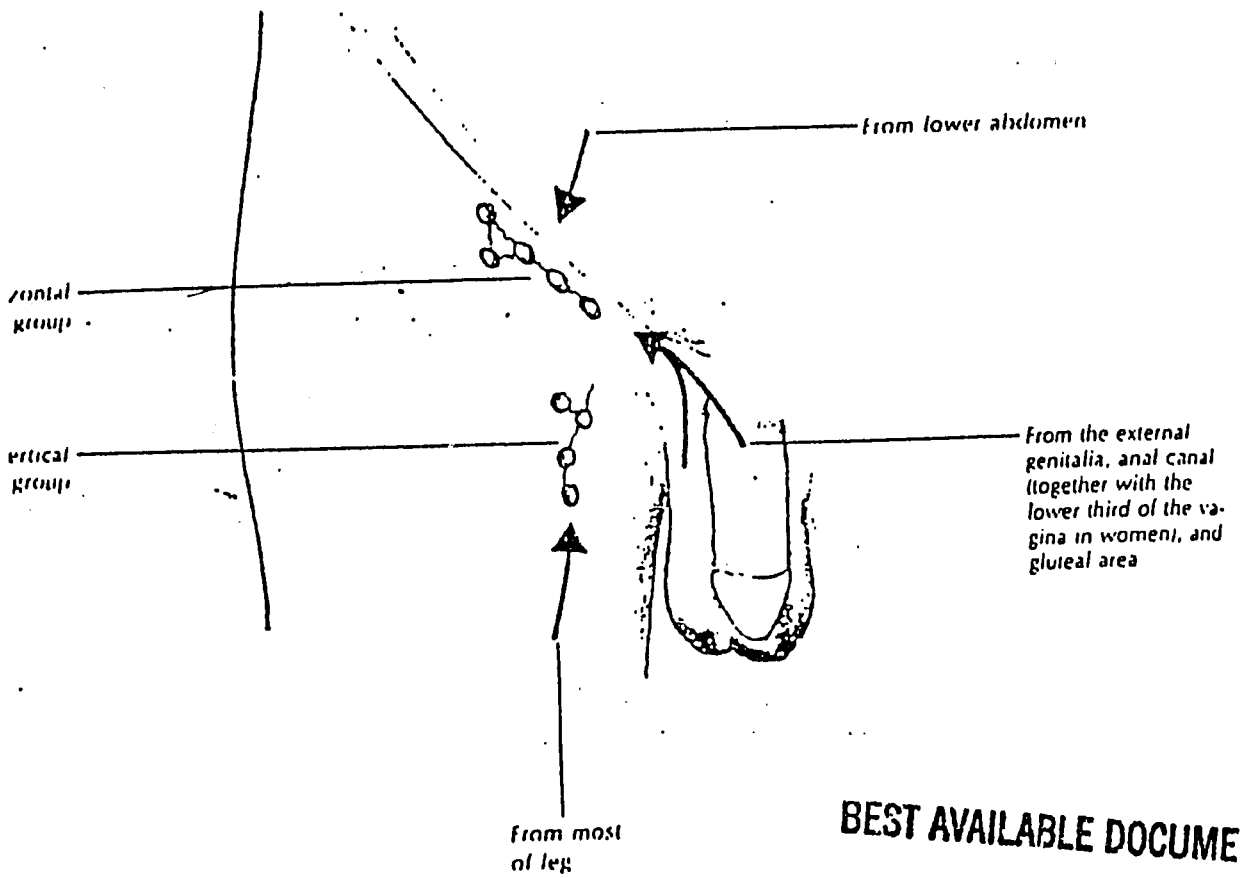
BEST AVAILABLE DOCUMENT

Examination of the Legs

Note: This is the second half of the procedure of examining the arms and legs (extremities) of the patient.

You will inspect and palpate the legs. The patient is normally sitting on the edge of the examination table for the procedure.

		NORMAL	ABNORMAL
a.	Inspect the legs	Normal anatomy and range of motion	Swelling, lesions/ ulcers/varicose veins.
b.	Palpate the legs.	Normal anatomy	Pitting edema Increased temperature or cold
c.	Cneck inguinal lymph glands	None present	Present



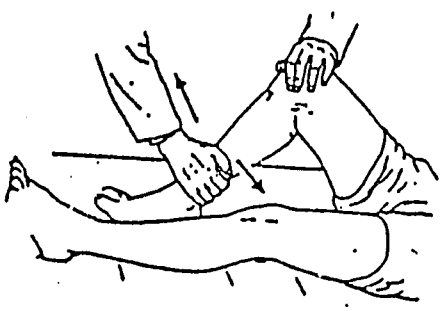
BEST AVAILABLE DOCUMENT

Examination of the Musculoskeletal System

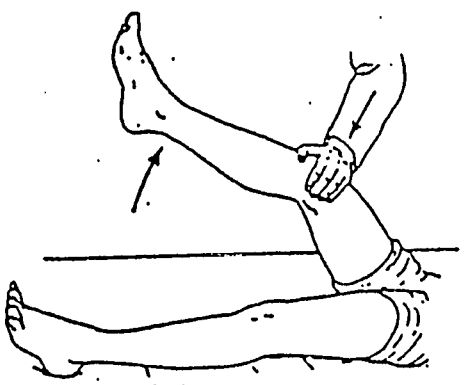
Note: This is normally done throughout the exam which you have just completed. In addition, the patient is now asked to stand so that the spine can be examined and general disability can be looked for.

You will inspect and palpate the musculoskeletal system. The patient is normally standing.

		NORMAL	ABNORMAL
a.	Inspect the MSK system. Note: Examine the patient first from the front, then the back. Ask the patient to bend forward at the waist. Watch how the patient walks.	Normal anatomy and range of motion	Abnormal bone, joint, or muscle anatomy. Pain with movement.
b.	Palpate the MSK system	Normal palpate anatomy	Roughness felt when a joint is moved. Swelling, tenderness, or increased temperature over a joint.



Checking the Hamstrings (Flexors of the Knee)

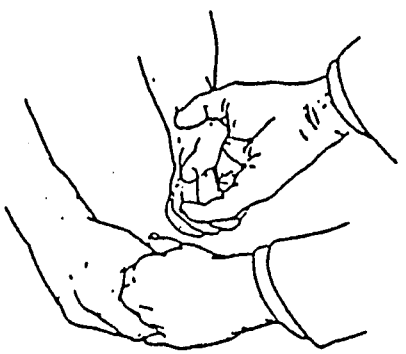
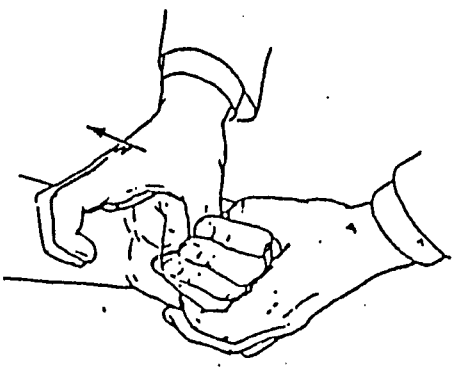


Quadriceps Muscle

BEST AVAILABLE DOCUMENT

ination of the Nervous System

ination of the nervous system involves several special niques. Ask the patient to sit on the edge of the ination table.

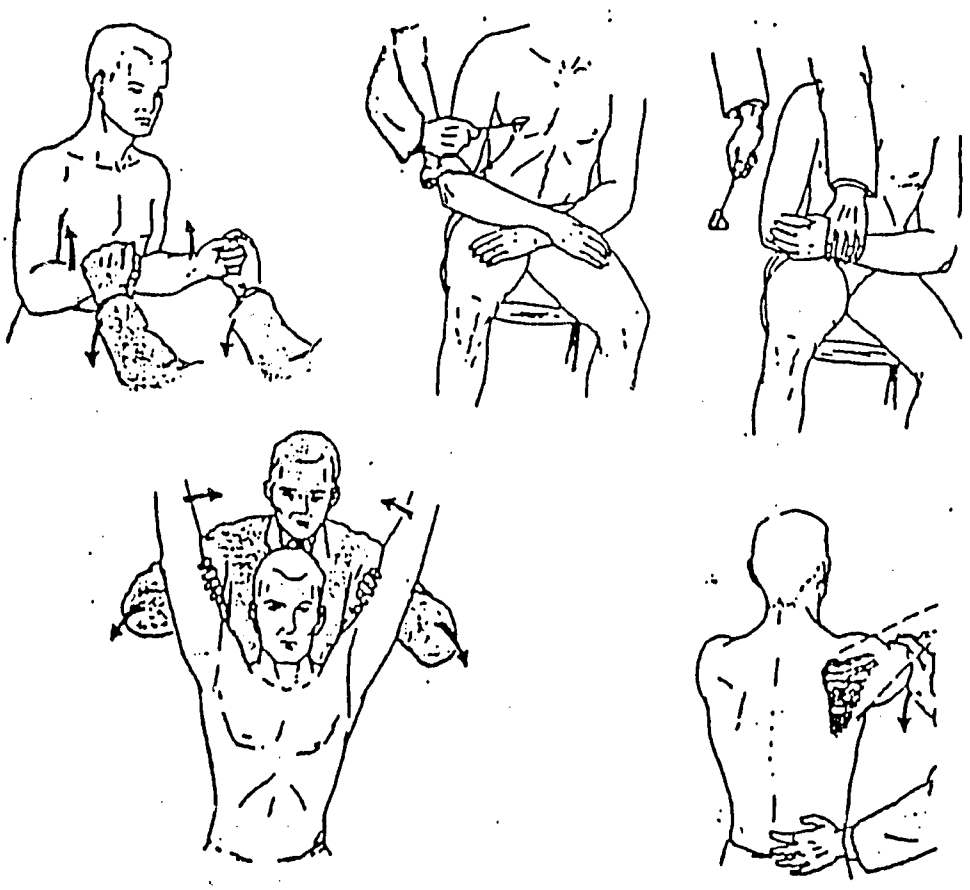
	NORMAL	ABNORMAL
A screening test of the cranial nerves is normally done with the exam of the eyes, mouth, throat and shoulders.	Normal movement and strength	Weakness, poor or asymmetrical movement
Test for muscular strength: abduction of shoulders -flexion of elbow -have patient grip two of your fingers on both hands -flexion of hip -extension of knee -plantar flexion of foot Note: Muscles strength is tested throughout the exam	Normal muscular strength 	Muscle weakness 
Test deep tendon reflexes at forearm and knee	Normal reflexes	Increased, decreased or asymmetrical reflexes

BEST AVAILABLE DOCUMENT

d.	Sensation can be tested using a sharp object. Cotton can also be used to test sensation	Normal sensation	Inability to feel sharp object on skin, or to know that it is sharp. Inability to tell that cotton has touched skin
e.	Nerve enlargement can be felt for at the neck, elbow, wrist, knee and ankle	No palpable nerves	Enlarged nerves
f.	Examine for nerve tenderness	No nerve tenderness	Tenderness over the sciatic notch area, tenderness with straight leg raising
g.	Examine for meaningeal Irritation - have patient touch chin to chest	No stiffness or pain	Neck stiffness, with neck movement

BEST AVAILABLE DOCUMENT

h.	Have the patient do rapid alternating movements by turning hands palm up and down in rapid succession	Able to do evenly	Abnormality indicates cerebellar disease



EXAMINATION OF THE EAR AND USE OF THE OTOSCOPE

When you examine the ear:

1. Start by carefully looking at the outer ear and the surrounding scalp.

BEST AVAILABLE DOCUMENT

2. Then examine the external ear canal and the ear drum.

3. Things to look for:

   a) crusty weeping rasn of ear canal (otitis externa)
   b) discharge (otitis externae or perforated eardrum)
   c) wax or small object in ear canal.
   d) look behind the earlobe at the mastoid area (mastoiditis)

4. You must have good light and some magnification to look inside the ear, so an otoscope is used.

B. <u>Appearance of normal eardrum:</u>

1. It is greyish and looks thin and transparent. Small blood vessels can be seen towards the outer edges.

2. You should see a yellow-grey line going forwards and backwards at the top end of the ear drum. This is the first middle ear bone.

3. There will be a bright light reflection at the bottom of the eardrum. It looks like a triangle of light.

C. <u>Appearance of an abnormal eardrum:</u>

1. Bulging (swollen), red and loss of light reflection

2. Pus or mucus behind the eardrum

3. Torn eardrum or a hole

D. <u>How to use an otoscope:</u>

1. Make sure the otoscope light is working.

2. The otoscope should be held like a pen, between the thumb and the index finger, with the little finger side of the hand resting gently against the side of the patient's head.

BEST AVAILABLE DOCUMENT

a) If the patient moves suddenly, holding the otoscope in this way prevents the speculum (ear piece) from digging into the ear canal and causing pain.

3. Use the largest speculum that will fit in the ear canal comfortably without causing pain.

4. To insert the otoscope easier, straighten the ear canal by:

   a) Pulling the earlobe BACKWARDS and UPWARDS for an ADULT

   b) Pulling the earlobe BACKWARDS and UPWARDS for a CHILD.

5. To prevent pain, slide the otoscope into the ear slowly, trying not to touch the ear canal with the speculum.

6. Position a child so he cannot move:
   a) sit him sideways on his mother's knees
   b) rest his head on his mother's knees
   c) place one of mother's hands over his head and the other around his body.

   d) the child usually caries, so save this procedure till last.

<u>To test for deafness:</u>

1. For adults and children:

   a) Ask the patient to block one ear with his finger, then whisper into the other ear.

   b) Then, do the same test for the other ear

   c) You can also rub hair between your fingers beside the unblocked ear.

2. For small children:

BEST AVAILABLE DOCUMENT

a) Rustle paper to one side of the babies head and see if he turns to look at the noise.

History Taking
All Students Together

emon: Complete history 1/2 hr
(real patient)

eview History and P.E. From Yesterday 1/2 Hr

ractice Complete history and review of systems on each other-not he same student you have done before.
/2 Hr each student

ne week of History and Physical Exam on real patients.

HX and P.E. Practical
With real patients x/wk

Groups of 4-5 with one doctor/nurse/P.A.
Groups OPD Class room
Group each exam/training room OPD

ach Group
sheet
charpoi or tooshak
pillow
basket
otoscope with batteries
cotton balls
blue basin
bottle savlon
towel
set lab requisition papers U/A, Hemo, Stool, AFB, X-ray

ed a screen to divide 2 groups in classroom

ing two patients at a time for each group. Bring green card, D card with pt. When finished with morning - All cards must go ck to OPD filled out.

BEST AVAILABLE DOCUMENT

VITAL SIGNS

tal Signs Include: Temperature, Pulse, Respiration and Blood Pressure.

MPERATURE

Temperature: Is the measurement of heat expressed in degrees. Body temperature is the degree of heat maintained by the body. The center for heat regulation in the body is situated in a part of the brain: Hypothalamus.

To take the temperature you can use different sites on the body:

a. Under the tongue: oral thermometer
b. under the armpit: axial
c. in the anus: anal - for babies and young infants. It is the safest way and it gives the actual body temperature.
d. in the groin

Temperature Readings

a. A temperature below 36C is subnormal (called Hypothermia).
b. 36 to 37C is a normal temperature
c. Above 37.5C is fever
d. Hyperthermia: is a high temperature superior to 40C
e. Rectal temperature will be about 0.5C higher than oral temperature, and 1C higher than the temperature taken in axilla or groin.

Grading of Temperature

(35C) 95F or below----------Collapse
(35C) 95F to 97F (36C)----------Subnormal
(36C) 97F to 99F (37.2C)---------Normal
(37.2C) 99F to 101C (38.3C)------Mild Pyrexia
(38.2C) 101F to 103F (39.4C)-----Pyrexia
(39.4C) 103F to 105F (40.5C)-----Hyperpyrexia

BEST AVAILABLE DOCUMENT

Thermometers

a. Thermometers usually contain mercury, as this fluid reacts readily with heat and cold: it is the degree of expansion or contraction of mercury against a definite scale that counts the degree of head (i.e. temperature).

b. Two grades are used, but in both boiling and freezing point of water are fixed.

c.

Scales:	Boiling Point:	Freezing Point:
Fahrenheit Scale	212	32
Centigrade Scale	100	0

d. To convert Fahrenheit into Centigrade:

$$C = \frac{(F - 32) \times 5}{9}$$

e. To convert Centigrade into Fahrenheit:

$$F = \frac{C \times 9 \text{ Plus } 32}{5}$$

Conversion Table

Fahrenheit:	Centigrade:
95	35
96	35.5
97	36
98	36.6
99	37.2
100	37.8
101	38.3
102	38.8
103	39.4
104	40
105	40.5
106	41
107	41.6
108	42
98.4	36.9

5. General Instructions for taking Temperature:

a. Temperature, pulse and respiration are taken twice daily: or

b. Every 4 to 6 hours if there is an indication of change in the patient's condition.

c. The patient must always be at rest, either sitting or lying down when taking temperature.

d. If the temperature is unexpectedly high or low, take it again with another thermometer to be sure.

e. Axillary temperature is the least accurate method. Never use this method within 30 minutes after bath.

f. Don't leave the patient while the thermometer is in use.

6. Use of Thermometer

a. Before using the thermometer see that the mercury does not register above 97F (36C).

b. Grasp the thermometer safely by the upper and (never hold it by the bulb).

c. Flex the hand and give a quick sudden movement of the wrist.

d. Do not shake the mercury below 95F as it may be difficult to get it up again.

e. Be careful not to let the thermometer fall or strike against anything.

f. Don't leave the patient while the thermometer is in use.

Taking Temperature

a. In the mouth

1. Place the end of the thermometer containing the mercury under the tongue, because here it will be close to larger arteries.

2. See that the lips are kept tightly closed and the patient breathes through the nose only.

3. Leave the thermometer in this position until the mercury reaches a constant height, about 3 to 5 minutes.

4. No hot or cold drinks should be given for 10 minutes.

Before the thermometer is used.

Note: Temperature in mouth should not be taken:

a. Young children
b. Delirious patients
c. Patients who cannot breathe properly by nose
d. Patients who had operations in mouth or mouth is inflamed or has sore
e. Hysterical patients
f. Comatose patients

b. <u>In the Axilla or Groin</u>

1. The part must be dried
2. The bulb of the thermometer is carefully placed in position and the arm brought across the chest and kept there. The bulb <u>must</u> press up against the skin in the armpit!
3. The patient can support the elbow with other hand, but if the patient is too weak the nurse do it for him.
   - If the groin is used the legs must be crossed at the knees. The tight must be well flexed over the abdomen.
4. Leave thermometer in position for 5 minutes

<u>In the Rectum</u>

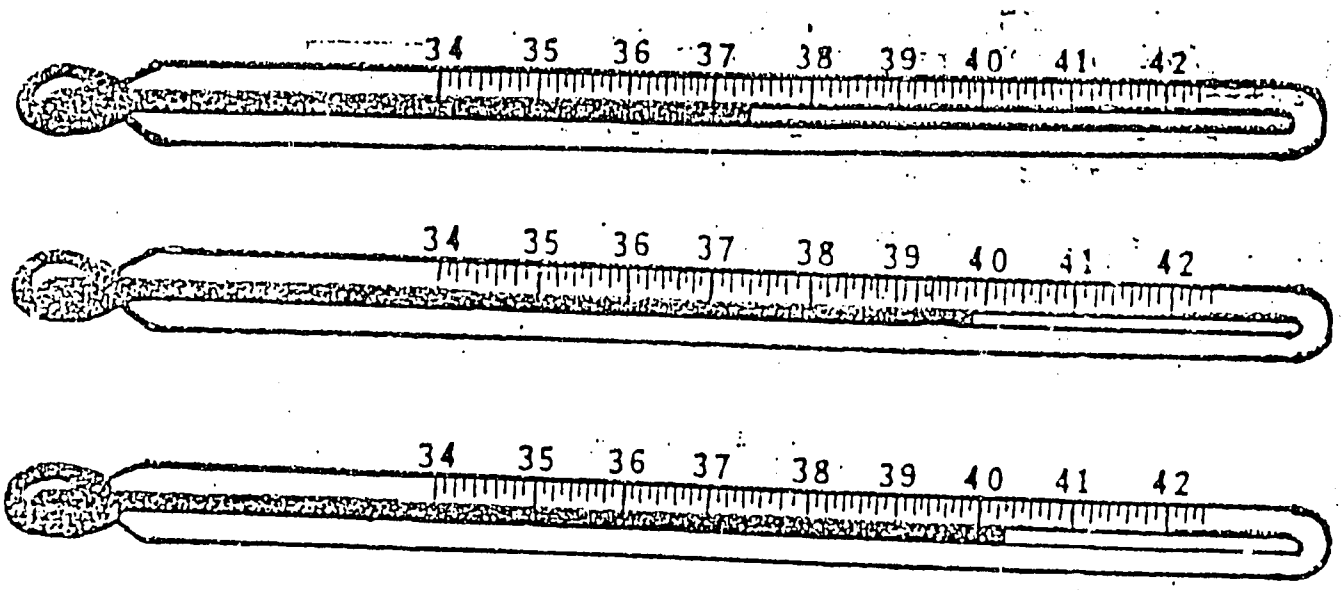
1. The rectum must be empty of faeces
2. Lubricate the special rectal thermometer
3. Insert 1 1/2" and should be held in position for 2 minutes.
4. It should be well washed after use. This method is used in:
   a. Children
   b. Restless, delirious and hysterical patients.
   c. Very ill of toxic patients

8. Care of Thermometer after use

a. Wash the thermometers well with cold water and soap. It is the mechanical action of washing with soap and water that cleans them, not the solution used for storage.

b. Place the thermometers in antiseptic solution for storage.

c. Keep them in a container with cotton wool at the bottom for the fragile bulb to rest on. Fill the container with disinfectant. Make sure that the level of the disinfectant is high enough for the whole thermometer to be covered.



To read a thermometer:

1. Hold thermometer at opposite end of bulb with one hand.
2. Hold it up directly at eye level.
3. With your back to the light, rotate the thermometer back and fourth till you can see the markings on the scale.
4. The temperature is the point of the scale where the column of mercury ends.

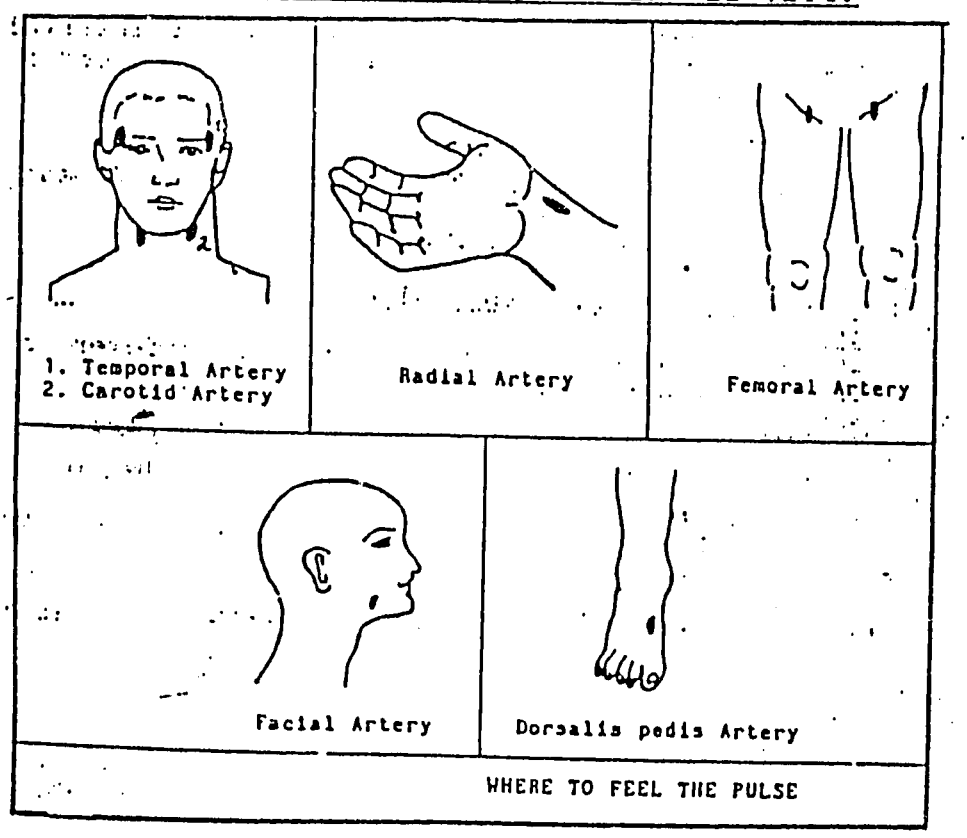
BEST AVAILABLE DOCUMENT

II. PULSE

1. Pulse beats are caused by the contraction of the heart. The blood is forced into the arteries each time the heart contracts. This flow of blood can be felt as PULSE where an artery passed over a bone near the skin surface. Pulse recording is very important, as pulse indicates heart action.

2. Pulse, (heart beat) gives an indication of the manner in which the heart is functioning. It is important to notice changes in the pulse rate. For example:
   a. Weak rapid, pulse means a state of shock.
   b. Very rapid, very slow or irregular pulse could mean heart troubles, fever.
   c. A relatively slow pulse in a person with fever (high) may be a sign of typhoid.
   d. The pulse gets much faster with exercise, and when a patient is nervous, has fever or acute pain.
   e. As a general rule, the pulse increases 20 beats per minute for each C degree rise in fever.

3. Common places where the pulse can be felt:



BEST AVAILABLE DOCUMENT

Terms used in Connection with Pulse:

a. Pulse Rate

Number of heart beats counted over a period of 1 minute.

b. Normal Pulse Rate:

Adult	60-80	(72) per minute, but may vary with age or exercise.
New born babies	140	
One year old child	120	
2-5 year old child	100	
5-7 year old child	90	
10-12 year old child	80	
In old age	60-50	

As a rule the ratio of the pulse to respiration rate is 4 pulse beats to every respiration.

Characteristics of Pulse

a. Rate: Whether normal, rapid or slow.

b. Quality: Weak or strong

c. Rhythm: Rhythm refers to the time between pulse beats:
- a REGULAR pulse has EQUAL intervals.
- an IRREGULAR pulse has UNEQUAL intervals.

d. Volume: Volume refers to the amount of blood in the arteries.
- FULL volume: lot of blood
- SMALL volume: less amount of blood

e. Tension: Tension refers to the force of heartbeat.
- STRONG beat: high tension pulse
- WEAK beat: low tension pulse.

Terms used in describing the pulse:

a. Tachycardia:

This is an abnormally rapid pulse e.g. in fever, shock, haemorrhage, heart disease.

b. Bradycardia:

This is an abnormally slow pulse, e.g. in heart disease, brain injury.

c. Weak Pulse:

The pulse is very small and difficult to feel. Volume and tension are both low.

d. Irregular Pulse:

The Rhythm is not the same for all beats, or pulsations vary in force.

Counting Pulse Rate:

Procedure:

a. Make the patient comfortable, either in bed or in a chair, with his forearm supported on a table of a pillow.

b. Place index, middle and 4th fingers over the pulse, about 2 inches proximal to the root of the patient's thumb.

c. Place your own thumbs at the back of the wrist as a support.

d. First get used to the "feel" of the pulse, then start counting.

e. Use a watch which has a second hand.

f. Count the beats for 1/4 or 1/2 minute and multiply the figure obtained by 4 or 2 respectively. Count an irregular pulse for one full minute.

Points to remember:

a. Do not apply too great a pressure.

b. Never take a pulse with your thumb. There is an artery in the thumb, and you may count your own pulse.

c. If the pulse appears abnormal, count it for one full minute.

d. Report immediately any pulse rate below 40 or above 100 (in an adult), or when you cannot feel the pulse at all.

RESPIRATION

1, Respiration means the exchange of gases (oxygen and carbon) between an organism and its environment

a. Inspiration is the act of breathing in.

b. Expiration is the act of breathing out.

By observing the respiration rate, the health worker can deduce many factors concerning the condition of the patient's oxygen supply.

2. Characteristics of Normal Respiration:

a. Rate: New born baby.....40 per minute
One year old.....30 per minute
2-5 years old.....24 to 28/minute
Adult.....16 to 24/minute
Slightly higher in women than in men

b. Moderate in depth: neither shallow nor deep.

c. Quiet: no wheezing, grunting or sighing.

d. Regular rhythm.

e. Comfortable: no pain or difficulty in breathing.

3. Terms:

a. Dyspnea: difficult respiration

b. Apnea: absence or lack of breathing
Stertorous breathing: noisy breathing

c. Anoxia: lack of oxygen in the tissues

d. Cyanosis: is a blue color of skin and mucosa (lips, ears, extremities) due to decreased amount of oxygen, being carried in the blood.

4. Abnormal Respirations

a. Signs and Symptoms

1. Deep/slow respiration
2. Shallow/Rapid respiration
3. Labored: Difficult and sometimes painful and noisy
4. Dyspnea: The breathing is difficult, noisy and uncomfortable and sometimes painful.

- Often have cyanosis or blueness and this is noticed in lips, ears, fingers and toes.

b. Causes for abnormally increased Respiration:

1. Fever
2. Heart disease
3. Lung disease
4. Anaemia
5. Haemorrhage and shock

6. Abdominal or thoracic pain
7. Hysteria and nervousness
8. Strenuous exercise

c. Causes for abnormally decreased Respiration:
1. Brain injuries
2. Coma (Unconsciousness)
3. Ceratin drugs, e.g. Opium
4. Rest, sleep and fatigue

5. Counting Respirations

a. The respiration rate can be controlled by the patient at will. Therefore, count it without his knowledge.

b. After counting the pulse rate, the nurse should leave his finger on the pulse and pretend to be still counting, but really she is counting the respirations. A strike and fall of the chest is counted as one, so taken the number of respirations for 1/2 minute and multiply by two, except where the respiration is irregular. If the chest movements are not clearly visible, the abdominal movements may be watched instead.

c. When counting the respirations, note:
- Rate
- Regularity
- Any pain or difficulty in breathing (Dyspnea)
- Any sounds, e.g. wheezing
- Depth

IV. BLOOD PRESSURE

1. Definitions

a. Blood Pressure
The force exerted by the blood against the walls of the blood vessels as it flows through them.

b. Systolic Pressure
It is the highest degree of pressure exerted by the blood against the artery walls as the left ventricle contracts and forces the blood from it to the aorta.

c. Diastolic Pressure
It is the lowest degree of pressure when the heart beat is in its resting period. just before contraction of the left ventricle.

d. Pulse Pressure

The difference between systolic and Diastolic Pressure.

e. Hypertension

Is a condition of abnormally high blood pressure

f. Hypotension

Is a condition of abnormally low blood pressure

2. Normal blood pressure

adult, 120/80 mm Hg

1. Systolic 120 mm Hg
2. Diastolic 80 mm Hg
3. Pulse Pressure 40 mm Hg

b. At the age of 60 years, approximately 140/90

c. Rough estimation: Is usually age + 100, but above 150 for the ages of 60 and above is high.

3. Reasons for Blood Pressure

a. To push the blood through the blood vessels of the body to supply nourishment and oxygen.

b. To help in the blood filtration process.

4. Variations in Blood Pressure

	Systolic	Diastolic
Subnormal:	Below 90	Below 50
Normal:	90 - 140	50 - 100
Slightly high:	150	110
Moderately high	180 -190	115 -120
Very high:	200 -250	130 -160

5. Factors Causing Variations

a. Age

1. Children - much lower
2. Young adult - 120/80
3. Old adults - 140/90

b. Sex

In men slightly higher than in women.

c. Body build

Obese show higher BP.

d. Exercise

Muscle exertion (activity) increases the BP.

e. Emotion

a. Fear

b. Worry Sharp, temporary rise in BP

c. Excitement

f. Kidney, liver and heart diseases increase the BP permanently.

g. Haemorrhage

It lowers the BP

h. Shock and collapse

It lowers the BP

6. <u>The factors maintaining the BP</u>

a. Pumping force of the heart

b. The elasticity of the walls of the blood vessels (arteries)

c. The viscosity of the blood

d. Total volume of the blood

7. <u>Measurement of BP</u>

a. It is measured with a Sphygmomanometer which has

1. Rubber bag (cuff)
2. Hand bulb for inflating the cuff
3. An escape valve
4. A manometer

b. A stethoscope is also required.

8. <u>General Points to remember when taking a B.P.</u>

a. Have the room as quiet as possible

b. The following things can cause an artificially high blood pressure reading:

- Pain
- Anxiety
- Exposure to cold
- Exertion
- Eating
- Smoking

c. Blood pressures may vary due to position - standing, sitting or lying down. It is preferable to have the patient sit or lie down.
(Orthostatic hypotension) - the lowering blood pressure when the patient moves from a sitting to a standing position.)

d. Whether sitting or standing, have the arm supported at the level of the heart.

e. The brachial artery at the elbow of the arm is usually the chosen site to take a BP.

f. If you get an abnormal BP reading, take the BP in both arms. There is usually a 5-10 mm Hg difference between the arms.

g. Mistakes causing a false LOW BP reading:
1. BP cuff too wide
2. A false LOW SYSTOLIC reading can be caused by:
   - not inflating the cuff high enough
   - deflating the cuff too quickly
   - stethoscope not completely flush to skin

g. Mistakes causing a false HIGH BP reading:
1. Cuff too narrow
2. Cuff wrapped too loosely
3. A false HIGH DIASTOLIC BP reading can be caused by:
   - Deflating cuff too slowly or too fast
   - Stethoscope not completely flush next to the skin

i. Pumping the cuff very high is painful. The approximate systolic pressure can be found as follows:
1. Feel for the radial pulse.
2. Inflate the cuff till the pulse disappears - this will be the approximate systolic BP.
3. Inflate the cuff another 20-30 mm Hg and slowly delate the cuff and note point when pulse reappears.
4. Delate cuff and wait 30 seconds
5. Take BP, inflating cuff 30 mm Hg above palpated systolic BP.

j. Because of the many factors which can cause an artificially high BP reading, do not consider a person to have high blood pressure from one reading. Take his BP again in 1/2 - 1 hour. If it is still high, have him come back every day at the same time for one week. Take his BP in the same arm and in the same position. His

normal BP will be the average of those seven BP readings.

k. If it is impossible to take a BP on the arm due to injuries etc, you can take it behind the knee or the leg, <u>only</u> if the cuff is wide enough and encircles the <u>thigh</u> completely. Put the stethoscope on the popliteal artery behind the knee. The bladder of the cuff must be on the back side of the thigh. (Systolic BP of the thigh may be 10-40 mm Hg higher than in the arm, but the diastolic will be essentially the same.)

l. If you have problems hearing the correct BP when deflating the cuff, do NOT continue to inflate the cuff again - this will cause a false reading! Deflate the cuff completely and start again, after waiting one minute. This allows time for the veins to refill with blood.

9. <u>Procedure for taking Blood Pressure</u>

a. Explain procedure to patient and have him lie or sit down.

b. Have arm at heart level.

c. Expose arm, removing any constricting clothing.

d. Palpate brachial pulse at elbow. Place the bladder of the cuff 2.5 cm (1 inch) above the artery.

e. Wrap the deflated cuff evenly and snugly around upper arm.

f. Inflate cuff 30 mm Hg above approximate systolic pressure (as found in 8.i, above).

g. Place stethoscope over brachial artery at elbow, flush next to the skin.

h. Slowly release valve - at rate of 2-3 mm Hg/second.

i. Note point that first clear sound is heard - this is the systolic reading.

j. Note the point that the sounds disappear - this is the diastolic reading.

k. Then deflate the cuff rapidly and remove from arm.

Equipment for Practice:

FA bags with thermometer

5 extra BP cuffs
5 extra thermometers
Alcohol cotton balls — 1 each group
Paper for recording — 1 each student

One day - temp
One day - pulse and Resp
One day - BP

Administration of Drugs

PHARMACOLOGY

I. Definition

1. Medicines or drugs - they are chemicals that have been found to help the body fight different diseases.
2. Pharmacology - Science that deals with the study of the properties and effects of drugs.
3. Drug therapy - is the art of treatment of disease with medicines.
4. Pharmacy - concerned with the preparation and dispensing of drugs.

II. Importance (uses) of Pharmacology

1. To understand the mode of action, side-effects and toxicity of different drugs.
2. To contribute to our understanding of health and disease.
3. To provide knowledge to the physician and health worker in proper selection of drugs.
4. To acquire safer and better medical treatment
5. Right and wrong uses of modern medicines
   a. Some medicines sold in pharmacies or village stores can be very useful. Others are of no value. Also, people sometimes use the best medicines in the wrong way, so that they do more harm than good. To be

helpful, medicines must be used correctly.

b. Many people, including most doctors and health workers, prescribe far more medicines than are needed - and by so doing cause much needless sickness and death.

c. There is some danger in the use of any medicine.

d. Some medicines are much more dangerous than others. unfortunately, people sometimes use very dangerous medicines for mild sickness. (I have seen a baby die because his mother gave him a dangerous medicine, chloramphenicol, for a common cold.) Never use a dangerous medicine for a mild illness.

e. Remember: Medicines can kill

f. Guidelines for the use of medicines:

1. Use medicines only when necessary.
2. Know the correct use and precautions for any medicine you use.
3. Be sure to use the right dose.
4. If the medicine does not help, or causes problems, stop using it.
5. When in doubt, seek the advice of another health worker.

Note: Some health workers and many doctors give medicines when none is needed, often because they think patients expect medicine and will not be satisfied unless they get some. Only use a medicine when you are sure it is needed and when you are sure how to use it.

III. <u>Medicine Names</u>

Medicines have two (2) types of names

1. Generic name
2, Bazaar or commercial name

1. The <u>generic name</u> is the real name of the medicine and describes what it is. This is the most important name of the medicine because it is used all over the world.

Examples: Penicillin
Magnesium Trisilicate
Acetaminophen
Acetylsalicylic acid

2. The <u>bazaar name</u> is the name given to the medicine by the factory that makes it. Each medicine has many bazaar names like each box of cigarettes has many names. One medicine with a generic name may have one or more bazaar names.

Examples:

Oracillin = Penicillin
Penioral

Trigel = Magnesium trisilicate
Trisil
Vermox = Mebendazole

Aspirin
Disprin - Acetylsalicylic acid

Chloromycetin = Chloramphenicol
Paraxin
Comycetin

IV. <u>How are medicine given?</u>

There are different presentations of medicines and different ways of taking them.

1. By mouth
2. By injections
   - under the skin (s.c.)
   - in the muscle (i.m.)
   - in the vein (i.v.)
   - in the skin (i.d)
3. On the skin
4. By inhalation
5. By rectum

A. <u>By Mouth</u>

1. Medicine starts working 30 minutes to one hour later
2. Presentation: tablets, capsules, syrups
   a. tablet - they can be divided to reduce the dose
   b. capsule - covered in plastic
      - more difficult to divide
   c. syrup - only for children less than 5 yrs.
      - expensive

- difficult to transport : heavy and breakable
- syrup is NOT better medicine than tablets

B. By injections:

1. Some medicines like vaccines can only be given this way because they are destroyed in the stomach

2. Presentation: solution or powder in a small glass bottle. The powder should be mixed with sterile water (5-10 ml). Solution (Ampules) do not need to be dissolved.

3. Subcutaneous: medicine starts working in 2-3 minutes.

4. Intramuscular: Medicine starts working in 5-15 minutes Duration of action longer than IV.

5. Intradermal: Used to test for allergy to a medicine (Ex: Penicillin. Ampicillin, ATS)

6. Intravenous: medicine starts working in 1-5 minutes
   - must use sterile needles and syringes
   - must inject slowly over 5-10 minutes danger of acute severe allergic reactions.
   - Only inject t in vein, not in artery

C. On the Skin.

1. These are called topical preparations
2. Presentation: creams, ointments, solutions, drops
   a. Read instructions carefully to find out which part of the body it is safe to put the cream on.
   b. Some solutions are dangerous to the eyes, nose or genitals.
   c. Check you know the correct dilution by reading the label.

D. By inhalation.

1. The medicine is breathed into the respiratory tract
   Ex. Menthol crystals.
2. Presentation: Crystals added to hot water inhalations.

E. By rectum.

1. Because rectum is rich in blood supply, absorption is rapid.
2. Presentation: Suppository, Jelly, cream,ointment, enemas.
   - for hemorrhoids, and fissures.
   - some suppositories are used to lower a fever.
   - for x-ray procedures.
   - for convulsions (children under 5 yrs-valium)

Remember:

The quicker methods like injections are more dangerous than the slower methods like tablets, creams and inhalations. This is because the medicine go quickly to the heart and cause acute severe allergic reactions.

V. When should Medicine Not Be Taken?

Many people have beliefs: about things they should not do or eat when taking medicines. For this reason they may stop taking a medicine they need. In truth, no medicine causes more harm just because it is taken with certain foods - whether chili pepper, guava, oranges, or any other food. But foods with lots of grease or spices can make problems of the stomach or gut worse - whether or not any medicine is being taken. Certain medicines will cause bad reactions if a person drinks alcohol.

There are certain situations when, without a doubt. it is best not to use certain medicines.

1. Pregnant women or women who are breast feeding should avoid all medicines that are not absolutely necessary. (However, they can take vitamins or iron pills without danger).

2. With newborn children, be very careful when using medicines. Whenever possible look for medical help before giving them any type of medicine. Whenever possible look for medical help before giving them any type of medicine. Be sure not to give too much.
3. A person who has ever had any sort of allergic reaction hives, itching, etc. - after taking penicillin, ampicillin, a sulfonomide, or other medicines, should never use that medicine again for the rest of his life because it would be dangerous.
4. Persons who have ulcers or heartburn should avoid medicines that contain aspirin.
5. There are specific medicines that are harmful or dangerous to take when you have certain illnesses. For example, persons with hepatitis should not be treated with antibiotics or other strong medicines, because their liver is damaged, and the medicines are more likely to poison the body.
6. Persons who are dehydrated or have disease of the kidneys should be especially careful with medicines they take. Do not give more than one dose of medicine that could poison the body unless (or until) the person is urinating normally. For example, if a child has high fever and is dehydrated, do not given him more than one dose of aspirin until he begins to urinate. Never give sulfa to a person who is dehydrated.

VI. <u>DON'T's in Preparing and Giving Drugs:</u>

1. Don't give drugs without reading first the label of its container.
2. Don't place dangerous or poisonous drugs in the medicine cabinet or in areas within the reach of children
3. Don't use drugs which have already expired
4. Don't take drugs without knowing its indications.
5. Don't use sterile drugs when its container has been broken or opened
6. Don't place drugs in containers with different labels or names
7. Don't take in drugs in the dark
8. Don't use or give drugs when you are in doubt

9. Don't take in drugs more than what is required
10. Don't give or take drugs when its original color has changed or the smell has turned bad
11. Don't leave drugs and equipment to administer drugs (needles, syringe) unattended in patient's rooms, hallway or other areas accessible to anybody other than the health personnel.

VII. Drug Indications and Contraindications

Medicines can kill you. They are potentially very dangerous and should only be given to people who really need them to fight a specific illness.

1. Indications of the Medicine

a. Only the diseases that the medicine can be used for.
Ex:- gastritis and peptic ulcers are indications for the use of magnesium trisilicate.
- Pneumonia is an indication for penicillin ampicillin
- Malaria is an indication for chloroquine

2. Contraindication for Medicines

a. For the people and diseases that the medicine must not be used for
Ex. Tetracycline tablets are contraindicated for women of child bearing age and children under 7 yrs.
- This is because the tetracycline will damage the teeth of the unborn child and all children under 7 yrs.
Tetracycline is also contra-indicated for people with kidney disease because they are not able to levels in the blood.

b. Take caution in giving medicines to people who have history of food or drug allergy. If you give a medicine to a person in which it is contraindicated that person will become very sick or even die. A lot of medicines are contia-indicated in children and old people because their livers and kidneys are not able to cope.

*Study your drug information sheet so that you know the indications, contra-indications and side effects of all the medicines we use in the clinic.

3. Side Effects of Medicines

a. Medicines have good effects and bad effects on the body. The good effects are the medicine helping to fight the disease

b. Side Effects: The side effects are the bad effects of medicine.

1. Example.
   The side effects of Penicillin are diarrhea and allergic reactions.
   The side effect of Aspirin is gastritis.
2. If the side effect is mild the patient can continue taking the medicine. For example, a little diarrhea should not stop the patient taking Penicillin. If the side effect is severe, then you should advise the patient to stop taking the medicine.
3. Allergic reactions - one of the side effects of many medicines
   - Characterized by itchy rash, itchy eyes, sneezing, blocked nose or skin rashes.
   - If a patient has a history of allergy to a medicine, they should avoid taking it
   - Many people have an allergy to Penicillin so should not take Penicillin or Ampicillin because they come from the same family of medicine.
   - Sometimes a person has a severe allergy with shock or bad asthroa
4. *Always refer to your drug information sheet when giving medicines to patients.

The Dose of Medicine:

1. The dose is the number of milligrams in one tablet, capsule or 5ml of syrup. Always check the dose of the tablets, capsules, or syrups on the medicine label. The doses are often different with different bazaar names.

a. For example if it says on your information sheet to give one 250mg, Penicillin V tablet and the medicine label says there are only 125 mg in one tablet, you must give 2 tablets to get the right dose.

2. Know or get the weight of the patient before giving medicines

- The weight reflects the actual size of the person. It is a safer guide to medicine doses than the age. This is especially true in children who are often malnourished with a small body for their age. If they have a small body and you give a dose of medicine according to their age you may overdose them.
- If you do not have weighing scales available then give the dose according to age.

3. Children need lower doses of medicines than adults in the same way that they need less food because their bodies are not as big. Their kidneys and liver are smaller and - See chart on next page.

4. <u>Recommended Body Dose</u>

a. Penicillin = 100 mg/kg/day in 4 doses
= 100.000 units/kg/day

b. Ampicillin = 100mg/kg/day

c. Acetaminophen = 5-10mg/kg/dose

d. Diazepam = 0.2-0.4 mg/kg/dose

e. Aminophylline = 4 mg/kg/dose

f. Trimethoprin = 10mg/kg/day
Sulfamethoxazole = 50mg/kg/day

g. Chloramphenicol =50-100mg/kg/day in 4 divided doses

h. Tetracycline =25-50mg/kg/day

i. Metronidazole = 40-50mg/kg/day

j. Chloroquine = 10mg/kg/day initially, then 5mg/kg after 6 hrs, then 5mg/kg on next day, then 5mg/kg in day after next.

k. Promethazine = 0.25mg/kg/dose

5. This chart shows the information in prescrobing a medincin ebased on age and weight.

CHLOROQUINE: Proquine
DOSE FORM: 250 tab (150 mg base) 80 mg/5 ml wyrup (50 mg base)

AGE	1-11 months *	1-4 years *	5-15 years *	ADULT
INITIAL DOSE 10 mg/kg	1/4-1/2 tab 2-5 ml syrup (1/2-1 tsp)	1/2-1 tab 5-10 ml syrup (1-2 tsp)	2-4 Tab	4 Tab
AFTER 6 HOURS 5 mg/kg	1/8-1/4 tab 1 ml-2.5 ml	1/4-1/2 tab 2.5-5 ml (1/2-1 tsp)	1-2 Tab	2 Tab
DAY 2 5 mg/kg	1/8-1/4 tab 1 ml-2.5 ml	1/4-1/2 tab 2.5-5 ml (1/2-1 tsp)	1-2 Tab	2 Tab
DAY 3 5 mg/kg	1/8-1/4 tab ml-2.4 ml	1/4-1/2 tab 2.5-5 ml (1/2-1 tsp)	1-2 Tab	2 Tab
COMMENTS	*Chose the lower dose range for smaller children. Unlike some infections, both mild and severe malaria are treated with the same dose. Overdose is fatal. Many cause nausea and vomiting. *NOTE: This chart recommends lower dosages, to be safe. If possible, weigh all children less than 12 years, and follow the mg/kg dosages recommended above.			
SAFETY IN PREGNANCY	Yes, only if you are convinced the patient has malaria			
INDICATIONS	1. Malaria 2. Suspected malaria in the case of prolonged fever or coma			

BEST AVAILABLE DOCUMENT

IX. Timing of Administration

1. Drugs are absorbed (through intestine. muscle and, skin) into blood and eliminated through kidneys (urine) or liver (bile juice)
2. Medicines are given a different number of time in a day - Some drugs have to be taken every 6 hrs, others only once a day.
   a. If a drug concentration in the blood becomes too low, treatment is ineffective
   b. If a drug concentration becomes too high, treatment is toxic
   c. Allergic reactions are independent of strength of drugs.
   d. There is a code for the number of times the medicine has to be given to be effective. If the medicines are given more often than their code in the information sheet, they will not be excreted fast enough by the liver and kidneys and will poison the patient.

   For Example:

   Code for Metronidazole is t.d.s.(3 times a day). If it is given q.d.s. (4 times a day) by mistake it will poison the body. If it is given b.d. (2 times a day) there will not be enough medicine to kill the microbes and the patient will not get better.

   e. Please follow therefore instructions concerning strength and timing of dosage.

   Example: one tablet 3 times a day (or one tablet every, 8 hrs.)

   Strength of dosage Timing of dosage

3. Note: Dosages per day should be spaced as equally as possible.

   6 times a day = every 4 hrs
   4 times a day = every 6 hrs
   day = every 8 hrs
   2 times a day = every 12 hrs

4. Always verify that drugs have the strength (mg base) that is needed, and adjust dosage if necessary.

a. Note: Adjust single dosage only, keep timing of dosages per day the same!

5. Codes:

	Code	How many times a day	How often	Example
q.i.d.	q.d.s.	4 times a day	every 6 hrs	Ampicill in
T.i.d.	t.d.s	3 times a day	every 8 hrs	Metronid azole
b.i.d.	b.d.	2 times a day	every 12 hrs	Mebendaz ole
q.d.	o.d.	once a day	every 24 hrs	Procaine Penicill in

X. <u>Duration in giving the medicine</u>

How long do you have to give the medicine for?

a. The information on Ferrous Sulphate states that you have to prescribe a 3 month course. This is because it takes 3 months to replace the iron stores in the bone marrow. There are many medicines that have to be given for a set length of time.

2. Examples:

TB medicine	must be given	1 year
Penicillin for tonsillitis	must be given	5 day
Chloroquine for Malaria	must be given	3 day
Mebendozale for worms	must be given	3 day
Pyrantel for worms	must be given	1 day

3. If you give these medicines for less than the stated time the microbes will not be killed and the infection will becomes chronic sometimes development resistant microbes. If TB medicine is stopped early then TB bacteria resistant to the medicine will start to grow.

4. Some medicines only need to be given once.

Example: Pyrantel measles vaccine measles vaccine

a. We use the code <u>STAT</u> for these medicines. They can usually be given in the clinic and we call them STAT doses.

5. Some medicines only need to be given when a certain symptom is present. These medicines are prescribed P.R.N. which means "when required"
   a. Example: Aspirin,
      - Aspirin is only prescribed p.r.n. for the symptoms of fever and pain and the patient should be told only to take Aspirin when he is having fever or pain.
      - The code for Aspirin is q.d.s. which means he must not take it more often than every 6 hours. Magnesium Trisilicate is prescribed prn for gastricitis pain.
6. Advice on when to take the medicine in relation to food
   a. Taking medicines on a full or empty stomach Some medicines work best when you take them on an empty stomach-that is one hour before meals. Other medicines are less likely to cause upset stomach or heartburn when taken along with a meal or right afterwards.

Take these medicines 1 hour before meals	Take these medicines together with or soon after meals.
- Penicillin	- aspirin and medicines that contains aspirin
- Ampicillin	- iron (ferrous sulfate)
- tetracycline	- vitamins
- Do not to drink milk an hour before or 2 hours after taking tetracycline.	- erythromycin
	- P.A.S.

Antacids do the most good if you take them when the stomach is empty, 1 or 2 hours before or after meals and at bedtime.

b. Some medicines combine with certain foods and are therefore not absorbed through the stomach. Tetracycline tablets should not be combined with dairy products such as milk and milk products since these products delay the absorption of the drug.

c. Some medicines harm the stomach wall
Example: Aspirin
- They should be taken with food so that food can protect the stomach wall.

I. Mode of action of different drugs

A. Fever and Headache
1. Analgesic - drug used to relieve pain
2. Antipyretic - medicine given to reduce fever
3. Anti-inflammatory - drug used to ease/reduce inflammation

B. Colds and Cough

1. Antihistaminic/antiallergy - used in the treatment of allergy or itching
2. Antitussive - drug that depress the cough reflex
3. Mucolytic - agents used to reduce the thickness and tenacity of sputum facilitating the removal of sputum from trachea and bronchi

C. Pulmonary
1. Bronchodilator - helpful in opening airways blocked by bronchial secretions
-Used to relieve bronchospasm associated with respiratory disorders like bronchial asthma, chronic breaths, emphysema

D. Cardiac

1. Diuretic - medicine which increases the flow of urine or medicine used to rid the body's tissues of excess fluid
2. Anti-hypertensive - for lowering high blood pressure

E. Eye

1. Emollient/lubricant - relaxing, soothing agent used to soften the skin or intentionally to soothe an irritated surface

F. Psychiatric

1. Anti-anxiety - agent which lessens tensions
2. Anticonvulsant - drug used to prevent or treat convulsion
3. Sedative - drug that produces a relaxing, calming effect or used to quiet patient or put patient to sleep
4. Muscle relaxant - agent used to ease muscular tension - Used for treatment of acute painful musculoskeletal conditions such as severe muscle sprains and spasms
5. Hypnotic - drug that induces sleep, that is, it allows the patient to fall asleep and stay asleep - usually given at h.s. (hours of sleep)

G. Gastrointestinal

1. Antispasmodic - drug used to ease abdominal spasm or pain
2. Antacid - substance used for treatment of peptic ulcer, gastritis, gastric distress or gastric hyperacidity - counteracts hydrochloric acid in the stomach
3. Antidiarrheal - drug used in the treatment of diarrhea
4. Laxative - substance when taken helps to evacuate the bowels
5. Anti-emetic - remedy to prevent vomiting and nausea
6. Emetic - drug that causes or has the ability to cause a patient to vomit.

H. General Classification

1. Antibiotic/Antibacterial - used in the treatment of specific infection (bacteria)
2. Anthelmintic - drug used to rid the body of worms.
3. Antiamoebic - for treatment of amoebia

4. Antimalarial - used in treatment of malaria
5. Antimycotic or anti-fungal used in the treatment of fungal infection
6. Anti-tuberculous/Anti-tuberculosis = drugs for treatment of tuberculosis.

I. Miscellaneous

1. Anesthetic - drug or gas used to abolish pain
2. Vaccines - substance used for inoculation for protection against diseases
3. Oral rehydrating solution (ORS) - fluid replacement given by mouth containing electrolytes
4. Intravenous fluid - fluids administered through the veins through plastic tubing.
5. Antiseptic - substance used to stop, slows or prevents growth of microorganisms.
6. Disinfectants - substance that destroys microorganisms
7. Vitamins - substance needed for normal growth and functions
8. Antidote - remedy given to counteract poison

XII. ANTIBIOTICS: WHAT THEY ARE AND HOW TO USE THEM

When used correctly, antibiotics are exrtremely useful and important medicines. They fight certain infections and diseases caused by bacteria. Well-known antibiotics are penicillin, tetracycline, streptomycin, and chloramphenicol. In this book the sulfa drugs, or sulfonamides, are also considered as antibiotics.

The different antibiotics work in different ways against specific infections. All antibiotics have dangers in their use, but some are far more dangerous than others. Great care must be taken in the choice and use of antibiotics.

There are many kinds of antibiotics, and each kind is sold under several 'brand names'. This can be confusing. However, the most important antibiotics fall into a few major groups:

Antibiotic group (generic name)	Examples of brand names	Brand names in your area (write in)
Penicillins	Pen-V-K	----------
Ampicillins	Penbirtin	----------
Tetracyclines	Terramycin	----------
Sulfonamides	Gantrisin	----------
Streptomycin	Ambistryn	----------
Cholramphenicol	Chloromycetin	----------
Erythromycin	Erythrocin	----------

*Note Ampicillin is a type of penicillin that kills more kinds of bacteria than do ordinary penicillin.

If you have a brand-name antibiotic and do not know to which group it belongs, read the fine print on the bottle or box. For example; if you have some Paraxin 'S' but do not know what is in it, read the fine print. It says "chloramphenicol".

Never use an antibiotic unless you know to what group it belongs, what disease it fights, and the precautions you must take to use it safely.

Guidelines For The Use of Antibiotics.

1. If you do not know exactly how to use the antibiotic and what infections it can be used for, do not use it.
2. Use only an antibiotic that is recommended for the infection you wish to treat.
3. Know the risks in using the antibiotic and take all the recommended precautions.
4. Use the antibiotic only in the recommended dose - no more, no less. The dose depends on the illness and the age and weight of the sick person.
5. Never use injections of antibiotics if taking them by mouth is likely to work as well. Inject only when absolutely necessary.

6. Keep using the antibiotics until the illness is completely cured, or for at least 2 days after the fever and other signs of infection have gone. (Some illnesses, like tuberculosis and leprosy, need to be treated for many months or years after the person feels better. Follow the instructions for each illness.
7. If the antibiotic causes a skin rash, itching, difficult breathing, or any serious reactions, the person must stop using it and never use it again.
8. Only use antibiotics when the need is great. When antibiotics are used too much they begin not to work as well.

Guidelines For The Use of Certain Antibiotics.

1. Before you inject penicillin or ampicillin, always have ampules of adrenalin (epinephrine) ready to control an allergic reaction if one occurs.
2. For person who are allergic to penicillin, use another antibiotic such as erythromycin or a sulfa.
3. Do not use tetracycline, or another broad-spectrum antibiotic, for an illness that can probably be controlled with penicillin or another narrow-spectrum antibiotic.
4. As a rule, use chloramphenicol only for typhoid fever. It is a dangerous drug. Never use it for mild illness. And never give it to newborn children (except perhaps for whooping cough).
5. Never inject tetracycline or chloramphenicol. They are safer, less painful and do as much or more good when taken by mouth.
6. Do not give tetracycline to pregnant women after the fourth month or to children under 7 years old.
7. As a general rule, use streptomycin, and products that contain it, only of tuberculosis - and always together with other antituberculosis medicines. Streptomycin should never be used for colds, flu, and common respiratory infection.
8. Eating yogurt or curdled milk helps to replace necessary bacteria killed by antibiotics like penicillin and to return the body's natural balance to normal.

What To Do If An Antibiotic Does Not Seem To Help

For most common infections, antibiotics begin to bring improvement in a day or two. If the antibiotic you are using does not bring any improvement, it is possible that:

1. The illness is not what you think. You may be using the wrong medicine. Try to find out more exactly what the illness is-and use the right medicine.
2. The does of the antibiotic is not correct. Check it.
3. The bacteria have become resistant to the antibiotic being used (they no longer are harmed by it). Try another one of the antibiotics recommended for that illness.
4. You may not know enough to cure the illness. Get medical help, especially if the condition is serious or getting worse.

These three children had a cold.....

What was the villian?	What took the toll?	Why did this child get well again?
Penicilline	Chloramphenicol	He got no risky medicine- just fruit juice, good food, and rest.

Antibiotics do no good for the common cold

Importance Of Limited Use Of Antibiotics

The use of all medicines should be limited. But this is especially true of antibiotics, for the following reasons:

1. Poisoning and reactions. Antibiotics not only kill bacteria, they can also harm the body, either by poisoning it or by causing allergic reactions. Many people die each year because they take antibiotics they do not need.

2. Upsetting the natural balance. Not all bacteria in the body are harmful. Some are necessary for the body to function normally. Antibiotics often kill the good bacterial along with the harmful ones. Babies who are given antibiotics sometimes develop fungus infections of the mouth (thrush) or skin (moniliasis). This is because the antibiotics kill the bacteria that help keep fungus under control.

   For similar reasons, persons who take ampicillin and other broad-spectrum antibiotics for several days may develop diarrhea. Antibiotics may kill some kinds of bacterial necessary for digestion, upsetting the natural balance of bacteria in the gut.

3. Resistance to treatment. In the long run, the most important reason the use of antibiotics should be limited, is that when antibiotics are used too much, they become less effective.

   When attacked many times by the same antibiotic, bacteria become stronger and are not longer killed by it. They become resistant to the antibiotic. Throughout the world important diseases are becoming resistant to antibiotics - largely because antibiotics are used too much for minor infections. If antibiotics are to continue to save lives, their use must be far more limited than it is at present. This will depend on their wise use by doctors, health workers, and the people themselves.

   For most minor infections, antibiotics are not needed and should not be used. Minor skin infections can usually be successfully treated with soap and water, hot soaks, and perhaps painting them with gentian violet. Minor respiratory infection are best treated by drinking lots of liquids, eating good food, and getting plenty of rest. For most diarrhea, antibiotics are not necessary and may even be harmful. What is most important is to drink lots of liquids and provide enough food as soon as the child will eat.

Do not use antibiotics for infections the body can fight successfully by itself. Save them for when they are most needed.

XIII. Abbreviations

Tab or tabl	=	Tablet
Caps	=	Capsule
Amp	=	Ampule
Inj	=	Injection
IM	=	Intramuscular
IV	=	Intravenous
SC	=	Subcutaneous
ID	=	Intradermal
Ung or Aint	=	Ointment
Sol or Solut	=	Solution
Comp	=	Compound (mixed)
Tinct	=	Tincture
Powd	=	Powder
Kg	=	Kilogram
Gm	=	Gram
Mg	=	Milligram (1g = 1000 mg)
Oz	=	Ounce
L or l	=	Liter
ml	=	milliter (1l = 1000 ml)
>	=	More than
<	=	Less than
mega	=	1 million = 1,000,000
IU.	=	International unit
Gr.	=	Grain
C.C.	=	Cubic Centimeter
W.T.	=	Weight
QD or o.d.	=	once a day
BID or b.d.	=	2 x a day
TID or t.d.s.	=	3 x a day
QID or g.d.s.	=	4 x a day
P.O.	=	by mouth
p.r.	=	by rectum
A.c.	=	before meals
P.c.	=	after meals
PRN	=	when necessary

STAT	=	now, immediately
AM	=	Morning
PM	=	Evening
AD lib	=	as desired
Q 2hrs	=	every 2 hours
Q 4hrs	=	every 4 hours
SOS	=	Once when necessary
QH or Q.H.	=	Every hour
AA	=	of each
h.s.	=	hour of sleep
NOC or nocte	=	night before bed time
hr.	=	hours
Min	=	minutes
Sec	=	second

Chapter-I

Roman Numerals.

Roman numbers are called Latin numbers too. These numbers are also used for showing big chapters, such as Chapter-I, Chapter-II and so on. To show several small parts of big topics, the said numbers are used as well. Some times these numbers are used to show the doses of medicines in prescriptions. Now the Roman numbers from 1 to 30 are as:

Roman	English Arabic	Roman	English Arabic
I	1	XVI	16
II	2	XVII	17
III	3	XVIII	18
IV	4	XIX	19
V	5	XX	20
VI	6	XXI	21
VII	7	XXII	22
VIII	8	XXIII	23
IX	9	XXIV	24
X	10	XXV	25
XI	11	XXVI	26
XII	12	XXVII	27
XIII	13	XXVIII	28
XIV	14	XXIX	29
XV	15	XXX	30

Chapter-II

1. Addition

2. Subtraction

3. Multiplication

4. Division

1. ADDITION.

Definition: Addition is a process in which one or more numbers are added to one more other numbers, and shown by the mark (+). Addition consists of two parts: the numbers which are added and the product.

Test of this process through number-9-method:

To make sure that the process is correct or not, add the first side-by-side numbers and subtract 9, until you get a number less than 9 or zero and note it. Then add the side-by-side numbers of the production and subtract 9 until you get a number less than 9 or zero. Then compare the two noted numbers, they should be equal otherwise the process of addition is wrong. For example:

388	Number-9-Method
260	
184	3+8=11-9=2+8=10-9=1
832	1+2=3+6=9-9=0+1=1+8=9-9=0+4=4

8+3=11-9=2+2=4

How to write and add the numbers:

Usually the numbers are written horizontally, but if they are written under each other. The way of writing the numbers should be determined. That is ones under ones, tens under tens and so on. Then a horizontal line is drawn under the numbers which are going to be added.

Examples:

1000mg	388mls	60000u
212mg	260mls	1500u
+ 1300mg	+184mls	120000u
2512mg	832mls	181500u

or:

256g + 856g + 7804g = 9152g
795m + 652m + 9765m = ?
795cm +3702cm+ 8765cm= ?

<u>Test of the process:</u>

28448 + 64736 + 432=93616
———————V———————V———————
7 7

As 7 is on both sides, the process is correct.

<u>Problems due to addition</u>

1. Suppose that the price of an ampicillin bottle is about Rs. 8 and the price of one bottle cotremoxazole is Rs.7. How much will both cost?

8+7=15 or: Rs.8
+ Rs.7

Rs.15

2. A garden costs Afgs. 80970 and a house costs Afgs. 255000. How much will both cost?

Afgs. 255000
255000+80970=335970 or + Afgs. 80970

Afgs. 335970
---

3. Suppose that a doctor tells a patient to take a medicine 3 times a day; 1000mg in the morning, 500mg at noon, and 250mg at bedtime. How many mg will be the daily dose for the patient?

1000mg + 500mg + 250mg = 1750mg

4. Ahmed's father gave Rs.1200, Rs.600, and Rs.300 to his three sons. Totally how much money has the father given to his sons?

Rs.1200 + Rs.600 + Rs. 300 = Rs.2100

<u>Subtraction:</u> is the difference between two numbers, and shown by this mark (-). Substraction consists of three prats:

a. Subtracted
b. Minuend
c. Product

```
Subtracted
-  Minuend
------------------
Product
```

Or: Subtracted -- Minuend = Product

Subtracted is a number from which minuend is deducted and the result is called the product. In subtraction, the following steps should be followed:

1. Subtracted should be bigger than minuend.

2. Minuend should be smaller than subtracted.

3. To test the process, and the product with minuend, the result will be subtracted number. For example:

```
  24      or 24 - 18 = 6
- 18
----------
   6
```

In the mentioned example, 24 is the number from which 18 is deducted, and the product is 6.

In the said process, similar items should be deducted. For example:

```
      440          500              5468 pens            3450mg
    - 216        - 346            - 1239 pens          - 2876mg
--------------   --------         -----------          ----------
      224          254              4227 pens             578
568mg  - 265mg   = 203mg              7456m             24651
586mls - 452mls  = 134mls          -  9652m          - 86230
9725m  - 288m    = 9437m           --------            -------
50400  - 39987   =10413
```

<u>Problems:</u>

1. Ahmad had Afgs. 100 and went to the bazaar. He bought a bottle of chloamphenicol for Afgs.86. How much money does he have now?

   Afgs.110 - Afgs/86 = Afgs.24

2. 150 mls normal saline has been spent from a 1000mls bottle, how many mls normal saline is now in the bottle?

   1000mls - 150mls = 850mls

3. When Mahmood was born , his father was 24 years old. Now his father is 35, how old is his son?

   35 years - 24 years = 11 or:

```
    35
  - 24
-------
    11
```

4. A bottle has 60mls Ampicillin. If a child is given 15mls ever day, how much ampicillin will be in bottle after two days?

1st. day 2nd. day

15mls + 15mls = 30mls
60mls - 30mls = 30mls

5. A doctor has given 12 ORS pockets to a child to take 4 pockets the first day, 3 pockets the second day, and 2 pockets the third day, and one pocket the fourth day. Now how many pockets will remain?

1st day 2nd day 3rd day 4th day

4 + 3 + 2 + 1

12-10=2(Two pockets will remain)

Multiplication

Multiplication is the shortest way of addition. It is indicated by these marks: (X), or (.). This process possesses three parts:

a. Multiplied

b. Multiplier Multiplied x Multiplier = Product

c. Product

Test: To know whether the process is correct or wrong, divide the product by the multiplier and the result should be the multiplied.

Otherwise the product is wrong.

- As it was said at first that multiplication is the shortest was of addition, if we add 12 eight times we have to write:

12 + 12 + 12 + 12+ 12 + 12 + 12 + 12 = 72

Through the process of multiplication:

8 x 12 = 72

To test the process, divide:

72 % 8 = 12

- To begin the process of multiplication, we should first of all memorize the following table with its method:

Oral Multiplication Table

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	8	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

Note: There is a general rule in multiplication:
Any number multiplied by zero, or zero multiplied by a number always make zero.

Exercise:

```
   244          5670          9955        18965
 X   2        X   4         X   6     X   456
----------    -------       -------    -----------
   488        22680         59730        113790
                                         94825X
                                       + 75860XX
                                       -----------
                                         8646040
                                       -----------
```

```
     100 mg          250 mg          500 mls
     X   6           X  16             X   4
-----------     -----------     -------------
   600 mg          1500            2000 mls
                    250
                -----------
                 4000 mg
```

465m . 4 = 1860 m 897mg X 12 = 10764 mg Or:

```
     897
   X  12
----------
    1794
     897
----------
   10764mg
```

Now: 123 mls X 25 +- ?

<u>Problems:</u>

1. If a doctor tells his patient to take 1500mg chloramphinicol daily for 7 days, how many mg of the medicine will be used after 7 days?

   Answer: 15000mg x 7 = 10500 mg

2. One capsule ampicilin contains 250mg, how many mg will be 30 capsules.

Answer: 750 mg

```
   X  30
   ------
     000          or:  250 mg
    756                  30
   ------               ------
    7500 mg            7500 mg
```

3. One bottle cotrimoxazole holds 60mls, how many mls will be 4 bottles?

Answer: 4 x 60 mls = 240 mls

4. Ahmad's father had Afs. 4580. He bought 18 notebooks each one for Afs.12. How much money will be with him now?

Answer: The whole price of notebooks is:

18 x 12 = 216 or 4580 - 216 = 4364

```
   18
  X 12
  -----
    36
   18
  ------
   216
```

Division

Division is the process through which one thing is divided nto several equal parts. the symbols of division are:

```
|                          /————————
|———————— , or        ————/
|
```

Division is the inverted process of multiplication.

Division consists of 3 parts:

a. Dividend

b. Divisor Dividend---- Divisor = Quotient

c. Remainder

```
                    Quotient
Division /_________________
_________/   Dividend

---------
---------
---------
---------
---------
Remainder
```

```
         |
         | Divisor
Dividend |_________________
         | Quotient
         |
```

Some times a number leaves which is not divisible, that is called remainder.

Test: To test the said process whether it is correct or wrong, the quotient is multiplied by the divisor. If the dividend appeared, the process is correct otherwise it is wrong. If there is a remainder, that is also added to the product.

Quotient X Divisor + (Remainder) = Dividend

<u>Examples:</u>

1. If we divide a 16cm long wood into 8 equal parts, the process will be:

16 % 8 = 2

```
                  | 40
5.   5465 |_________
     40   |130
   -------
     146
     120
   --------
     265
     240
   --------
      25
```

```
6.   8855 |
     88   |
     -----|

7.  8756 | 76
     76  | 114
    --------
     115
      76
     -----
     316
     304
     -----
      12
```

```
8.   216 / 889760
         / 864
         -------
          257
          216
          ------
          416
          216
         -------
         2000
         1944
        ----------
           96

          4119
        ----------

          56 /3108
             / 280
             ------
           308
           230
          ------
           280
           280
          -------
            X

          55.5
```

<u>Problems Related to division</u>

1. If a doctor says that a child should take syrup ampicillin 3 times daily; each time 5mls, and the bottle holds 60mls, then how many days will the bottle suffice ?

<u>First Step:</u> Now we divide 60 mls to 15 or

```
60 |15
 4 | 4
------
 20
 20
------
 x
```

The whole bottle will suffice for 4 days.

2. Now 4000mg cloramphinicol has been given to be taken by a patient in 3 fractional doses, how many mg should be given each time?

Then 2000 / 3 = 1333.3 // 1333 mg.

```
                  |  3
4000              |-------
 3                |  1333.3
------
 10
  9
------
 10
  9
-------
 10
  9
-------
  1
```

3. If a doctor instructs a patient to take Paratin 30mls in three fractional doses, how many mls should be patient take? And if the patient uses a spoon whose capacity is 5mls, how many spoons full of Paratin should be taken each time ?

a. <u>First Step:</u> 30 / 3 = 10mls means each time 10mls.
b. <u>Second Step:</u> 10 / 5 = 2; means 2 spoonsful each time.

Exercise:-

Chapter-III

Fraction

Fraction is usually used for manufacturing medicines and their presentation to show weight and volume.

There are two kinds of fractions:

a. Common Fraction b. Decimal Fraction

Common fraction is divided into two parts as well:

a. Proportional Common Fraction: Shows a part or any number less than a whole number. Suppose that $\frac{X}{Y}$ is a fraction. Now X is a numerator and Y is denominator. In the fraction X=Y or X<Y (X smaller than Y), the two are equal or smaller or bigger.

For example,
```
              1------------> Nomenator
              ------------------------------> Fractional Line
              2------------> Denominator
```

Now we see that nomenator is smaller than denomentator.

b. Non-proportional Common Fraction: In this sort of fraction, the X is bigger than or equal to Y. X =Y, or X>Y.

For example: 7/6, we see that nomenator is bigger than denominator.

Note: We should have in mind that the units written on and under the line are alike, otherwise the fraction does not have any concept.

Ounce--Similar\Grains Not alike Grains
Ounce/ Grains Ounce

Combined numbers:

This sort of fraction consists of an integral number accompanied by a proportional fraction. For example : $3\frac{1}{4}$

If we want to change such numbers to non-proportional fraction, we are to follow the following steps:

1. Multiply denominator by integral number: (4 X 3 = 12)

2. Add the product of the multiplication to the nomenator (12 + 3 = 15)

3. The product of the addition should be written on the line as nomenator and the previous denominator on its place: $\frac{15}{}$

If we want to rechange this non-proportional fraction to the combined numbers, we divide 15 to 4 like:

```
     | 4
  15 |-------------
  12 | 3
  ---
   3
```

Now 3 is the quotient, and the other 3 in the remainder: $3\frac{3}{4}$

Exercise:

1. Changed these combined numbers to non-proportional fraction:

   $+2$ $5\frac{}{3}$ Answer: 5 X 3 = 15 . .= $\frac{17}{3}$

   15 + 2 = 17

2. change $\frac{23}{3}$ non-proportional fraction to combined numbers.

```
     |
     | 3
  23 |-------------
  12 | 7
 -----
   2
```

3. Change $\frac{33}{17}$ non-proportional fraction to combined numbers:

```
33 | 17
17 |-----------
---|1
16
```

$1\frac{16}{17}$

4. Change combined numbers $8\frac{3}{5}$ to non-proportional fraction:

$+\ 3$ $\quad 8 \times 5 = 40$

$8\frac{\ }{5}$ $\quad 40 \times 3 = 43$

$\frac{43}{5}$

Change the following :

a. Combined numbers to non-proportionals

1. $6\frac{1}{9}$

2. $15\frac{2}{17}$

3. $19\frac{11}{19}$

b. Non-Proprtionals to combined numbers

1. $\frac{92}{22}$

2. $\frac{133}{17}$

3. $\frac{263}{177}$

2- Decimal Fraction

Decimal fractions are used in metric system. It is a fraction whose denominator or power is 10. Then 2/10 (Read two tenth) is the example of the fraction whose denominator is 10. the power of 10 is that number beside which zeroes are written. So 100, 1000, 10,000, etc, whose power is 10. the Fractions whose denominator or power is 10 could be changed to decimal form. Decimal form has 3 parts.

The number written on the left side of the point.
The number written on the right side of the point.

The point of a decimal fraction could also have numbers at its right side. That state is called decimal fraction as well. It is possible for the point to have numbers on both sides. This is called combined decimal fraction. Usually both decimal fraction and combined decimal fraction. Usually both decimal fraction and combined decimal fraction have close relation with the point. If there is no decimal point at the left, a zero is put on that side. For example:

0.25

Although mostly the zero is not used at the left side in maths, it is necessary to be put for showing the doses. This action prevents the mistakes and doubtfulness.

In reading the numbers on both sides of the point, they have different concepts.

Decimal Point

Hundred thousands	Ones
Ten thousands	Tens
Thousands	Hundreds
Hundreds	Thousands
Tens	Ten thousands
Ones	Hundred thousands

Addind Decimals

When addind decimals, place the numbers in a column in a column so that the whole numbers are aligned to the left of the decimal and the decimal fractions to the right of the decimal.

```
   20.45
    2.56
--------------
   23.01
```

or: 20.45 + 2.56 = 23.01

```
   2.00
   0.25
--------
   2.25
```

or: 2 + 0.25 = 2.25

Questions related adding decimals:

1.
```
   602.008
   523.956
-----------
  1125.964
```

2.
```
   789.956 mg
   256.425 mg
-----------
  1046.381
```

3.
```
   980.862 mls
   259.260 mls
--------------
  1240.022 mls
```

Problems:

1. There are three bottles of medicine. The first one contains 4.5 mls, the second one 5.5 mls and the third one has 2.5 mls medicine. How many liters will the three bottles have?

```
First bottle:  4.5 mls
Second bottle: 5.5 mls
Third bottle:  2.5 mls
              -----------
               11.5 mls
```

2. A doctor told a patient to use the tablets he has prescribed daily as follows: First day: 20.50 mg, the second day 16.50 mg, the third day 12.25 mg, the fourth day 8.25 mg, the fifth day 4.50 mg, and finally 2 mg the sixth day. Totally how many mgs will the patient take in six days ?

First	day:	20.50 mg
Second	day:	16.50 mg
Third	day:	12.25 mg
Fourth	day:	8.25 mg
Fifth	day:	4.50 mg
Sixth	day:	2.00 mg
		64.00 mg

Homework:

1.
```
  6.510
 17.126
 21.200
----------
```

2.
```
  8.956
 11.215
 21.000
----------
```

3. We have three bags Dextrose serum. The first one has 1000 ml, the second one 250ml and the third bag has 521.67 ml serum. Totally how many mls will the three bags have?

4. Add these numbers: 8.95mg, 66.72 mg and 99.62 mg.

5.
```
89.625 mls
87.235 mls
----------
```

6.
```
1007.002
2111.661
--------
```

7.
```
788.654
876.567
656.780
706.865
----------
```

8.
```
9765.7795
7765.7765
9232.2076
----------
```

Subtraction of Decimal

When subtracting decimals, the numbers are aligned to the left and right of the decimal in the same manner as in addition:

```
 20.45          or:  20.45-2.56 = 17.89
  2.56
---------
 17.89

 2.00
 0.25           Or:  2-0.25=1.75
--------
```

Questions related to Subtraction of decimals:

1. 508.765 mg	2. 6576.9543	3. 6543.002
243.430 mg	1234.1252	2124.567
---	---	---
265.335 mg	5342.8291	4418.435

Exercises:

5676.673	5677.001	4.567
4265.761	4100.120	0.899
---	---	---

Problems:

1. A bottle has 60 ml Ampicillin solution. If 14.5 ml is taken by a patient, how many mls will remain in the bottle ?

```
60.0
14.5      Or: 60 ml - 14.5 ml = 45.5 ml
-------
45.5
```

2. A nurse has taken 0.3 ml out of a 1 ml Terbutalin bottle and injected SC to a patient. Now how many liters will be in the bottle ?

```
1.00
0.30      Or: 1.00 - 0.30 = 0.70 ml
--------
```

3. A 1000 cc serum is going to be injected to 3 patients as follows: 320.46 ml to the first patient, 280.79 ml to the second patient, and 132.76 ml to the third one. How many liters will be in the bag after injection?

```
1rst:     320.46                          1000.00
          280.79          2nd step:        734.01
          132.76                          --------
        ----------                         265.99 mls
   734.01
```

. . . 265.99 mls

1. Multiplying a Whole Number by a Decimal

To multiply a whole number by a decimal, move the decimal point of the product as many places to the left as there are places to the right of the decimal:

There are two places to the right of the decimal

The decimal point is moved two places to the left.

```
   500
   .05
  ------
  25,00
```

2. Multiplying a Decimal by a Decimal

To multiply a decimal by a decimal, move the decimal point to the product as many places to the left as there fare places to the right in both decimal:

```
  2.75  two places to the right of the decimal
  0.5   plus one place to the right of the decimal equals three
 -----
  1 375. move the decimal point three places to the left.
```

Questions related to decimal multiplication:

1.
```
  2.56 mg
    2.1
 --------
    756
   1512
 ----------
   15.876
```

2.
```
  9.20 u
    6.2
 --------
   1840
  5520
 ----------
  57.040 u
```

3.
```
  24.3 mls
     3.4
 ---------
    972
   729
 ----------
  82.62 mls
```

4.
```
  667.37 m
    67.4
 -------
  266928
 467124
400392
---------
44977.368
```

```
  9.567
      4
 ------
 38.268
```

```
  8.765
     21
 ------
   8765
  17530
 ---------
 184.065
```

Problems:

1. An infant is given Turbutaline 0.1 ml/kg. If the infant weighs 6 kgs, how much will be given to the patient ?

```
 0.1 mls
   6
 ------
 0.6 mls
```

∴ 0.6 mls

2. the daily dose of Dexametazine is about 12 tablets, each tablet has 0.5 mg. Then how many mag will be in the 12 tablets ?

```
  0.5
   12
 --------
  6.0 mg
```

Or: 0.5 mg X 12 = 6 mg

3. The single dose of Diazepam is 0.3 mg/kg. A person weighs 55 kg, how many mg should be taken by the patient for 3 times ?

```
   55
  0.3
--------
  16.5
```

Or: 55 X 0.3 = 16.5 mg .....Single dose
16.5 X 3 = 49.5 mg .....Three time a day

Homework:

1. 88.65 mls
   4.62

   ?

2. 62.50 mg
   7.3

   ?

3. 654.623
   45

   ?

4. 49.45 m
   5.6

   ?

5. 6702.001
   0.25

   ?

6. 954.002
   800
   ----

7. A patient is given Prometazine about 0.25 mg/kg each hour. If a patient weighs 35 kg, how many mg will be given to him for four hours ?

8. A person weight 75 kg. If he is given atropin IV 0.01 mg/kg body wight after 4 hours, find out the daily dose for the said person?

9. An 8-month-old child is given 2.5 mls Cotrimoxazole each time. Find out the amount of Cotrimoxazole given two times.

Dividing Decimals

The divisor is the number that divided into the dividend. If the dividend is decimal and the divisor a whole number, move the point to the right side of the dividend and put as many zeroes as you have moved the point to the whole number, then we divide the numbers as in simple division.
If the divisor and the dividend are decimals, then we count the decimal numbers of both sides, in case of equality, only move the point to the right. If the decimal numbers of either side are more than the other side, put zeroes on the right side of the little number.

For example:

1. 645.62 % 8 = ? ——————>

```
        | 800
64562   |-------------
64000   | 8.7
------
 5620
 5600
 -----
    20
```

2. 896.423 % 4.56

```
        | 4560
896423  |-------
        |
        | 1400
56475   |-------------
 4200   | 38.91
 -----
  12475
  11200
 ------
    12750
    12600
 -------
     1500
     1400
 -------
      100
```

Exercises:

1. 564.75 % 14 = ?

2. 789.55 % 4.6 = ?

```
          | 460
78955 |----------
460   | 17.16
-----
 3295
 3220
-----
  755
  460
------
 2950
 2760
------
  190
          | 7622
9600520 |----------
7622    | 125.9
--------
19785
15244
--------
 45410
 38110
---------
 73000
 68598
---------
  4402
```

4. 56.32 MG % 4.5 = ?

```
        | 450
5632 |----------
450  |  12.5 mg
------
 1132
  900
------
 2320
 2250
-------
   70
```

5. 9.654 mls % 4 = ?

```
        | 4000
9654    |-----------
8000    | 2.411
-----
16540
16000
------
 5400
 4000
------
 4000
 4000
------
   X
```

6. The amount of Cotrimoxazole given to a child is 22.5 mg, find out the single dose.

22.5 mg % 3 = 7.5 mg

7. The amount of Cotrimoxazole given to an 11-year-old child for 21 days is 157.5 since he has typhoid fever. Find out the daily dose of the patient.

157.5 mg % 21 = ? (7.5 mg)

```
        | 210
 1575   |-----------
 1470   |  7.5
------
 1050
 1050
------
   X
```

8. The amount of Mtronidazol given to a 6-month-old child 3 times a day is about 4.5 tea spoonsful. Find out the amount of one time.

4.5 % 3 = ? (1.5 spponful)

Homework

1. 96.76 % 23 = ?
2. 95.002 % 7.62 = ?
3. 557.2 % 4 = ?
4. 4.003 % 0.002 = ?
5. 960.02 % 02 = ?
6. 674 % 0.3 = ?

7. the total amount of Aminophillin for a 14-year-old patient in 7 days is 31.5 mg. Find out the daily dose.

8. The amount of Paracetamol for a 7-month-old baby in 3 times is about 3/4 tablet. Find out the amount given one time.

Chapter-IV

Syrenges, Measures, and Reading

Definition:

Syrenge is a glass or plastic cylinder which is used for injecting or pulling out the material from or to the bottles.

A syrenge is made of two parts:

a. Barrel Part: is a hollow cylinder having degrees or the outside surface to show the doses. See the pictures below.

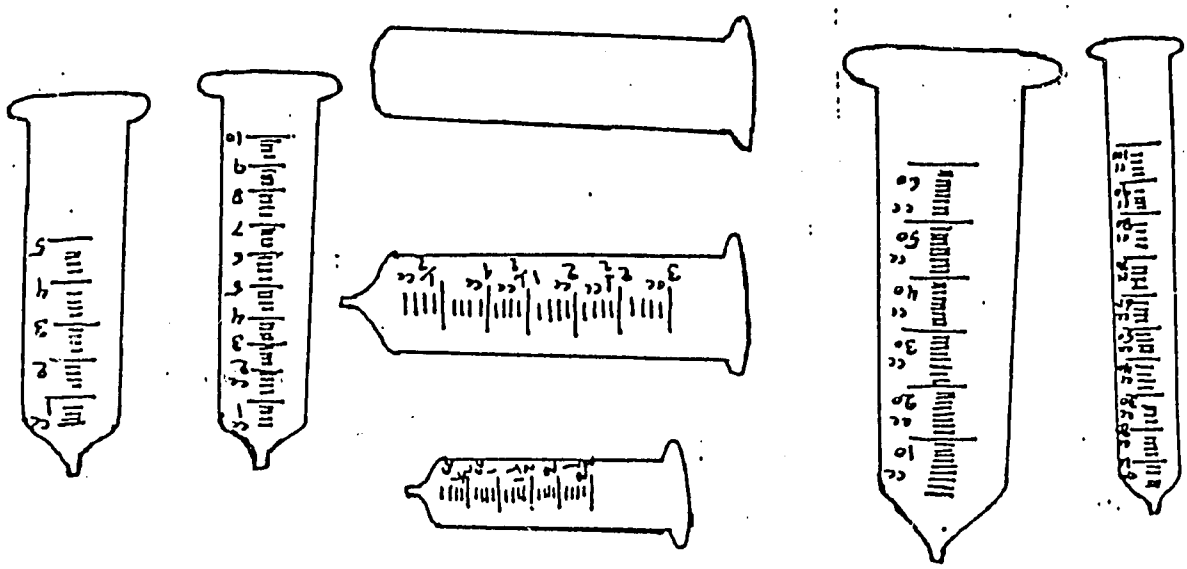
b. Plunger which is called piston as well. See the pictures below.

Measuring of Syringes due to their Volumes:

Although surenges vary each other, we will study only those that are 1cc, 3cc, 5cc, 10cc, and 50cc.

1. On one ml syrenges, each line represents 1/50 ml or 0.50 ml.

2. On 3mls or 2.5mls, each line represents 1/10 ml or 0.1 mls
3. On 10 mls or 5 mls syrenges, each line represents 2/10 mls or 0.2ml.
4. On 50ml or 60ml, each line represents 1cc or ml.



Note:- In figure no.1, one line represents 1/10 part on one cc, 2 lines represent 2/10 cc, three lines 3/10cc, 4 lines 4/10 and finally 5 lines, 0.2cc or 1/2 part of a cc.

- On 5cc, 10cc syrenges, each line represents 2/10 parts of a cc. Two lines of 4/10cc, three lines of 6/10cc, four lines of 8/10cc, five lines of 10/10cc, each one represents 1 cc.

- On 60 cc syrenge each line represents 1cc.

Chapter-V

Savlon Solution 1%

It is antiseptic solution used for skin.

How to prepare:

If we need 1% solution, we must know about the measure of net solution because later we can prepare the desirable percentage solutions from the pre-known volume.

Note:

Net solution is the amount of the substance in a bottle which is one liter.

To prepare the solutions, we can use two methods:

I. Simple Method:

a. a bottle with 500ml capacity
b. 495 cc boiled cold water
c. 5 cc Salvon solution

Procedure:-

Pour 495 cc boiled cold water in 500 ml bottle and mix 5 ml solution of Salvon in water. Now you have 500 ml 1% Salvon Solution.
Thus we can prepare 2%, 3%, 4%, and so on.

II. Formula:-
Net-solution = 1/100 X Volume of bottle
Water = Solution - Mix amount
Prepared solution = Solution = Water

Example:

If we want to prepare 500 ml 1% Salvon, we would know the amount of water and salvon:

Therefore we can use formula:

Net Salvon Solution = 1/100 X 500 = 5ml.

Water = 500 - 5 = 495 ml.

At the result we can mix 495 ml water and 5 ml net Salvon solution and we will have 500 ml 1% Solution of salvon.

Example II:-

We have 1000 ml bottle and we want to prepare 1% Salvan solution. we need to know the amount of water and net Salvon solution.

According to Formula:-

Net Salvon Solution = 1/100 X 1000 = 10 ml.
Amount of water = 1000-10 = 990 ml.

Result:

Now we have 1000 ml 1% Salvon Solution.

Example III :-

We have a bottle of 250 ml and want to prepare 1% solution in the bottle:

Formula:-

Net Salvon Solution :- 1/100 X 250 = 2.5 ml.
amount of water :- 250 - 2.5 = 247.5 ml

Result:-
We will have 250 ml 1 % Salvon Solution.

Note:-
we can prepare every percentage of solutions using the formula:-

Example I :-

With 500 ml bottle we want to prepare 3% Salvon solution:

Net Salvon Solution :- 3/100 X 500 = 15 ml.
Amount of water :- 500 -15 = 485 ml.

Now after mixing 485 ml water with 15 ml net salvon solution, we have aquired 500 ml 3% salvon solution. Sometimes the percentage of net salvon solutions vary from each other for example they are bottles with percentages like:

1/50, 1/40, 1/25, etc. According to the formula, we can easily prepare the needed volumes of the solution.

Example:

We have 500 ml bottle and want to prepare 1% Salvon solution, but the percentage of net solution is 50% not 100%, according to the formula:-

Net Salvon Solution :- 1/50 X 500 = 10 ml
Volume of water :- 500 - 10 = 490 ml.

Now we mix 490 ml water with 10 ml net salvon solution, at the result we have prepared 500 ml 1% salvon solution.

Exercise:-

Xylocaine

Indication: Local anesthesia.

Maximum dosage should be acquired by following formula and using the graph.

Formula:

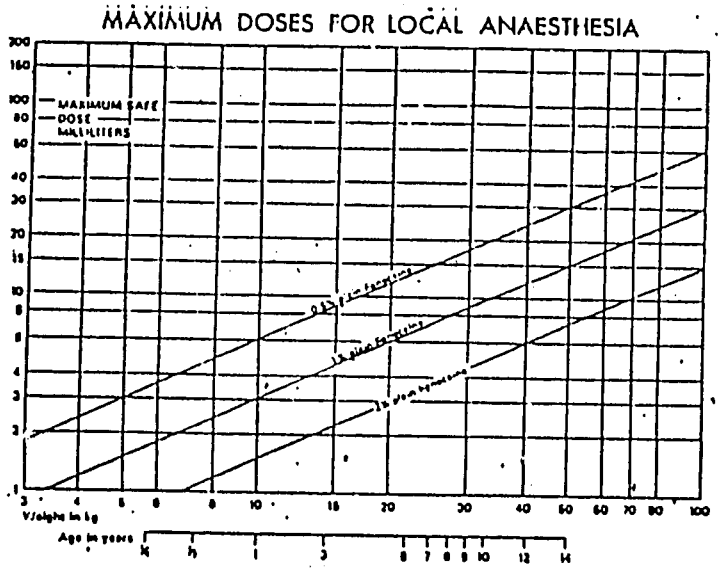
$$\text{a. Maximum Dose (ml)} = \frac{\text{3mg/kg body weight}}{\text{10 X Percentage of Solution}}$$

Example:

For a 60 year old person, 2% Xylocain solution is needed to be injected. Now we must know the correct dosage. So we use the formula:

$$\frac{60 \text{ kg} \times 3 \text{ mg /kg}}{10 \times 2\%} = \frac{180}{20} = 9\text{ml (maximum Dose)}$$

b. Graph:-



a. Horizontal lines indicates the amount of Xylocain by milli liters.

b. Vertical lines mean weight by kg and age by year.

c. Slant line indicates percentage of Xylocain.

As we see in the graph for those children whose weight is less than 6.5 kgs or age less than 6 months, 2% Xylocain is not prescribed to be given. But Xylocain with 0.5% is allowed to be used in every age. And solution of 1% should not be given to infants.

For example:

If we want to give 0.5% Xylocain to a child whose weight is 10kgs, what amount will be that ?

Answer:

Chapter-VI

Systems of Measurements:

The Apothecaries and Metric Systems

The two systems of weights and measures used in pharmacology are the apothecaries system and the metric system. Although both are presently used, the metric has largely replaced the apothecaries.

I Metric System:

The gram is the unit of weight, the liter the unit of volume, and the meter the unit of linear measurement in the metric system.

Here we study the parts of them:

1 kilo meter = 1000 meters
1 hectometer = 100 meters
1 deca meter = 10 meters

Parts of a meter:

1 meter = 10 decimeters
1 meter = 100 centimeters
1 meter = 1000 millimeters

Weights:

1 killogram = 1000 grams
1 hectogram = 100 grams
1 decagram = 10 grams

Parts of a gram:

1 gram = 10 decigram
1 gram = 100 centigram
1 gram = 1000 milligrams

1 liter = 1000 milliliters = 1000 cc

$1\ Cm^3 = 1\ cc$

II. Apthecaries System:

In this system, the grain is the unit of weight, and the minim the unit of volume.

You will see both systems in the following tables:

Metric	Apothecaries
Weight:	
1 milligram (mg)	
(1000 micrograms (Mcg))	1/60 grains (gr)
60 mg.....	= 1 grain
1 gram (g) (1000 mg).....	= 15 grains
30 g.....	= 1 ounce (oz)
1 Kilogram (kg).....	= 2.2 pounds (lb)
Volume:	
1 milliliter (ml)	= 15 or 16 minims (m)
4 ml	= 1 fluid ounce (fl oz)
30 ml	= 1 fluid ounce (fl 3)
500 ml	= 1 point (pt)
1000 ml	= 1 quart

Household Measurement and Equivalents

Household	Apothecaries	Metric
1 teaspoonful	60 drops (gtt) or 60 minims or 1 dram	4 or 5 ml
1 teaspoonful	4 drams	15 or 16 ml
2 tablespoonfuls	1 ounce	30 ml

Conversion from Metric to Apothecaries'
<u>and Apothecaries to Metric Systems:</u>

It usually happens to see that the physician's order reads Metric, but the drug container reads Apothecaries or vice versa. In some instances it may be necessary to convert within the same system.Her are some of the examples below:

1. How many grains (gr) equal to 100 mg ?

or $\frac{1gr}{60mg} = \frac{Xgr}{120mg}$

$60X = 120$

$X = \frac{120}{60}$

$X = 2$ gr

2. How many mg equal to o.1 gr?

1 g = 1000 mg

0.1 gr = X

X g = 0.1 x 1000 = 100mg

Then o.1 gr = 100 mg

3. Change 1/1000 gr to mg.

As 1 gr = 60 mg Then 1 gr = 60 mg

1/1000gr = X

$$X = 60 \times \frac{1}{100} = \frac{60}{100} = \frac{6}{10} = \frac{3}{5} = 0.6$$

4. How many milliliters equal to 0.01 lit ?

1 lit = 1000 ml Then 1 lit = 1000 ml

0.01 lit = X

X = o.ol x 1000 = 10 mls.

5. Change 30 gr to g.

As 1 g = 15 gr Then 1 g

<u>Units:</u>

Unit is a single thing from which the dose of medicines could be found. For instance:

Penicillin Procaine 400000u
Penicillin Procaine 2000000u

In this may most of the antibiotics are assigned through units.

For Example:

Penicillin V 125mg = 200,000u
Penicillin V 250mg = 400,000u
Penicillin V 1gram = 1,600,000u

Chapter-VII

Calculation of Doses

Definition: Dose is the amount of medicine that is applied once. It is calculated by weight, volume, or units. For example, one dose of Aspirin is about 300mg, and the dose of Antititanic is 1500u, and the dose of Parafin is 5-10mls.

Calculation of Dose for Children

Children's dose is rather less than adults. There are various formulas for determining children's doses. For example, Young's rules consider the age of a child:

$$\text{Child's Dose} = \frac{\text{Child's Age (Years)}}{\text{Child's Age} + 12} \times \text{Adult's Dose}$$

For Example:

A child is about 3 years old, how much Ampicillin should be given to him where as the dose for an adult is about on gram or 1000 mg ?

Applying the above formula, we can write:

$$\text{Child's Dose} = \frac{3}{12 + 3} \times 1000 = \frac{3000}{15} = 200\text{mg}$$

Now the dose for a three-year-old child is 200mg.

The author called Clark has proposed an other formula that is based on the child's weight:

$$\text{Child's Weight} = \frac{\text{Weight of Child (Kg)}}{} = \text{Adult's Dose.}$$

For example:

A child weighs about 6 kg, how much Chloramphinicol should be given to him whereas the dose of adult is about 1000mg daily:

$$\text{Child's Dose} = \frac{6}{70} \times 1000 = \frac{6000}{70} = 85.7\text{mg}/85\text{mg}$$

Noe it has been discovered that the dose for a child whose weight is 6kg is about 86mg daily.

Exercise:

1. How much Aspirin should be given to a child whose weight is 15kg whereas the dose for an adult is 1800mg in 24 hours?

2. The highest dose of Chloramphinical for an adult is 4000mg, how much should be given to a child who is 6 years old?

Calculation of Dose for Adults

The calculation of dose for an adult is applied according to his body weight (Kg). The weight is almost shown from his age or by scale.

For example:

The daily dose of Penicillin Procaine is about 500000u/kg. If a person weighs 60 kg, how many units should be given to him daily? 5000u/kg means 5000 units is needed for each kg of body weight. Now we can find the answer through by-cross-multiplication process for the body weighing 60kg:

50000u	1kg
X	60kg

$$X = \frac{60kg \times 50000u}{Kg} = 3000000u$$

Then the highest dose for the person whose body weight is 60kg is 3000000u Penicillin Procaine.

Exercise:

1. A person weighs about 65kg, and the dose of Ampicillin is 100mg/kg. Show his daily dose.

2. A patient weighs about 55kg, and the highest dose of Chloramphinicol is 100mg/kg. How much will be a daily dose for the patient ?

3. A single time dose of Aspirin is 10mg/Kg, whereas the patient weighs 68kg. How much will b the single dose for the patient?

4. The amount of Aminophillin is about 16mg/Kg for 24 hours. How much should be given to a patient whose wight is 45kg?

5. A person weighs 60kg, and the dose for a single time Diazipam is 0.3mg/Kg. How much Diazipam should be given to the patient?

Calculation of Pure Drug and Course Dose For Certain Duration in Syrups and Suspentions

Definition:

The pure amount of medicine expresses the amount of cosistency of medicine present in each liter or mililiter.

For Example:

If 125mg/5ml is written on a bottle, this means that 125mg drug exists in each 5ml. According to calculation we can write:

$$\begin{array}{ccc} 125mg & & 5ml \\ X & & 1ml \end{array}$$

$$X = \frac{125mg \times 1ml}{5ml} = 25ml$$

In each ml we have 25mg.

<u>Calculation of a single dose, Daily and a Full Course of Medicine:</u>

The calculation could be systematically done in the following three steps:

Step -1:

Suppose that a doctor has told a patient to take 250mg drug each time. There is 125mg medicine in each 5ml, then how many ml of medicine will contain 250 mg ?

Now we have:

$$\begin{array}{ccc} 125mg & & 5ml \\ 250mg & & X \end{array}$$

$$\frac{250mg \times 5ml}{125\ ml} = 10ml$$

Now the single dose for the patient is 10ml.

Step-2

If a doctor has led a patient to take the medicine three times daily, as we found out the single dose that is 10ml, then we can find the daily dose easily:

$$3 \times 10ml = 30ml$$

Now the daily dose is 30ml.

Step-3

If the doctor has told to take the medicine for 10 days, we can find out the amount of medicine taken for 10 days as:

$$10 \times 30ml = 300ml$$

then the whole amount for 10 days is 300ml.

- If a bottle contains 60ml then how many bottles are needed for 10 days?

Answer: Amount of one course (per bottle) = $\frac{\text{Total amount of Medicine (ml)}}{\text{Amount of bottles (ml)}}$

$$= \frac{300ml}{60ml} = 5ml.$$

Five bottles are needed for 10 days.

Problems:

1. If a doctor tells a patient to take 250mg of Ampicillin Syrup for 12 days; 3 times daily, and every bottle contains 60ml, and in every bottle contains 60ml, and in every 5ml there is 125mg pure drug, now find out:

a. A single dose of medicine

b. daily dose

c. Dose for 12 days

d. How many bottles are needed for a complete course?

Answer

a. 5ml 125mg

X 250mg

$$X = \frac{250 \times 5}{125}$$

Then the amount of single doze is 10ml.

b. Daily dose: 3 X 10ml = 30ml.

c. Dose for 12 days equals to :

12 X 30ml = 360ml

d. As each bottle contains 60ml, then we can find out how many bottles are needed for 12 days:

$$\text{Amount of one course (Per bottle)} = \frac{360 \text{ ml}}{60 \text{ ml}} = 6$$

Six bottles are needed for 12 days.

2. If a doctor has told to take Ampicillin Syrup for 14 days;

4. times daily; each time 125mg, the bottle contains 60ml, and the pure drug is 125mg/5ml, then find out:

a. A single dose of medicine

b. Daily dose

c. Dose for 14 days

d. How many bottles are needed for a complete course?

Answer:

a. A single dose is 5ml since there is 125mg pure drug in each

b. Daily dose = 5ml X 4 = 20 ml

c. Daily dose = 5ml X 4 = 280ml

d. As each bottle contains 60ml, then we can find the amount of bottles for 14 days as follows:

Amount for a complete course (per bottle)= $\frac{280}{60}$ = 4.6//

About 5 bottles are needed for 14 days.

Math Outline

Chapter-I

1. Roman Numerals
2. Reading and Writing Roman Numerals
3. Exam

Chapter-II

1. Addition
2. Subtraction
3. Multiplication
4. Division

Chapter-III

1. Common Fraction
2. Decimal Fraction
   a. Addition
   b. Subtraction
   c. Multiplication
   d. Division

3. change Common Fractions to Decimal Fractions.

Chapter-IV

1. Metric System (Weight, Volume)
2. Apothecary System
3. Units

Chapter-VII

Calculation of Dose
1. Dose of r Children
2. Dose for Adult
3. Calculation of Dose by Kg body Weight.
4. Calculation of Pure Drug in Syrup and Syspention.
5. Calculation of Course Dose for Certain Duration
6. Exam

Final Exam

Teaching Hours = 60 minutes

Total Teaching hours with final Exam = 29 hours

For:

Chapter I.....2 hours
Chapter II.....6 hours
Chapter III.....4 hours
Chapter IV.....3 hours
Chapter V.....3 hours
Chapter VI.....3 hours
Chapter VII.....6 hours
Final Exam.....2 hours

Total.....29 hours.

The Amount of Drops or Fixing the Speed of Running Solution:

to know the amount of drops per minute, we can use two ways:

First way:

The following formula can be used:

$$\text{The amount of drops (Per minute)} = \frac{\text{Quantity or the total amount of solution}}{60 \times \text{Number of hours}}$$

For example:

If 1000ml Dextrose is applied in 8 hours, find out the amount of drops in one minute. now we have:

$$\text{Amount of drops (Per minute)} = \frac{1000}{60 \times 8} = \frac{100}{48} = 2.08 \text{ // } 2\text{ml/min.}$$

The amount of every syrum set is different from each other, but commonly drops in one ml for the set are as follows:

a. 10 drops/mnt b. 12 drops/mnt
c. 15 drops/mnt d. 20 drops/mnt

We found out the amount of drops in one minute, how many drops will be a 20-drops set?

2 ml X 20 drops/mnt = 40 drops

Second way:

In this way we can write the formula briefly:

$$\text{Drops/minute} = \frac{\text{Total amount of solution} \times \text{Serum set gauge}}{60 \times \text{Number of hours}}$$

For example:

500 ml Normal Saline is going to be applied in 2 hours, serum set gauge is 12 drops/mnt, find out the number of drops per minute: Take the second formula:

$$\text{Serum drops/Minute} = \frac{12 \times 500}{60 \times 2} = 50 \text{ drops/mnt}$$

Exercise:

1. Apply 2000ml Serum Dextrose in 8 hours while serum set gauge is 10 drops/mnt. find out the number of drops in one minute.

2. 750ml Saline Syrum whose set gauge is 60 drops/min will need how many hou 5 to be finished?

3. Apply Physiologic Syrum within 10 hours while serum set gauge is 20 drops/ml. Find out the amount of drops in one minute.

Homework:

Ratio and Proportions

I. Ratios:

A ratio is always a way of expressing a part of a whole or the relationship of one number to another. For example, a ration written as 1:10 means 1 part to 10 parts, or 1 to 10. A ratio may also be written as a fraction; thus 1:10 can also be expressed as 1/10. Drug solutions may be expressed in ratios. For example 1:100 or 1:500. These ratios mean that there is 1 part of a drug in 100 or 500 parts of solution. A ratio is a way of expressing a part of a whole just as a fraction expresses a part of a whole.

Percent:

The term percent (%) means parts per hundred. Foe example, 25% means 25/100, which can be further reduced to 1/4. $4 \div 5 = 0.8$; $0.8 \times 100 = 8\%$

Changing a ratio to a percent:

To change a ratio to a percent, the ratio is expressed as a fraction; the first term of the ratio becomes the numerator, and the second term the denominator. For example, 1:500 (ratio) changed to a fraction becomes 1/500. Then the fraction is changed to a percent. The denominator is divided into the numerator, the quotient is multiplied by 100, and the percent sign (%) added:

$1 \div 500 = 0.002$; $0.002 \times 100 = 0.2\%$

If the ratio is 1/10 (1:10)

$1 \div 10 = 0.1$; $0.1 \times 100 = 10\%$

Changing a Percent to a Ratio:

To change a percent to a ratio, the percent becomes the numerator over a denominator of 100:

5% = 5/100 = 1/20 or 1:20

50% = 50/100 = 1/2 or 1:2

Exercises:

1. Change 1:200 to percent:

   We can write 1/200

   So 1/200 = 0.005 THEN 0.005 x 100 = 0.005

2. Change 1:800 to percent:

   1/800 = 0.001

   Then 0.001 x 100 = 0.1%

3. Change 25% to a ratio.

   25% = 25/100 = 1/4 = 1:4

4. Convert 75% to a ratio.

$$75\% = 75/100 = 3/4 = 3:4$$

homework:

1. Convert 1:250 to percent.

2. Convert 1:750 to percent.

3. Covert 1:1000 to percent.

4. Change 20% to ratio.

5. Change 30% to ratio.

6. Change 80% to ratio.

2. Chronic relapsing hepatitis - with persistence of symptoms; anorexia, fatigability, vague dyspepsia, variable tenderness and enlargement of the liver are present; patient must be referred.

Management

1. the patient should rest.

2. Low-fat diet.

3. Supplement diet with lots of carbohydrates and vitamin tablets.

4. Avoid all alcohol, barbiturates, morphine and sulphonamides.

5. Encourage fluids.

6. Antibiotics are not helpful.

7. A patient who is vomiting and unable to drink fluids should stay in your clinic until he can maintain hydration.

8. Prevent the spread of hepatitis. The patient should use his own eating utensils. Carefully dispose of urine and feces away from water and food.

Prevention

1. Chlorinate the drinking water supply at patient's home.
2. Chlorinate the drinking water of the patient's community.

To prove that the equation is correct, substitute the answer for X in the equation:

$$5 : 10 :: 10 : X$$
$$5 : 10 :: 10 : 20$$

Now multiply the means and extremes; if the numbers are the same on both sides of the equal sign, the problem has been solved correctly:

$$5 \times 20 = 10 \times 10$$
$$100 = 100$$

If the proportion has been set up as a fraction, cross multiply and solve for X:

$$\frac{5}{10} = \frac{10}{X}$$

$$5X = 100$$

$$X = \frac{100}{5}$$

$$X = 20$$

Exercises:

1. If there is 125mg medicine in 5ml solution, how much will be in each ml?

12mg 5ml

X 1ml

$$X = \frac{125mg \times 1\ ml}{5ml} = 25mg$$

2. For 1 kg, about 100mg ampicillin is used, how much will be used for 60kg>

100mg 1 kg

X 60kg

$$X = \frac{100mg \times 60kg}{1kg} = 6000mg = 6g$$

II. Proportion:

A proportion is a method of expressing equality between two ratios. An example of two ratios expressed as a proportion is:

3 is to 4 as 9 is to 12

This may also be written as:

3:4 as 9:12 or 3:4 :: 9:12

or

$$\frac{3}{4} = \frac{9}{12}$$

Proportions may be used to find an unknown quantity. The unknow quantity is assigned a letter, usually x, in the proportion. A example of a proportion with an unknown quantity is:

5:10 :: 10:X

$$\frac{5}{10} = \frac{10}{X}$$

The first and the last terms of the proportion are called the extremes. The second and third terms of the proportion are called the means.

means

5 : 10 : : 10 : X

extremes

extreme means $\frac{5}{10} = \frac{10}{X}$ mean extreme

In order to solve for x:

1. Multiply the extremes and place the product to the left of the equal (=) sign:

   5:10 :: 10:X
   5X=

2. Multiply the means and place the product to the right of the equal sign:

   5:10 :: 10:X
   5X = 100

3. Solve for X:

   5X = 100 X = 20

4. If 5ml pure savlon is needed for preparing 1% of 500ml solution, how much will be needed for providing 100ml pure 1% solution?

500ml 5ml
100ml X

$$X = \frac{5 \times 100}{500} = \frac{500}{500} = 1$$

Homework:

1. If 10ml pure savlon is needed for making 1000ml, how much will be needed for making 250ml 1% savlon solution?

2. The single dose of diazepam is 0.3mg/kg, how much will be given to a patient who is 55kg?

3. If for each kg body weight 600,000u penicillin procain is needed, for daily dose, how much will be given to a person who is 70kg?

Changing Common Fraction to Decimals,

Or

Decimal Fraction to Common one

1. Chinging Common Fraction to Decimal:

In this case numerator is divided by a denominator. For example:

$$\frac{1}{5} = ? \quad (0.2)$$

```
10 | 5
   |----
10 | 0.2
----
 X
```

2. Changing a decimal to a fraction:

We can say briefly that each decimal or the whole number is having the denominator which is one. We remove the decimal point and make the resulting whole number the numerator. The denominator is stated as 10 or a power of 10. thus 0.2 is read as two-tenth. In this example the denominator is ten:

1. $0.3 = \frac{0.3}{1} = \frac{03}{10} = \frac{3}{10}$

2. $0.75 = \frac{0.75}{1} = \frac{075}{100} = \frac{75}{100} = \frac{3}{4}$

3. $0.5 = \frac{0.5}{1} = \frac{05}{10} = \frac{5}{10} = \frac{1}{2}$

4. $0.025 = \frac{0.025}{1000} = \frac{025}{1000} = \frac{25}{1000} = \frac{1}{40}$

Question related to either ones:

1. Change $\frac{8}{9}$ to a decimal fraction.

$$\frac{8}{9} = 0.88$$

```
 80    9
 72    --------
 -------  0.88
 80
 72
 ------
  8
```

2. Convert common fraction of $\frac{5}{6}$ to the decimal one.

3. Convert $\frac{133}{173}$ Common fraction to the decimal one.

```
 1330 | 173
      |------
 1211 | 0.76
------|
 1190
 1038
------
  162
```

$$\frac{133}{173} = 0.76$$

4. Convert 0.52 decimal fraction to the common one.

$$0.52 = \frac{52}{100} = \frac{13}{25}$$

5. Change 4.56 decimal fraction to the common one.

$$4.65 = \frac{465}{100} = \frac{93}{20} = 4\frac{13}{20}$$

6. Convert 0.95 decimal fraction to the common one.

$$0.95 = \frac{95}{100} = \frac{19}{20}$$

<u>Homework</u>:

1. Change $\frac{3}{4}$ common fraction to the decimal one.
2. Convert common fraction of $\frac{19}{20}$ to the decimal one.
3. Change $\frac{31}{41}$ common fraction to the decimal one.

4. Change 0.96 decimal fraction to the common one.

5. Convert 87.43 decimal fraction to the common one.

6. Change 0.220 decimal fraction to the common one.

<u>How To Put Ointment or Eye Drops in the Eye</u>

1. Points to remember:

   a. Avoid putting any eye med directly on the cornea this will cause discomfort.

   b. Avoid touching the eyelids or any other part of the eye with the eye dropper or ointment tube to reduce risk of infection.

   c. Eye drugs are sterile and should only be used for the affected eye or eyes. Never use the same eye drops or ointment for two different people.

2. Wash your hands.
3. Clean away and pus or crusts.
4. have patient tilt his head slightly backwards.
5. Hold a cotton ball below lower eye lid.
6. Pull the lower lid down to form a pocket in the conjunctive.
7. ask patient to look towards the ceiling (helps prevent him from blinking and prevents med from hitting the cornea).

8. <u>For eye ointment</u>:

   a. Apply a 1-1 1/2cm strip of ointment along the inside of the lower lid, making sure not to touch any part of the eye with the tube.

   b. Have patient close his eye and rub eyelid lightly in a circular motion with the cotton ball.

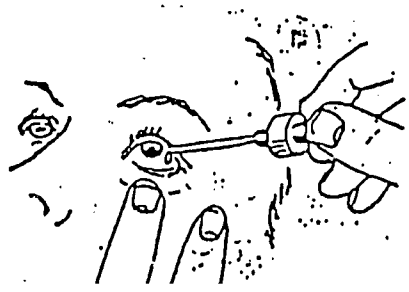
   c. Wipe away any excess med on eyelid from nose outward.

9. <u>for eye drops</u>:

a. Hold eye dropper 1-2 cm above lower eyelid conjunctiva.

b. Put the eye drops inside the lower lid near the outer corner, to prevent injuring the cornea and loss of medication.

c. Ask patient to close his eye gently.



Eye Care & Dressing

1.	Cotton Balls	5 each student
2.	Kidney basin	1 each 2 students
3.	Blue basin for water	1 each 2 students
4.	10cc syringe	1 each 2 students
5.	IV catheter any size	1 each student
6.	Plastic sheet	1 each 2 students
7.	Towel	1 each 2 students
8.	Otoscope	1 each 2 students
9.	match sticks	1 each 2 students
10.	Eye ointment	1 each student
11.	Eye drops (Optisol)	1 each student
12.	Match box, Naswaar box, lid, etc.. for eye dressing	
13.	Boiled water warm	
14.	Salt	

Demo in front of class
- exam
- meds
- clean
- dressing eyes

C.M.C.E.P. III.
(ENGLISH)

COMBINED CONTINUING EDUCATION PROGRAM (CMCEP)

PHC & MCH.

COMMON DISEASES & NURSING

SKILLS

HEALTH SYSTEM MANAGEMENT, FIRST AID, ANATOMY & PHYSIOLOGY, MIDLEVEL HEALTH WORKER SKILLS KNOWLEDGE

DEVELOPED BY:

WHO, IPH(MOPH), IMC, MCI, MSH & SCA

FUNDED BY: U.S.A.I.D.

USAID 735 b

Then demo in groups
Then practice each other

instillation of Ear Drops:

Ear drops are usually ordered as a means of applying heat to the ear to relieve pain or earache, or to soften a plug of wax, so that it can be removed by irrigation.

Ear drops may be glycerine, olive oil, etc. depending on the purpose for which they are used.

procedure:

1. Warm the solution or medication to 100F (37.60) placing the bottle or container into a basin of hot water for a few minutes.

2. make patient lie down, head turned to one side.
   a. For an adult, pull earlobe backwards and upward.
   b. for a child, pull earlobe backwards and horizontally.

3. Install 3-4 drops of the warm solution or oil into the ear. Hold the dropper about 1cm above the ear canal. Do not put it directly into the ear as this will cause pressure by forcing the drops inside and may damage the eardrum.

4. Instruct the patient to remain in the same position for 3-5 minutes.

5. Place a small cotton swab in the ear to prevent escape of the oil or medication from the auditory canal when the patient turns his head to a different position.

BEST AVAILABLE DOCUMENT

Ear Exam and Irrigation and FB and meds

Otoscope	1 each 2 students
Batteries - Bulbs	1 each 2 students
50cc syringe	1 each 2 students
Kidney Basin	1 each 1
Towels	1 each
Paper clips	1 each 2
Glycerin	1 bottles
Plastic dropper	1 each 2
Warm water	
Salt	

if possible, do ear exam and ear medications on one day give glycerin to those with wax (or all students). The second day, do irrigation and FB removal.

GENERAL INSTRUCTIONS FOR INJECTIONS

SYRINGES AND NEEDLES:

1. Syringes: (3cc, 5cc, 10cc) It is important to check the size of the syringe in order to give the correct amount of medicine.

   a. Each line of a 3cc or 2 1/2cc syringe represents 1/10cc (0.10cc)
   b. Each line of a 5cc or 10cc syringe represents 2/10cc (0.20cc).
   c. Each line on a 50cc or 60cc syringe represents 1cc.

2. Needles vary in length and gauge (diameter).

   a. Gauge - the diameter of the hole in the needle.
      1. the larger the gauge number, the smaller the hole diameter.
      2. A 23 gauge needle has a small diameter hole.
      3. A 20 or 18 gauge needle has a larger diameter hole.
      4. When giving thick medicine like penicillin or ampicillin, you must use a larger needle such as a 20 gauge.

BEST AVAILABLE DOCUMENT

b. Length

1. on the package it will state: 20g x 1 1/2 or 23g x 1", The 1 1/2" or 1" refer to how long the needle is.
2. You must use a long needle on an adult when you give an I.M. injection to make sure you reach into the muscle.

Injections:

1. Injections work by pressure.

2. Fluids tend to flow from ares of greater pressure to areas of lower pressure.

3. In a sealed vial, you must first inject air into the vial to increase the pressure inside. When you now withdraw the fluid, it is actually pushed out into your syringe by the pressure.

4. When you inject medicine into tissue, the pressure in the tissue is then greater than the pressure in the capillaries, so the medicine is forced into the capillaries.

Factors affecting the absorption of injected medicines:

1. Absorption is favored by heat and inhibited by cold. (heat increases the blood supply).

2. Walking or moving the part after an injection increases absorption.

3. Rubbing the injection area increases the blood supply, so absorption is increased.

4. the solubility of the medicine affects absorption - the thicker the medicine, the slower the absorption.

Indications for using injection rather than giving meds by mouth:

1. Severe vomiting.
2. A patient who cannot take anything by mouth.
3. An unconscious patient.
4. Giving a medicine which would be destroyed by stomach digestive juices (like insulin or adrenalin).
5. When you need a med to be rapidly absorbed.

Dangers of injections:

1. Bacterial abscess from dirty injection equipment.
2. Sterile abscess (too large a volume of medicine in one area which does not fully absorb into the tissues).
3. Allergic reaction.
4. Nerve damage - paralysis.

Types of injections:

1. Intradermal (I.D)

   a. Given in between the thin layers of skin.

   b. there are more nerves in the skin than any other part of the body so injections near the surface cause more pain.

   c. the injected meds go through the lymph into the blood.

   d. I.D. injections are used mainly to test for allergy to a medicine (such as penicillin, ampicillin and A.T.S.)

2. Subcutaneous (S.O. or SC)

   a. Given in tty tissue beneath the skin.

   b. There is a good supply of blood, lymph and nerves in the SO tissue.

   c. With a SO injection, pick an area such as the outer arm or thigh which is poorly supplied with sensory nerves to decrease the pain.

d. Adrenalin and insulin are given by so injection.

e. Medicine starts to work in 2-3 minutes.

3. Intramuscular (I.M)

a. muscles have large blood vessels and have less sensory nerves, so injections here are less painful than superficial injections.

b. there is a danger of injecting into a blood vessel here (which would actually make it an intravenous injection).

c. Medicine starts to work in 5-15 minutes.

d. the gluteus muscle in adults is the best muscle for adult injections.

e. The mid outer thigh is the best site for babies and children.

4. Intravenous (I.V)

a. As all medicines get to the body tissues through the blood, this is the most dangerous injection, as 100% of the medicine gets directly into the blood stream.

b. An IV medicine MUST be given slowly, over 5-10 minutes.

c. There is a great danger of severe allergic reaction.

Sterility and cleanliness:

1. Soap and alcohol are antiseptics - they do not kill microbes, they only slow their growth.

2. You cannot sterilize you hands or the area of skin where you given an injection - you can only minimize the amount of microbes present by cleansing with and antiseptic.

a. Always wash your hands before and after giving injections.

b. Cleans the area for injection well with alcohol - cleanse in a circular motion, from the inside out.

3. When opening a sterile package containing a needle and/or syringe, never touch the parts which attach to each other with your hands or any unsterile surface.

4. Always clean the top of a medicine vial with alcohol.

Medicine in a glass ampule:

1. Scratch a line around the neck of a glass ampule with a scoring blade, and hole a piece of cotton around the neck before snapping of the top. This prevents the ampule from shattering in your fingers.

3. Be careful not to touch the outside edge of the ampule with your needle when withdrawing the liquid, because the edge is unsterile.

3. Do not reach the needle to the bottom of the ampule when withdrawing the liquid as there may be small slivers of glass on the bottom.

4. Throw away any unused medicine from the ampule as you cannot (greaseal an ampule and keep the medicine sterile.

Giving Medicine from A Sealed Vial

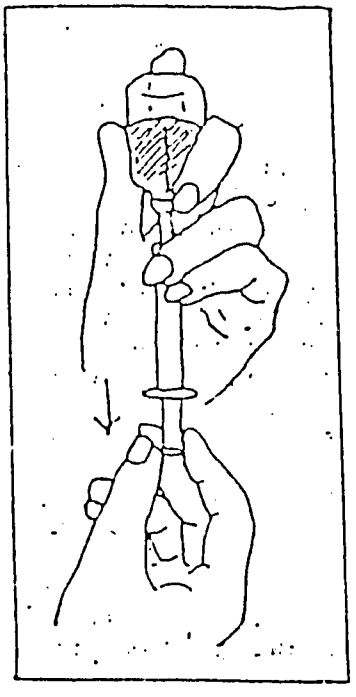
1. If you want to give 2 ml of medicine, draw up 2 ml of air into the syringe.

2. Wipe the top of the vial with alcohol. Inject the air into the vial.

3. Withdraw 2 mls of medicine from the vial.

4. If there are air bubbles in the syringe, tap the syringe and gently push out the air with the plunger. (Do not inject air into the patient).

This drawing shows how to fill the syringe with medicine.



Mixing a vial of powdered medicine for injection:

1. You must add the proper amount of sterile water (or saline) to the dry powder in the vial.

2. If you want to add 2 ml of sterile water to the powder vial you must first withdraw 2 ml of air from the powder vial.

3. Next withdraw 2 ml of water from the water vial.

4. Then injection the 2 ml water into the powder vial.

5. Mix the powder and water well, making sure all the powder dissolved.

BEST AVAILABLE DOCUMENT

Giving Medicine From A Sealed Vial

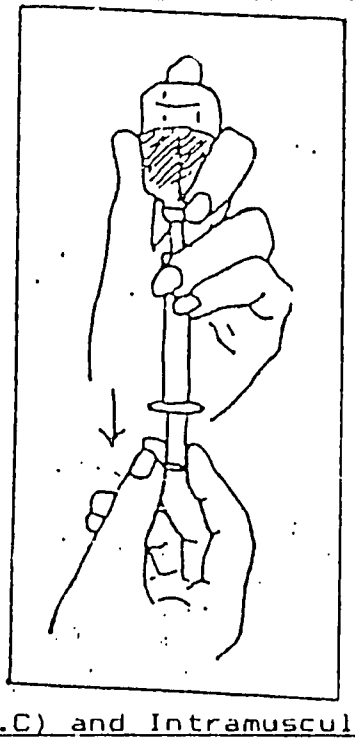
1. if you want to give 2 ml of medicine, draw up 2 ml of air into the syringe.

2. Wipe the top of the vial with alcohol. Inject the air into the vial.

3. Withdraw 2 mls of medicine from the vial.

4. If there are air bubbles in the syringe, tap the sade of the syringe and gently push out the air with the plunger. (Do not inject air into the patient)

This drawing shows how to fill the syringe with medicine.



Subcutaneous (S.C) and Intramuscular (I.M) Injections

Giving Subcutaneous (SC) Injections:

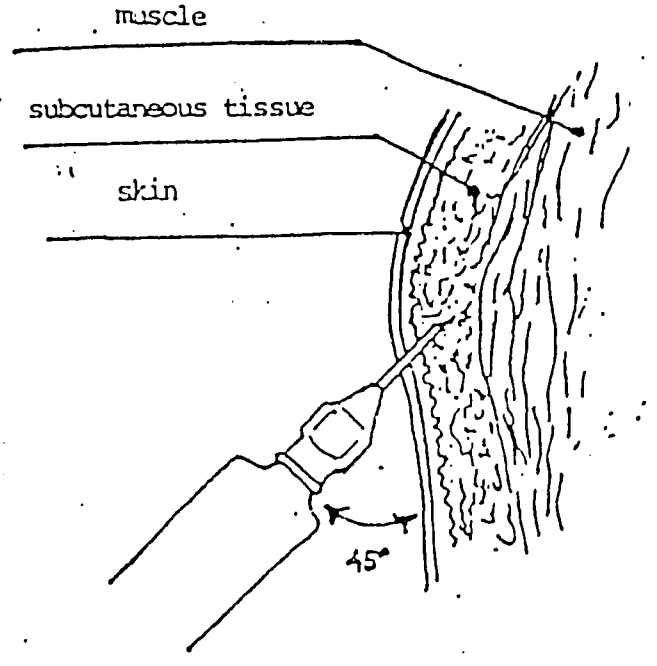
Places on the body to give subcutaneous Injections:

1. Outside part of middle upper arm
2. Top and outside parts of thighs
3. Lower abdomen

BEST AVAILABLE DOCUMENT

4. Buttocks

The subcutaneous Injection goes into subcutaneous tissue just below the skin as shown by this drawing.



Giving The Subcutaneous Injection:

1. Draw up the medicine into a syringe. Use a 20 gauge or 22 gauge needle.
2. Tell patient he is going to receive an Injection.
3. Clean the Injection site with alcohol. do not give Injection until alcohol is dry.
4. Remove the needle cover and hold the syringe in one hand.
5. With the other hand, pick up skin between the thumb and second finger.

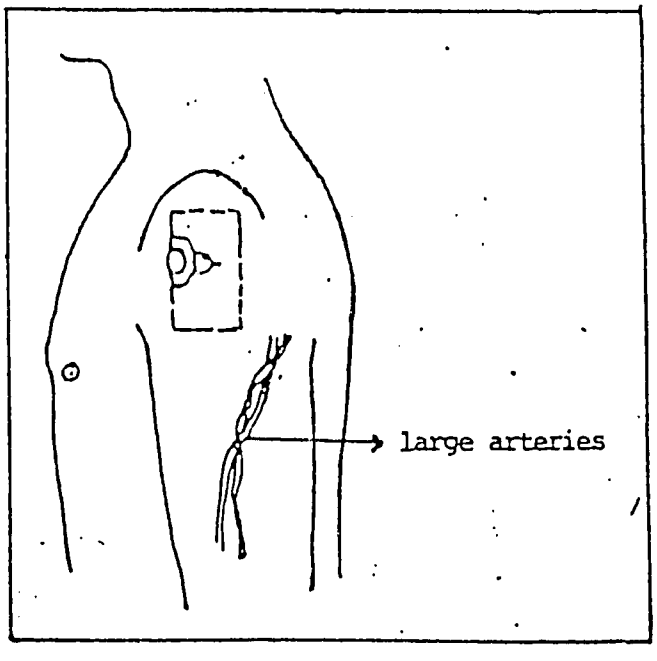
6. Put the needle into the skin at a 45 degree angle. do not put needle into the skin more than 1 1/2 centimeters. Put the needle in quickly.
7. Pull back on the plunger. If there is blood in the syringe, do not inject the medicine, Move the needle to another Injection site and repeat this process. If there is no blood when the plunger is pulled back at the new site. Inject the medicine.

BEST AVAILABLE DOCUMENT

8. Inject the medicine slowly, until all medicine is in.
9. Pull the needle out quickly at the same angle it was put into the skin.
10. Rub the injection site gently with the alcohol sponge to help absorb the medicine.
11. Medicines Injected subcutaneously should work in about 30 minutes.

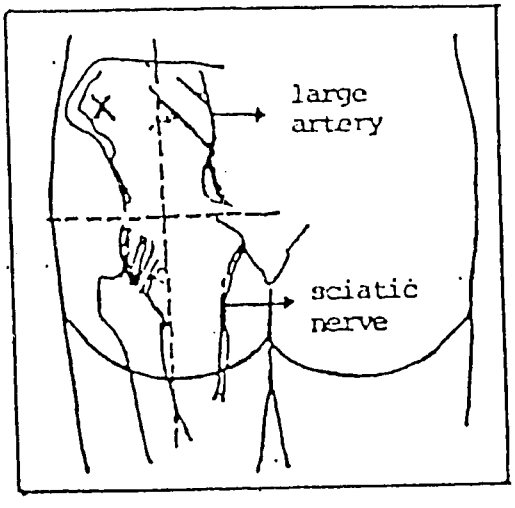
Giving Intramuscular (IM) Injections

1. Do not inject more than 1 ml of medicine into the arm site. In the buttocks hips or thigh, do not inject more than 2 1/2 mls. If more than this is necessary, give the medicine in two or more injections.
2. Arm site: Use the upper 1/3 of the arm, outer side, about 2 inches below the shoulder. This drawing shows where to inject in the arm.



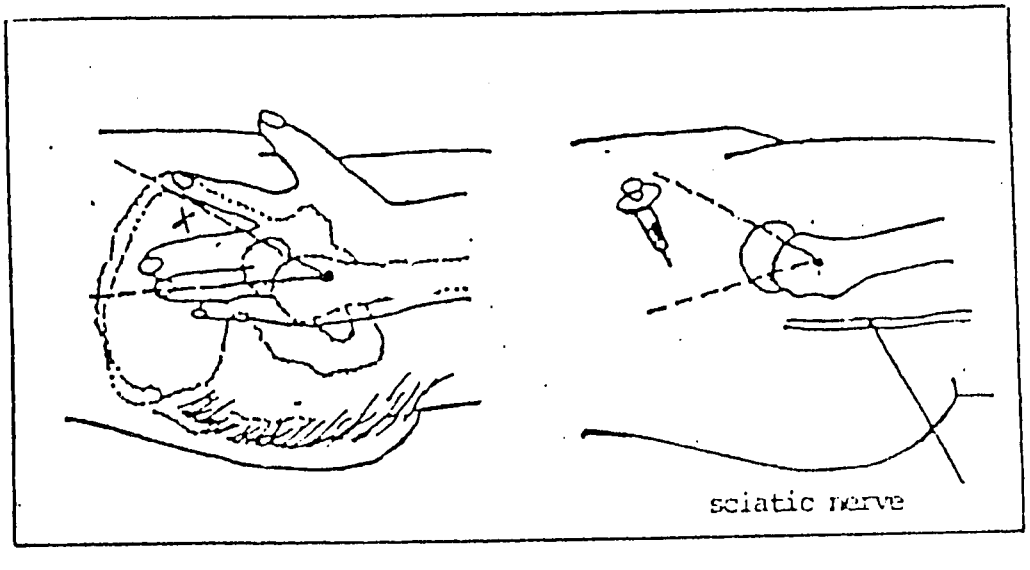
BEST AVAILABLE DOCUMENT

3. <u>Buttock site</u>: Divide the buttock into quarters; give the injection in the upper outer quadrant. This is shown in this drawing.



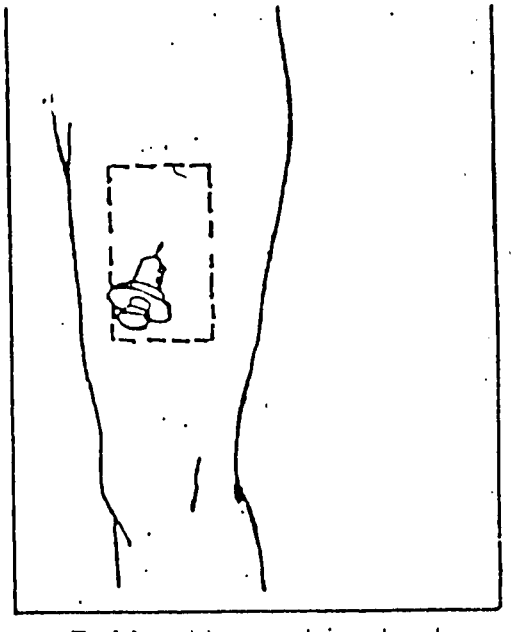
4. It is easier to give an IM injection if the buttock muscles are relaxed. To do this have the patient stand up or lie down, with his toes pointed inward.

5. Outer hip site: Place your palm over the end of the thigh bone. Put your second finger on the front hip bone. Spread your middle finger out towards the back top edge of the hip bone. Give the injection between the second and middle fingers. This is shown by the drawing.



BEST AVAILABLE COPY

6. <u>Thigh site</u>: This is the safest and best site to use for small children and babies. Give the injection from the middle of the front to the middle of the side of the thigh, from a hand's width below the groin to a hand's width above the knee. This drawing shows how to give a thigh injection.



7. Wash your hands. Tell the patient he well receive an injection.

8. clean the site with alcohol. Let the alcohol dry completely.

9. Flatten the skin at the site with your thumb and second finger, pressing down firmly. This makes the injection site tight so the needle will go in easily.

10. Put the needle in quickly, like a dart, at a 90 degree angle (straight up and down). Put the needle in all the way.

11. Pull back the plunger. If there is blood in the syringe put the needle in another site.

12. Inject the medicine with a slow continuous motion.

13. Apply pressure at the injection site with the alcohol sponge, while removing the needle with a quick straight up motion.

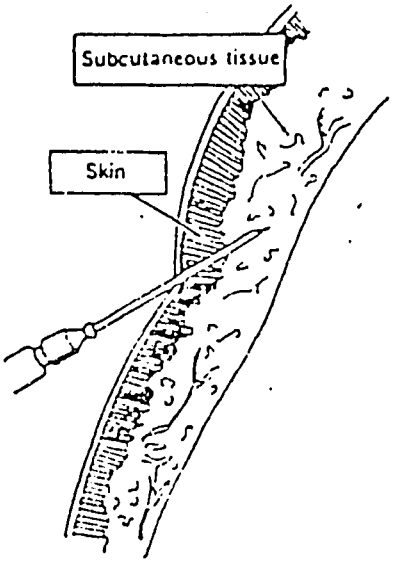
BEST AVAILABLE COPY

14. Rub the injection site gently with the alcohol sponge to help absorb the medicine.

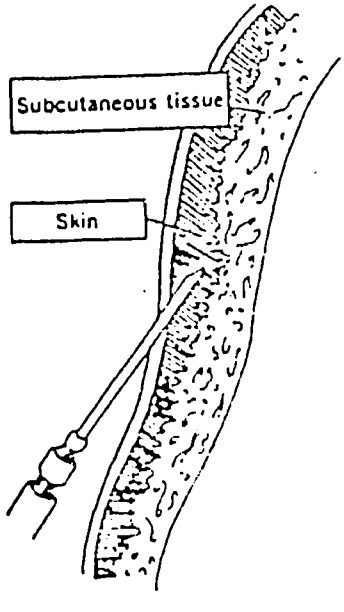
INTRADERMAL SKIN TESTING

1. Used to test a patient's sensitivity and possible allergic reaction to a medicine (Ex: Pronapen. A.T.S. Ampicillin, Keftrex)

2. An intrademal injection is given into the top thin layer of skin <u>NOT</u> into the loose subcutaneous tissue under the skin.



Subcutaneous injection



Intradermal injection

BEST AVAILABLE COPY

Procedure

1. Prepare medicine for injection.
   a. Then dilute 0.1 cc medicine with 0.9 cc sterile water. choose proper site for test.

2. Choose proper site for test
   a. The underside of the forearm is a good site.
   b. Choose a site away from any blood vessels, with clear skin (no rashes or irritation).

3. Clean site with alcohol (about 2 inches in diameter) using a circular motion from inside of circle to outside. Let alcohol dry!

4. Hold the skin taut (tight) from underneath the arm, so the needle will go into the skin easily.

5. With the bevel (hole) of the needle pointing UPWARDS, place the needle flat on the skin.

6. Slide the needle directly into the thin layer of skin, until the needle hole is completely in the skin.
   a. If properly done, you should see the hole of the needle through the skin.
   b. If you insert the needle to deep in the skin the test will not be accurate.

7. Inject 0.1 ml of the diluted medicine into the skin.
   a. If you inject a larger amount of medicine, the skin might react to the amount of medicine rather than the medicine.
   b. If properly done, the medicine will form a bubble ABOVE the skin (like a blister) that is firm, raised, with a well-defined edge.

8. Remove the needle, DO NOT RUB THE AREA.

9. Circle the bubble with a pen, so you can see the exact size and site later to check for reaction.

10. Wait 30 minutes (minimum). Check for reaction.

11. Positive reaction:
    a. Bubble area is larger area than original test size.
    b. Other signs/symptoms patient may have:
        1. redness
        2. itching
        3. warmth
        4. rash
        5. anaphylactic shock (rare)

12. The nurse (not assistant nurse) should check the reaction.

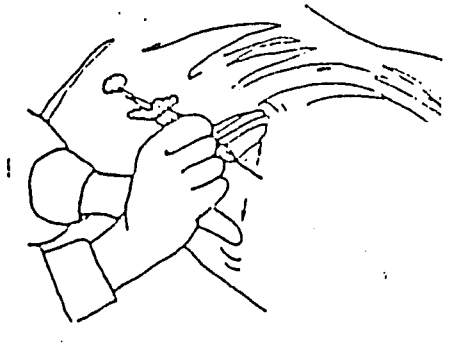
13. If none of the signs/symptoms of reaction are present at the 30 minute check, you may give the medicine.

14. Note: There is always a possibility that at a later time a reaction will occur.

INFORMATION ON INJECTION:

Intramuscular Injections:
Intramuscular injections must be given deep into large muscles. Always inject at 90 degrees to the skin surface. Always stretch the skin over the injection site. In case of blood return: Pull needle back 1-2cm, and re-insert it at a slight angle. check for blood return again.

Three muscles are large enough for IM injections:
1. Shoulder
2. Buttock
3. Thigh



BEST AVAILABLE COPY

FOR INFANTS:

Never inject the shoulder until the child is 4 years old. ALWAYS USE THE THIGH UNTIL THE CHILD HAS WALKED FOR ONE YEAR!

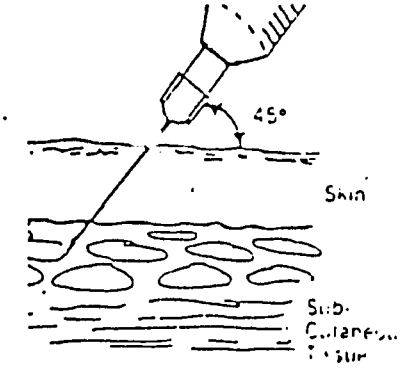
Subcutaneous Injections:

Subcutaneous injections are given into the fat layer between the skin and muscle.

Always inject at 45 degrees to the skin surface Always pinch up a fold of skin over the site in case of blood return: Pull needle back 1-2cm, and re-insert it at a slight angle. Check for blood return again.

Three body areas have thick fat over the muscle:

1. Back off upper arm
2. Outer thigh.
3. Lower abdomen.



No difference between children and adults.

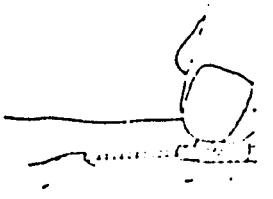
Intradermal Injections:

Intradermal injections are given between skin layers. Always inject at the shallowest possible angle to the Always inject at the shallowest possible angle to the skin surface.

Always stretch the skin over the injection site. Only insert he needle far enough to cover the hole in the end of the needle.

DO NOT ASPIRATE FOR BLOOD RETURN

A blister must appear instantly after injection.
If no blister comes up, the injection was subcutaneous.



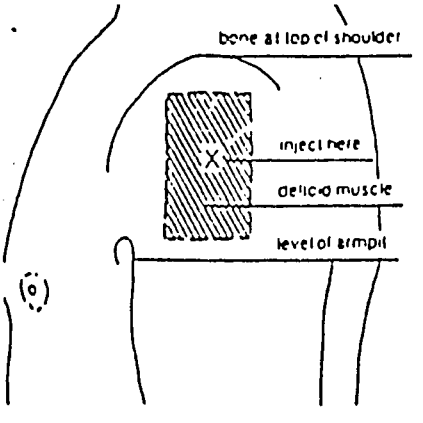
No difference between children and adults.

INTRAMUSCULAR INJECTION SITES

Shoulder:

The shoulder muscle CANNOT be used for injections over 1CC.

Measure 3 finger widths down from the joint at the top of the shoulder.
Inject into the middle of the muscle (thickest part).



Buttocks:

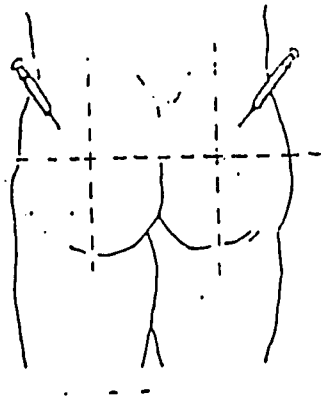
For Adults;

The buttocks can be used for injections up to 2.5cc.

For a 5cc injection, 2.5cc will be given in each buttock.

Divide the buttock into 4 equal quarters.

Inject into either upper-outer quarter.



Thigh:

For Adults:

The thigh muscle can be used for injections up to 2.5cc. for a 5cc injection, 2.5cc will be given in each thigh.

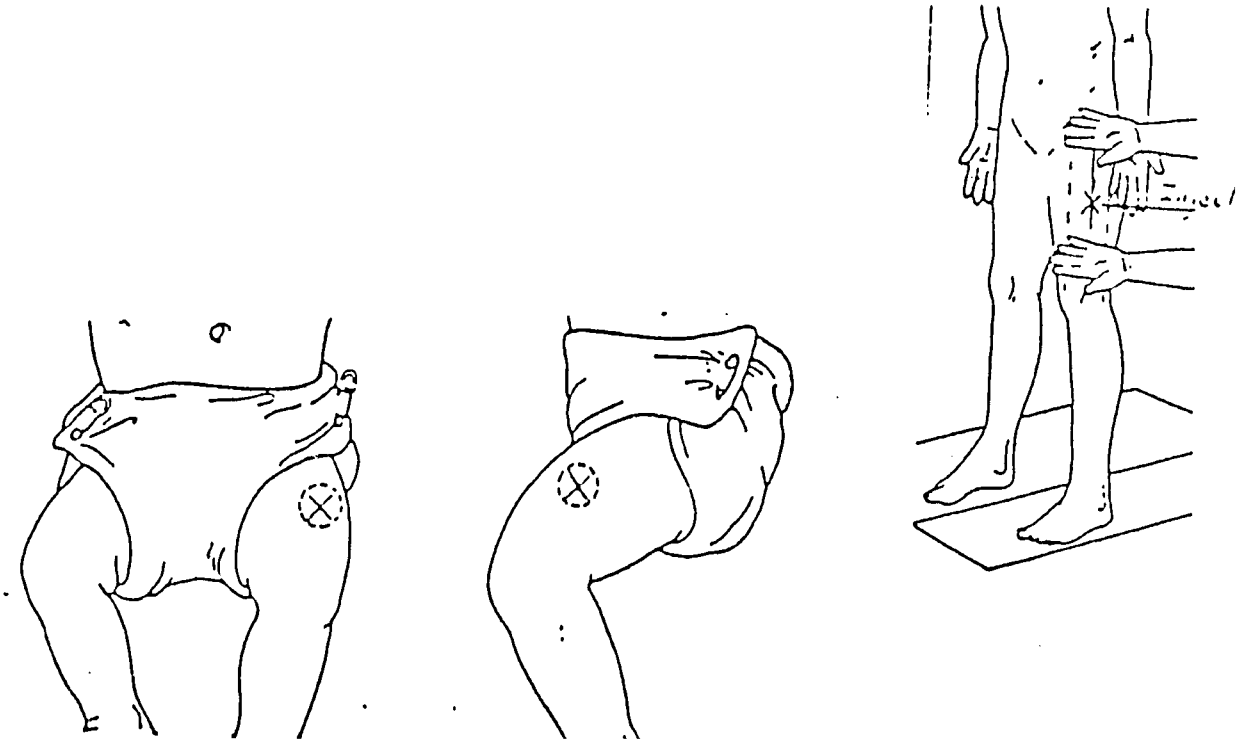
For Infants:

Inject maximum of 1cc in each thigh.

Draw a line from hip to knee on front of thigh. Draw a line from hip to knee on outside of thigh.

Measure one hand width above the knee, and one hand width below the hip.

The line halfway between the first 2 lines and between the hands is where to inject.



SUBCUTANEOUS INJECTION SITES

Back of Upper Arms:

Halfway between shoulder and elbow.

Always pinch up a thick roll of skin over the site.

Outer Thigh:

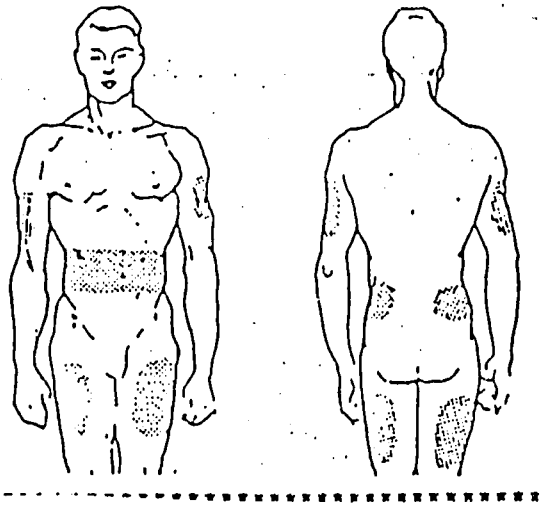
Halfway between hip and knee.

Always pinch up a tick roll of skin over the site.

Lower Abdomen:

Between the level of the umbilicus and pubic bone.

Always pinch up a thick roll of skin over the site.



INTRADERMAL INJECTION SITES

Inside of Lower Arm:

Halfway between wrist and elbow,

DO NOT inject over a vein.

Blister must appear at injection site instantly.

Circle injection site with a pen immediately after injection.

DO NOT rub injection site.

Mixing Injectable
Opening Ampules

1.	Ampules files	1 each
	Sterile H20	2 each
	Powder vials	1 each
	Alcohol balls	1 each group
	Syringes	1 each

Syringes Needles

1 each	50cc	Syringe
	10cc	
	5cc	
	3cc	
	1cc	
1 each	18	1 1/2 needle
	21	1 1/2
	23	1in
	27ga	5/8in

Can use the used syringes for this practical. However, students need to practice opening sterile packets of all disposable supplies.

INJECTIONS

1.	Syringes	- 3cc	1 each student
		- 1cc	1 each student
2.	Needles	- 18g	
		- 21g	1 each student x 5
		- 23g	2 each student x 5
3.	Alcohol balls		1 each group
4.	Small Basin		1 each group
5.	Trash container		1 each group
6.	1% Savlon		1 each group
7.	Towel		1 each group
8.	Normal Saline -		1 bag each group

9. Dummies - take apart for each group
10. Pen each group to mark, ID test wheal

STARTING AN I.V.

IV. Therapy used to:
- give drugs and fluid to body
- Increase blood volume
- supply nourishment

Must be careful with IVs - serious complications can occur:
- Injury to blood vessels and surrounding tissue
- allergic reactions
- air embolism (IV injection in arm reaches heart in about 7 seconds)
- over loading circulatory system with excessive fluids (these are excreted in the kidneys or go into the tissues and lungs.)

IVs are given into the veins, NOT the arteries.

Veins - darker blood, no pulse, carry blood back to heart
Arteries - blood brighter red, spurting, carries blood away from heart

1. IV placed in direction of blood flow in vein - toward the heart.
2. When you place a tourniquet on arm (BP cuff), you want to block the blood flowing through the vein, but NOT the blood flowing through the artery.
3. You want the vein to fill up so needle can go in easily. If artery is closed off, no blood will flow for the artery to the vein.
4. After you have applied the tourniquet, always check to see if radial pulse still present - that means artery is open.
5. If you are using a BP cuff as a tourniquet, inflate it to about 1/2 of the patient's systolic blood pressure. (about 50-60 mm Hg).

IV Sites:

1. Forearm best - most suitable veins
   a. Veins relatively straight, easily seen and easily stabilized with thumb.

b. Used for rapid fluid infusion and blood transfusions, and long-term IV

2. Veins in elbow larger - if trauma case with decreased BP, use if other veins are not available.
   a. IV at elbow interferes with elbow movement and may infiltrate easily.

3. Metacarpal veins - back of hands
   a. Skin thin, fewer nerve endings
   b. Used for slow infusions

4. Scalp veins for babies

5. Leg veins - inner leg from ankle to thigh (at ankle)
   a. Least preferable - potential for thrombophlebitis and embolism

6. When choosing an IV site, if not an emergency, start low on the arm.
   a. If you go through the vein and have to start over, go to the other arm, or choose a site higher than the bad site on the same arm.

<u>IV Equipment</u>:

1. Needles:
   a. IV catheters - angiocath - plastic needle over a metal needle
      - Use larger gauge (bore) 14 9 or 16 9 for adults, especially if large amount of fluids to be given
      - Shorter length also better - 1 or 1 1/4 inch
      - Two types here - chinese and American
   b. Butterfly needles - used for babies and small children
   c. Straight metal needles

2. IV solution bag/bottles and administration tubing

3. Alcohol and cotton balls

4. Adhesive tape to anchor needle and tubing

5. BP cuff or other tourniquet

<u>IV Procedure</u>:

1. Choose IV solution (Normal Saline, Dextrose 5% in Water, Ringer's Lactate, Dextran)
   a. Check solution bag for leakage, contamination, cloudiness, expiration date.

2. Attach administration tubing to bag and run fluid through tubing, removing any air.

3. Choose needle/catheter. (Well use 20 g for practice). Slide cath up and down needle to check it's OK. Leave cath at proximal end of bevel.

4. Cut 4 Pieces 1/2 inch tape, about 4 inches long and one 1 inch tape about 5 inches long.

5. Get alcohol and cottonball ready.

   Make sure you have washed your hands!!
   It is best if patient is lying down.

6. Apply tourniquet (or BP cuff) above midarm. Make sure radial pulse is present.

7. Select vein: near surface, straight, doesn't roll, feels springy when touched.
   - Let patient is arm hang over edge of bed
   - have him open and close fist and then keep it closed till needle is in vein
   - slap site of vein
   - apply heat to site (wrap arm in hot towel)

8. Cleanse site with alcohol - circular motion in a wide area. Let dry. Wipe your fingers with alcohol (those you use feel for the vein).

9. Choose a good vein. With thumb or finger of left hand, press/pull skin down just below vein. This stretches skin and anchors the vein, making insertion easier.

10. With the needle bevel up, position needle in direction of shoulder. Enter skin and vein either from the top or from the sides.

11. Hold needle at a 45 degree angle about 1/2 inch below where you want to enter the vein. firmly pierce the skin and tissue, but NOT the vein.

12. Lower the needle, till almost flat (about 10 degree angle) and move needle directly over vein.

13. Pierce the vein wall. You should be able to feel a "pop" or less resistance when you enter the vein. blood will appear in the end of the needle.

14. With angiocath, push needle in about 2 mm's or 1/8th inch more, to assure that the catheter is in the vein. Do not aim down - might pierce back of vein wall.

15. Push the plastic catheter into the vein with a twirling motion, all the way to the hub.

16. Take out needle. Release tourniquet. Press down on vein above IV site white you connect IV tubing to needle, so blood doesn't come out.

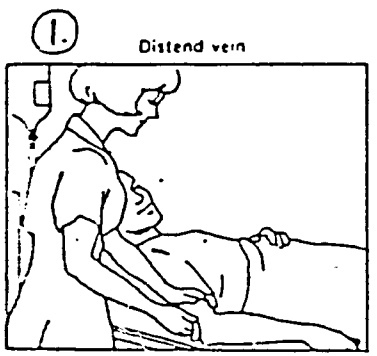
17. Observe flow of fluid. If slow, pull back on catheter very slightly - cath end may be resting against vein wall.

18. Observe for swelling in area or hematoma - if noticed, remove cath - start again.

19. Lape catheter in a "V". Tape distal and of tubing in a "V". Loop tubing up towards shoulder and tape.

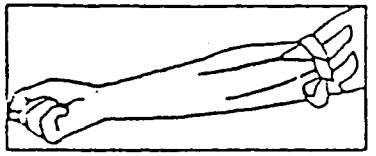
20. Adjust fluid rate. IV solution must be above level of heart.

BEST AVAILABLE COPY

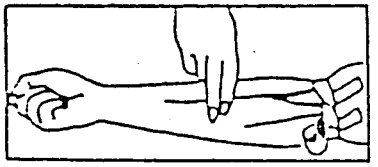


1. Distend vein

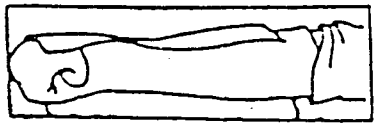
Tourniquet. Before placing tourniquet, vein distention can be aided by letting patient's arm hang over edge of bed. Then tighten tourniquet only enough to block venous backflow without cutting off arterial flow.



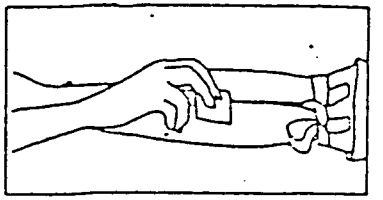
Fist. Distention is aided if patient alternately opens and closes fist, finally clenching it, and keeping it closed until needle is in vein.



Slap. If distention is insufficient, slapping site may increase prominence of vein.

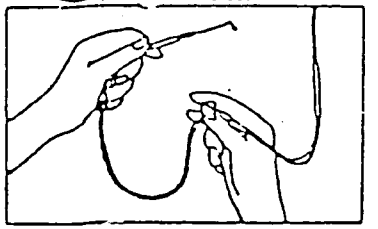


[illegible]



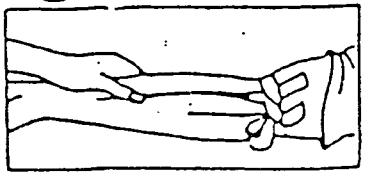
2. Cleanse site

Thoroughly cleanse and prepare injection site. If prepping agent is prewarmed, vein is less apt to contract from sudden contact with a cold antiseptic solution.



3. Prime set

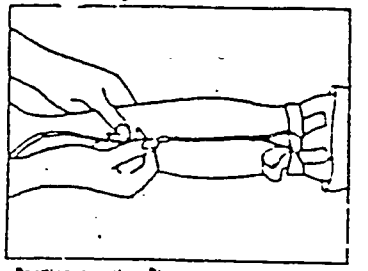
Clear all air from tubing and needle by loosening clamp and expelling some of fluid. Then close clamp.



4. Stabilize vein

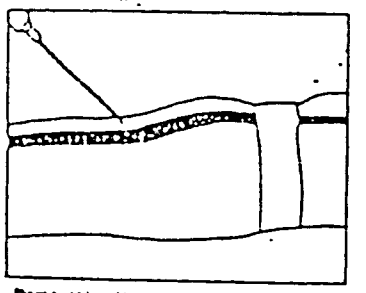
Steady hand with one hand grasp [illegible] of finger pressure over skin surface just below injection site to stretch skin and anchor vein.

Choice of venous cannulation

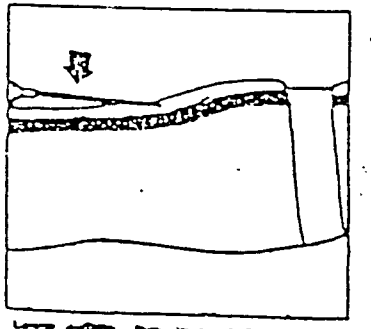


5. Begin venipuncture

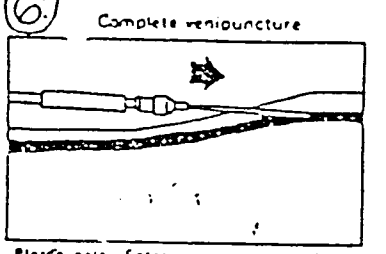
Position needle. Place needle tip barely to one side of vein, about ½ inch below site selected for entering vein proper. Bevel up. Point needle in direction of venous flow (toward shoulder).



Pierce skin. Holding needle at 45° angle above skin surface, firmly pierce skin and underlying tissue to reach but not penetrate vein.

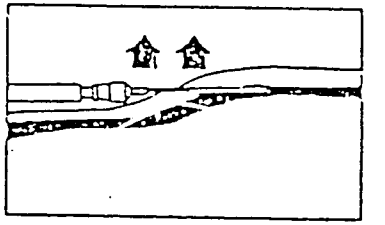


Lower needle. [illegible] angle [illegible] skin surface. [illegible] to directly over vein.

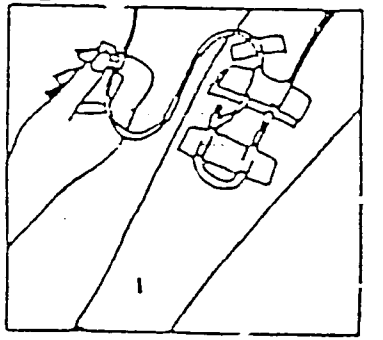


6. Complete venipuncture

Pierce vein. Enter vein slowly, verifying entry by flashback of blood into clear needle adapter.



Advance needle. After flashback is confirmed, cautiously advance needle well into vein, at the same time lifting slightly upward with needle shaft, to avoid piercing opposite wall.

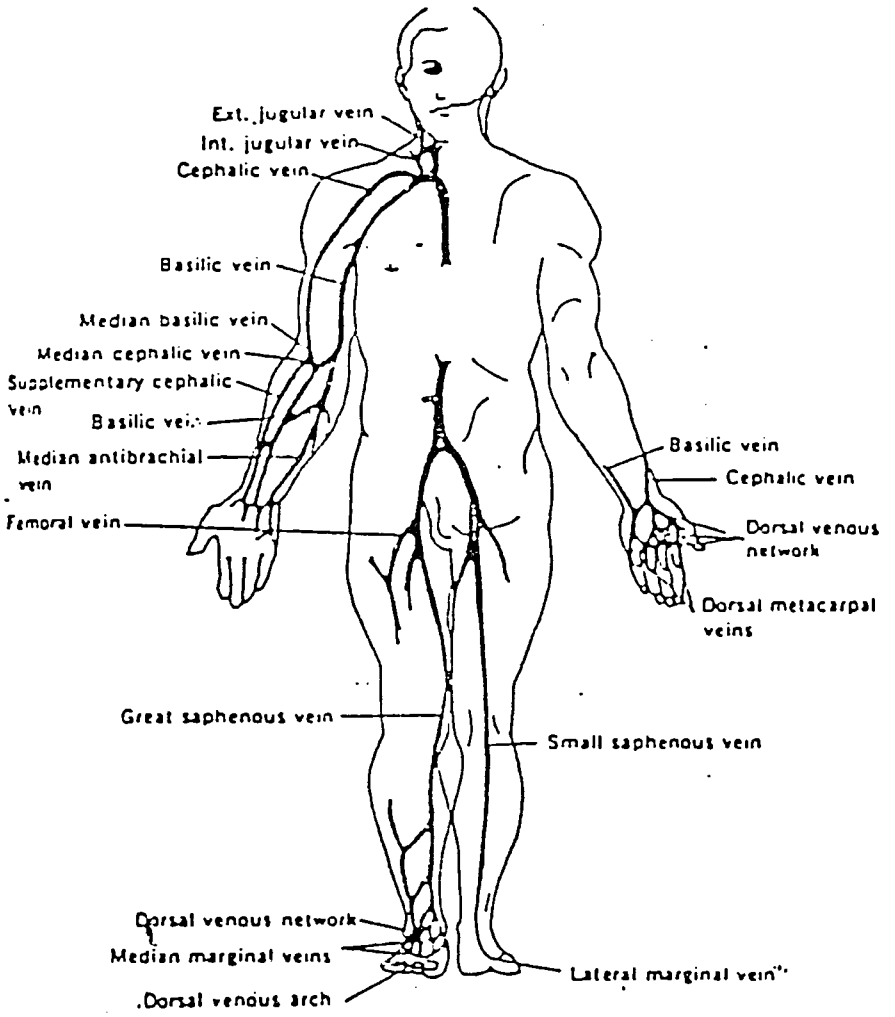


7. Begin infusion

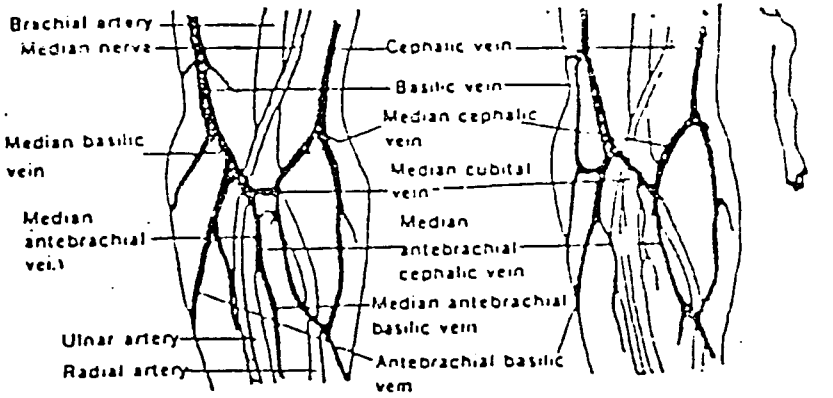
Release tourniquet and open clamp to check for unimpeded flow. Flow needle and protective sleeve of tubing firmly in place. Adjust clamp to [illegible]

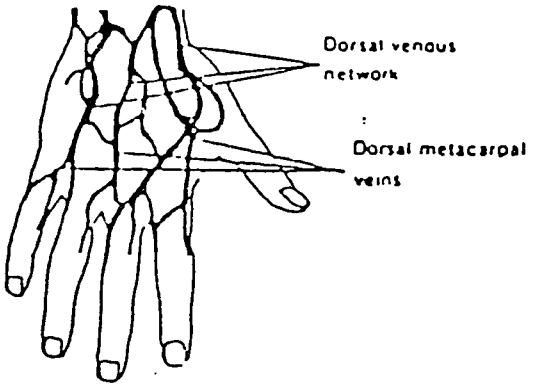
How to make the venipuncture.

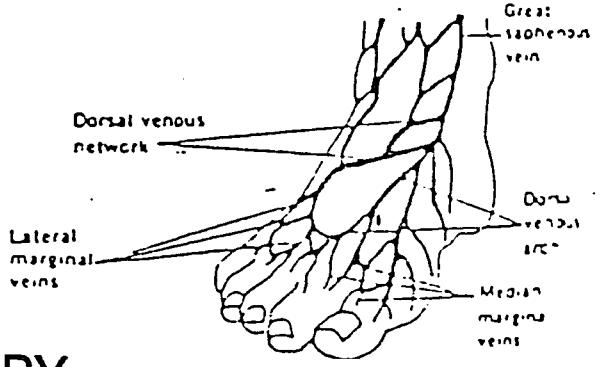
(761)



Superficial veins used for I.V. infusions and drug injections.







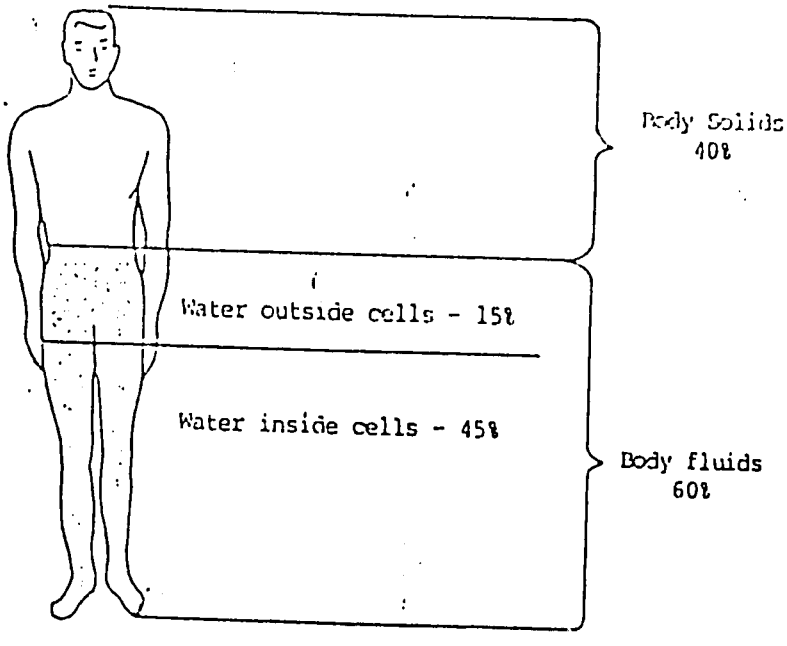
BEST AVAILABLE COPY

I.V. SOLUTIONS

You will be treating people with different illnesses and injuries. Some of these will be caused by a loss of fluid from the body, and others will be the reason the body loses fluid (large wounds or burns).

The body is made up chiefly or water (60%: (42 L for a man)

1. 45% - water inside the cells (31.5 L)
2. 15% - water outside the cells: (10.5 L)
   a. 10.5% water around the cells (7.35)
   b. 4.5% water in the blood (5 liters of blood in the body_



The normal person loses approximately 2 to 2 1/2 liters of fluid a day through urine, feces, the Tungs and skin. these losses are usually replaced by fluid and food intake.

Abnormal loss of body fluid is caused by:

1. Gastrointestinal losses (vomiting, diarrhea)
2. High fever, hyperventilation, hot weather
3. Increased sweating
4. Increased urine losses
5. Plasma losses from burns, drains, wounds and bleeding.

Blood made up of 5 elements:

1. Red blood cells (40-45%)
   - RBOs contain hemoglobin - carry oxygen
2. White blood cells - defense, produce antibodies
3. Platelets - blood clotting and sealing leaks in injured blood vessels
4. Plasma - fluid part of blood - 55%.

If a person has lost a large amount of body fluid. IVs might be necessary.

Intravenous fluids are given to:

1. Give drugs and fluid to the body
2. Increase the blood volume
3. Supply nourishment

Different IV solutions:

1. Colloids: solutions with relatively large molecules that stay in the blood vessels for quite a while and hold in fluid. These solutions restore blood volume to prevent or treat shock.
   a. Whole blood
   b. Human Plasma
   c. Dextran (plasma substitute)

2. Crystalloids: Non-protein containing fluids, that don't stay in the blood vessels long they readily pass through the blood vessel walls. Most useful when only salt and water have been lost, such as in dehydration.

A. Advantages:
   a. Easily manufactured, less expensive than colloids
   b. No danger of transfusion hepatitis
   c. Stored at room temperature

B. Disadvantages:
   a. Need larger amount initially to restore blood volume (2-3x amount lost)

b. Wet-lung problem - with overinfusion, increased lung moisture
c. Large amount doesn't stay in blood - may lead to edema
d. Blood volume expansion does not remain long

C. Normal Saline (Sodium chloride, NaCl o.9%).
a. Replenishes fluid and electrolytes
b. Too much can lead to retention of water, sodium and chloride excess and potassium deficiency
c. Commonly used for trauma patients

D. Ringer's Lactate solution
a. Good for fluid loss due to trauma and for dehydration
b. Contains sodium chloride, potassium chloride, calcium chloride and sodium lactate and sterile water approximately the same electrolyte concentration as blood plasma.
c. Some people do not use it because it contains several drugs and may not be beneficial and could be harmful

E. 5% Dextrose in water
a. Used for calorie replacement, but contains no electrolytes
b. Good solution for slow IV infusion of numerous drugs

F. 5% Dextrose and 0.9% Sodium Chloride
a. use before and after surgery

How to calculate how much fluid is to be given

1. Each IV administration set (tubing) delivers a certain number of drops per milliliter.
   a. Common drop factors for IV administration sets are:
      a. 10 drops in 1 milliter
      b. 12 drops in 1 milliter
      c. 15 drops in 1 milliter
      d. 20 drops in 1 milliter

2. To figure out the rate (drops per minute) or how fast the IV should run:
   a. Total amount of solution = number of mls per hour number of hours

b. Ml per hour = number of mls per minute

c. Ml/minute X number of drops per ml = number of drops per minute

3. Example for No. 2: 1000 ml in 8 hours

a. $\frac{1000 \text{ ml}}{8 \text{ hours}}$ = 125 mls per hour

b. 125 mls/hour = 2.08 mls/minute

c. 2.08 ml/minute X 20 drops pr ml = 41.6 or 42 drops/minute

4. Another way to figure out the rate of an IV:

Drops/minute =

$$\frac{\text{volume to the infused x drops/1 ml of administration set}}{\text{Total time of infusion in minutes}}$$

Example: 1000 ml in 12 hours

$$29 \text{ drops/minute} = \frac{1000 \text{ ml X 20 drops/ml}}{720 \text{ minutes (12 hours)}}$$

5. KVO (keep vein open rate: 1000 ml in 12 hours)

a. Administration set that delivers 12 drops for milliter = 17 drops per minute

b. Administration set that delivers 20 drops per milliter = 29 drops per minute

6. For patients after surgery who are NBM (nothing to eat or drink) with NO bleeding and NO hypovolemic shock:

* In normal weather - give 3000 mls/24 hours
* In hot weather - give 3500-4000 mls/24 hours

* 3000 mls IV fluid:

2000 ml Dextrose 5% in water OR 2000 ml Dextrose 5% in water
1000 ml Normal Saline 500 ml Ringer's Lactate
500 ml Normal Saline

7. For patient with severe bleeding or hypovolemic shock:

1. Alternate 1000 ml Normal saline and 1000 ml D5 NSS
2. Keep he IV running as fast as possible
3. When the urine output returns to normal (30-50 ml/hour) return to the following rates and solutions: (noted above with * in # 6)

8 For children:

1. Normal Saline - 5 ml/kg per hour
2. D5 NSS - 10 - 15 ml/kg per hour
3. Use a butterfly 21-25 gauge or a small cannula.

Removing An IV

Remove an IV

1. First clamp tubing to stop flow of solution.

2. Gently remove all tape from skin.

3. Using aspetic technique, hold a sterile gauze pad over the puncture site, and use you other hand to withdraw the needle or catheter slowly and smoothly, keeping it parallel to the skin.

4. Using the gauze pad, apply firm pressure over puncture site for two-three minutes after removing a butterfly needles, and for 5 minutes after removing a catheter, or until the bleeding has stopped.

5. Cleanse the site with alcohol and apply small (2"x2") sterile dressing.

6. If blood oozes from the site apply a pressure dressing. Be sure to check the pressure dressing. Frequently check peripheral circulation distal to the puncture site.

7. If the site is infected, cleanse the area with an antiseptic and apply a sterile dressing.

Complications of IV Therapy

1. Infiltration
   1. Possible cause
      a. Needle or catheter displacement
      b. leakage of blood around the needle

2. Signs and Symptoms
   a. Coolness of skin
   b. Swelling and discomfort around site
   c. Swelling of entire limb
   d. absence of blood return
   e. Sluggish IV rate

3. Nursing Considerations
   a. D/C IV immediately
   b. If infiltration detected within 30 minutes of onset and swelling is slight, apply ice - otherwise apply warm wet compresses to promote absorption and elevate affected limb. Restart IV in another limb.

4. Prevention
   a. Use a splint to stabilize the needle or catheter when the site is over the joint or the patient is active.
   b. Palate occasionally to confirm proper needle position.
   c. Check IV site and flow rate frequently.

II. Phlebitis
1. Possible causes
   a. Injury to vein during venipuncture.
   b. Irritation to vein by solution or drugs used or a vein that's too small to handle amount or type of solution

2. Signs and Symptoms
   a. Sluggish flow rate
   b. Edema in limb or along course of affected vein
   c. Sore, hard, cord like and warm vein - possibly a red line above venipuncture site.

3. Nursing Considerations
   a. Discontinue and remove catheter immediately.
   b. Apply warm moist compress.
   c. To prevent further damage to the vein and formation of blood clots or emboli. DO NOT rub or massage the affected arm or leg

d. in case of sluggish flow rate, DO NOT irrigate the line. In addition to increasing the risk of infection. You may flush a clot into the blood stream, causing an embolus!

4. Prevention
   a. Administer additives or drugs through a large vein with good blood flow
   b. Keep infusion going at prescribed (proper) rate.
   c. Stabilize needle or catheter with a splint if necessary

III. Circulatory Overload
1. Possible Causes
   a. Excessive or too rapid administration

2. Signs and Symptoms
   a. Rise in blood pressure
   b. Dilation of neck veins - check with head of bed elevated 20 degrees
   c. Rapid breathing/shortness of breath
   d. Rales
   e. Wide difference between liquid intake and urinary output

3. Nursing consideration
   a. Slow IV to keep vein open rate.
   b. Raise patient's head and keep him warm to promote peripheral circulation.
   c. Monitor vital signs.

4. Prevention
   a. Monitor patients urine output.

IV. Air Embolism
1. Possible Causes
   a. Empty solution container
   b. Air in tubing
   c. Loose connections allowing air to enter tubing

2. Signs and Symptoms
   a. Decreased blood pressure
   b. Weal rapid pulse
   c. Cyanosis
   d. Loss of consciousness

3. Nursing considerations
   a. Turn patient on leftside and lower head so any small air bubbles entered by the heart can be absorbed by the pulmonary artery.
   b. Check IV system for leaks.

4. Prevention
   a. Clear all air from tubing before attaching it to the patient.
   b. Change solution container before it is completely empty.
   c. Keep the injection site below level of the container
   d. Secure all connections.

V. Allergic Reactions
1. Possible cause
   a. Sensitivity to an IV or additive.

2. Signs and Symptoms
   a. Generalized rash, itching.
   b. Shortness of breath.

3. Nursing Considerations
   a. Discontinue

4. Prevention
   a. Ask patient if he has any known allergies prior to starting IV.

VI. Infection At IV Site
1. Possible Causes
   a. Poor aseptic technique during cleaning site or IV tubing change.

2. Signs and Symptoms
   a. Swelling, Soreness at site
   b. Foul smelling discharge.

3. Nursing Consideration
   a. DC IV and remove needle or catheter immediately.
   b. Clean IV site and cover with sterile gauze.

4. Prevention
   a. Review and improve aseptic Technique.
   b. Wash hands thoroughly before beginning an IV.

VII. Systemic Infections

(more common with plastic catheters than with metal needle)

1. Possible Causes
   a. pathogens entering bloodstream through IV line
   b. Poor aseptic technique
   c. Irrigation of clogged IV
   d. Contamination of equipment during manufacture, storage or use.

2. Nursing Consideration
   a. Discontinue IV
   b. Restart IV in another limb
   c. Look for other sources of infection

3. Prevention
   a. Always use aseptic technique when giving care at or near an IV site.
   b. If any part of the system is accidently disconnected, don't rejoin it. Instead. replace the parts with sterile equipment

VIII. IV Catheter Embolism

(More common with inside the needle than outside the needle catheters.

1. Possible Causes
   a. Withdrawing the catheter before the needle or attempting to rethread a catheter with a needle.
   b. Broken catheter.

2. Signs and Symptoms
   a. Drop in blood pressure
   b. Weak rapid pulse
   c. Cyanosis
   d. Loss of consciousness
   e. Discomfort along the vein in which the catheter fragment lodged

3. Nursing Considerations
   a. Discontinue IV
   b. Apply tourniquet above site. You may be able to stop the catheter from migrating farther. Be careful not to apply the tourniquet to tightly, because it can obstruct artery blood flow.
   c. In an ideal situation, you would arrange for an x-ray to locate the catheter.

4. Prevention
   a. Remember to withdraw needle and catheter together after an unsuccessful vein puncture attempt.
   b. Take special care when taping or withdrawing an IV

Problems with IV flow Rate

1. Patient manipulates the clamp
   Intervention:

   a. Instruct the patient not to touch the clamp and place tape over it.

2. Tubing disconnected from the needle
   Intervention:
   a. Wife distal end of the tubing with alcohol, reinsert firmly into catheter hub, and tape at connection site.

3. Positional needle

Intervention:

a. Manipulate the needle and place a 2"x2" gauze pad under or over the needle hub to change the angle. Reset flow clamp at the desired rate. If necessary remove the needle and reinsert

4. Flow clamp moving as a result of patient movement

Intervention:

a. Place tape below the clamp

II. Flow Rate Too Slow

Causes:

1. Vein spasm from insertion

   Intervention

   a. Apply warm soaks over site

2. Vein obstructed from bending arm

   Intervention

   a. Secure with arm board if necessary

3. Decreasing fluid in bottle causes solution to run slower due to decreasing pressure

   Intervention

   a. Read just the flow rate

4. Change in solution viscosity from medication added

   a. Readjust flow rate

5. IV container too low or patient's arm or leg too high

   Intervention

   a. Hang the container higher or remind the patient to keep arm below heart level

6. Bevel of needle against vein wall

   Intervention:

   a. Withdraw the needle slightly or place a folded 2"x2" gauze pad over or under catheter hub to change the angle.

7. Needle too small

Intervention

a. Remove needle in use and reinsert larger-bore needle

8. Kinked tubing

Intervention:

a. Check the tubing over its entire length, and unkink.

9. Infiltration or clotted needle

Intervention:

a. Remove the needle in use and reinsert another in a different site.

10. Tubing compressed at area clamped

Intervention

a. Massage or "milk" the tubing

Time Taping IV Fluids

Needed Materials:

1. 1" Adhesive tape
2. Pen
3. Drip rate chart
4. IV solution

Purpose of Time taping IV Fluids:

To make sure needed amount of fluid is infused correctly according to million per hour.

Flow rate - the amount of fluid measured in drops per minute according to your IV flow sheet.

Flow rate - can easily be monitored by using a time tape which indicates the solution level at hourly intervals.

Flow rate is important and requires close monitoring because many factors can cause the rate to vary. Some of these factors are:

A. Kinked IV tubing
B. Patient movement
C. The patient manipulates the IV clamp

D. Venous spasm

E. Change in position of the IV cannula

F. Obstruction of venous flow due to clotted cannula or infiltration

G. Height of the IV solution

IV Flow rate is important because:

A. An excessively fast rate, can lead to dangerous complication. the patient can go into heart failure due to too much fluid which can accumulate in the lungs. this is called circulatory overload.

B. A very slow rate, when not needed, can cause: insufficient intake of fluids, drugs and nutrients.

Amount of Fluid in the IV solution bag

Your IV fluid bag has either one thousand mls of fluid in it or 500 mls of fluid in it. The total volume of fluid should be marked on the bag. For example it might say - 1000 mls of Normal Saline or 500 mls of D5W.

A. On the 1000 ml bag there are no indications where 900 ml, 800ml, or 200ml, should be. It is easy to see that 1/2 the bag would contain 500cc of fluid given there are 1000ml total solution. Look at the bag with 1000 ml of fluid. You can Approximately divide the IV Solution container into invrements would be 500 ml you can easily tell where the 600 or 400 mark would be. You may do the same for the 500 cc bag. Midline would be judged at approximately 250 ml because. 1/2 of 500 is 250.

Now you are ready to time tape the bag:

1. Check your IV drip rate formula.

2. Calculate the number of milliter to be given per hour.

3. Place a piece of tape on the solution container going from top to bottom in a straight line.

4. Starting at the current solution level, move down where you have judged where the appropriate amount of solution in mellimeters should be. Mark the appropriate time and horizontal line on the tape at this level.
Then continue to mark the appropriate time intervals until you have reached the bottom of the container.

1. Your IV drip rules are simple to calculate when checking your IV table. They are given in drops per minutes.

2. Remove your watch (if you have one) and hold it next to the drip chamber, so you can see the watch and drops at the same time.

3. Release the clamp slowly to the approximate drip rate. Then count drips for one minute to account for flow irregularities.

4. Adjust the clamp, as necessary, and count drips for one full minutes. Continue to adjust the clamp and count drips until you have the correct rate.

5. Check the flow rate every fifteen minutes until its stable. Then recheck it every hour add adjust as necessary.

IV DRIP RATIES

IV		HOURS		DROPS/MINUTE
1000ccc	in	24 hours	=	14 drops/minute
1000cc	in	22 hours	-	15 drops/minute
1000cc	in	20 hours	=	17 drops/minute
1000cc	in	18 hours	=	18 drops/minute
1000cc	in	16 hours	=	20 drops/minute
1000cc	in	14 hours	=	23 drops/minute
1000cc	in	12 hours	=	28 drops/minute
1000cc	in	10 hours	=	34 drops/minute
1000cc	in	8 hours	=	41 drops/minute
1000cc	in	6 hours	=	56 drops/minute
1000cc	in	4 hours	=	83 drops/minute

IV		HOURS		DROPS/MINUTE
500cc	in	12 hours	=	14 drops/minute
500cc	in	10 hours	=	17 drops/minute
500cc	in	8 hours	=	20 drops/minute
500cc	in	6 hours	=	28 drops/minute
500cc	in	6 hours	=	41 drops/minute
500cc	in	2 hours	=	83 drops/minute

IV PRACTICAL

Minimum of 5 classes and practical exam

1. Practice Arm
2. IV boards with each student
3. Min 6 cannula each student (2 canula each x 3
4. 4 straight needles (21ga) each (there are needles on tubing)
5. 4 Butterfly each student (can attach syringe of saline rather then tubing)
6. 6 tubing each student (each student x 5 session)
7. 6 IV solution NS each 4-6 students (with each 4-6 x 6 sessions)
8. Alcohol balls - 1 jar each 4-5 students each session
9. Tape with roll each 4-6 students
10. Small basin each 4-6 students (blue plastic)
11. Towel each student
12. Plastic sheet each student
13. BP cuff (6) each 4-6 students
14. Destaken each group
15. Trash container each group
16. IV stand each group
17. 1% Savlon each group
18. Towel each group
19. Gauze 2x2's (padded short arm splint)
20. Arm boards
21. 3cc syringes - (6)
22. Scissor 1 each group

1. Demo - Straight needle.
2. practical - IV boards and "ARM" with straight needle

Day Two

1. Demo/practical - prepare solution, prime tubing, needle and butterfly on "ARM"

Day Three

2. Demo/Practical - Drip rates, taping, catheter on "ARM"

Day Four

Practical - Straight needle and butterfly - each other.

Day Five

Practical - Catheter each other

Practical Exam - Catheter each other

NOTE: If needed more practice sessions should be included before the exam.

Instructions

1. - Practice on "ARM" technic for needle, butterfly, cath insertion.
   - soln and tubing prep and handing
   - practice taping

2. Each section should be demonstrated in front of whole class then demonstrated in group of each instructor.

3. Students should do return demo - <u>one step at a time</u>. Should complete all steps of IV insertion and prep before really. <u>puncturing skin, each time in order to memorize correct steps</u>.

4. IV's to be started by students on each other no more than 2 sticks per arm per session.

5. Allow 2-3 days healing time between practice

6. New needle or cath each stick

7. New tubing each pt

8. New soln each 4-6 students.

Basic Wound Care

Asepsis and Sterile Technique

Terms:

1. Asepsis - Sterility, free of any living microbes.

2. Contaminated - microbes are present

3. Sterile (aseptic) Technique - all procedures or actions used to eliminate microbes from an area, and prevent contamination and infection. In order to prevent spread of infection, sterile technique must be used with procedures such as dressing changes, urinary catheter insertions. IV insertions and surgical operations, during which pathogens could enter the body.

4. Pathogens - disease producing microbes
   Every patient should recover from his disease or injury without experiencing complications, like infections, caused by carelessness on the part of those who take care of him. Sterile Technique is one important aspect.

Rules and Principles of Sterile Technique

1. Only sterile articles are used when performing procedure requiring sterile technique.

2. An article is either sterile or unsterile.

3. A sterile article that has been touched by an unsterile article is no longer sterile.

4. Any sterile article that has become unintentionally wet or damp is not longer sterile. (ex: cloth wrap).

5. Reaching over or across a sterile field causes the area to become contaminated.

6. If you are not sure whether something has become contaminated, treat it as unsterile.

7. Talking must be limited when working around a sterile field to prevent the spread of bacteria.

8. Never turn your back to a sterile field.

9. Keep the sterile field above waist level, when possible.

10. Only sterile objects may be placed within the sterile field.

11. A border of one inch around the sterile field is considered contaminated.

12. There can be no compromise when performing procedures requiring aseptic technique.

Cleaning and Sterilizing Techniques

Terms:

1. Antiseptic - An agent that hinders microbes from multiplying or growing (alcohol, gentian violet, betaine, Savion 1%)

2. Disinfectant - An agent which kills all microbes, except spores: (full strength savlon. Chlorine, salon 4%)

3. Sterilization - The killing or removal of all microbes

Microbes cause disease. Some parts of the body have no microbes like the brain, bladder, eye, blood and middle ear, so anything that touches these organs must be sterile. Any microbes that enter those will be harmful. Other parts of the body like the mouth, intestine and skin have microbes on them, but not harmful microbes. Harmful microbes from a sick patient are dangerous if they get into the mouth or wound of another person which is why we must sterilize thermometers, tongue depressors and needles before using them again.

There are several different ways of cleaning things to reduce the number of microbes on them.

Here are the different methods:

- soap and water, antiseptics
- disinfectants
- sunlight
- burning
- steaming in pressure cooker
- boiling
- formal tablets

Ways Of Killing Microbes

1. Washing with soap and water. Antiseptic (soap, Savlon 1%) slows the growth of microbes although it does not kill them. Gentian Violet is also an antiseptic. You must always wash your hands before and after a dressing, and after examining a patient. Advise people to wash their hands before eating and after toilet.

2. Disinfectants These are special chemicals that kill microbes. They are not used on the skin because they burn it. SAVLON is a disinfectant that can be used for disinfecting thermometers, Tongue depressors and otoscope specula, in a 4% solution.
   Mix 20 mls. SAVLON in 500ml of boiled water.
   Leave instruments in this solution for one hour.

3. Sunlight Microbes exposed to the sun for 12 hours will be killed. This is why we advise people to put there bedding out in the sun.

4. Burning Heating metal so that it is red hot for few seconds will kill microbes. The metal loop for smearing sputum on a slide must be made red hot in a flame after the slide has been prepared. Burning rubbish like the contents of a spittoon or dirty dressings after a clinic will kill any harmful bacteria.

5. Steaming and Boiling This is the best way of sterilizing materials. Steam in a pressure cooker will kill all microbes in 15 minutes and is a faster and more efficient way of sterilizing equipment.

How To Sterilize Instruments in a Pressure Cooker

a. Put metal tray into the pressure cooker with its rim downwards.
b. Put 2 cups of water into the cooker.
c. Place the instruments on the metal tray.
d. Put the lid of the pressure cooker on without the weight,
e. Heat the cooker strongly.
f. Put the weight on when it has been steaming for a few minutes.
g. Turn the heat down when it starts to hiss.
h. Leave for 15 minutes.
i. Take the pressure cooker off the heat and leave it to cool. Lift up the weight to check there is no steam coming out. If there is no steam you can remove the lid.

NEVER LET THE PRESSURE COOKER BURN DRY, BECAUSE THIS WILL DAMAGE IT. ALWAYS CHECK YOU HAVE ENOUGH WATER IN THE PRESSURE COOKER.

BOILING

If you do not have a pressure cooker you can boil the instruments in water for 30 minutes. the container must have & cover.

1. While boiling observe the following rules:
   a. The water must first be boiling for a full 5 minutes.
   b. The sterilizer must contain enough water to cover all the articles completely.
   c. No additional articles may be put in the sterilizer after the 30 minute period has begun.
   d. the lid of the sterilizer must be properly closed during this time.

2. Silk sutures must be boiled for 30 minutes, as they are poor conductors of heat.

3. When boiling glass item, such as syringes, wrap each piece separately in a piece of gauze or cloth to prevent breakage. Place in cold water first and then bring to a boil - leaving them boil for 35 minutes.

4. Make sure all hinged instruments (Forceps, scissors etc). are OPEN when being boiled.

5. Autoclaving - the process of sterilizing by steam under pressure.

6. Formol Tablets - Sterilization by formol gas.

7. Emergency Sterilization of Instruments

   1. After cleaning with soap and water, place instruments in pure (full-strength) Savlon for 15 minutes.
   2. Rinse off with hot sterile water before use.

Procedure for cleaning instruments/equipments before sterilization:

1. Rinse in cold water first to prevent blood and drainage from coagulating and sticking in instrument grooves.

2. Wash in soapy water, using a scrub brush kept for that purpose. Pay special attention to the grooves and hinges. Remove all blood and drainage.

3. Soak in savlon 4% solution for one hour

4. Rinse with water and dry well.

5. Sterilize using appropriate technique.

Remember:
We cannot see bacteria, but they are everywhere. By handling unsterile material. We might harm the patient. It is therefore our responsibility to know the principles of disinfection and sterilization, and the main means of sterilization. It is our responsibility to apply this knowledge wherever we are, regardless of how difficult the circumstances may be.

Example: It is often better not to give in injection, then doing it with an unsterile needle.

ANTISEPTICS:

SAVLON

Indications: Emergency sterilization (use concentrate) Cleaning of wounds, burns (use 1% solution) cleaning skin before injections (use 1% solution) Disinfection of surfaces and instruments (use 4% solution)

Contraindications: Allergy, do not apply to mucous membranes

Preparation: Plastic container, one liter - concentrate to mix 1% solution:

a. Take empty 500 ml container
b. Add 495 ml cool boiled water
c. Add 5 ml Savlon concentrate

MIX NEW SOLUTION EVERY 24 HOURS

To mix 2% solution:

a. Take empty 500 ml container
b. Add 480 ml cool boiled water
c. Add 20 ml Savlon concentrate

Dosage: Apply 1% solution to skin and wounds as needed Use 4% solution for cleaning and soaking instruments and furnishings

Pregnancy and Location: Yes

GENTIAN VIOLET

Indications: Skin candidiasis (usually occur in moist warm parts of the body - axilla, buttocks fold, groin, under breasts), (diaper rash, oral candidiasis, wet skin lesions)

Contraindications None

Preparation Crystals, Solution

To mix 1% solution
a. Take empty 500 ml container
b. Add 500 ml warm water
c. Add 5 grams (one level teaspoon) crystals.
d. Mix until crystals all dissolve

Dosage Apply 2 to 3 times daily to affected areas

Pregnancy, Lactation Yes

NOTE: Gentian violet colors clothes permanently, however color in skin and mucosa will disappear a few days after treatment is complete.

MISCELLANEOUS

Formol, Paraformaldehyde Tablets

Sterilization with Formal tablets

A. How Formol tablets work:

1. Formol tablets work by heat breaking down the tablets to form a poisonous gas which kills the microbes.

2. The best container to use is made of metal, as metal conducts heat. The heat is needed to make the tablet turn to gas.

3. The container must be AIR-Tight so that the poisonous gas will circulate to all parts of the container, but not escape outside the container.

4. For all things to be sterilized, especially gauze sponge dressings, pack them loosely so that the air can circulate around them.

5. As the Formol tablets break down into gas, they will turn to powder in about 6-7 days. Check the tablets when the container is empty, and put in a new tablet if the old one has turned to powder.

B. Warning about Formol tablets: Formol Tablets are Poisonous!

1. They can kill you if you swallow them. Mark the outside of you Formol tablet bottle with "Do Not Swallow - Poison!".

2. Keep the bottle in a safe place away from other medicines, and away from other people, especially children.

3. Do not touch the tablet directly with your fingers - try to handle them with a piece of gauze. Wash your hands well after you use the tablets.

4. Because formol is poisonous material, watch for skin reactions on patients when doing their dressings.

C. How to use Formol tablets:

1. For any metal container 9 inches in diameter or less, only ONE Formol tablet is needed. For a larger container, place Two tablets inside.

   A. Round metal cans or drums and good to sterilize gauze sponges (dressings)

   B. Metal boxes with tight lids are good for metal instruments.

2. You can tell if you have enough Formol tablets inside to properly sterilize by the Very Strong Smell produced by the Formol gas.

3. Wrap the Formol tablet in a thin piece of gauze and attach it with a piece of tape to the inside cover of the container.

4. Remember to seal the container tightly so the formol gas will not escape.

5. Label the outside of the container with the Date and the Time.

6. For proper sterilization, it is best to leave the container closed for 24 hours.

7. Proper sterilization can also be achieved if you put the container:
   a. outside in the sun for 6 hours
   b. outside on a hot, sunny day for 2-4 hours
   c. inside for 24 hours
   d. inside next to a stove/fireplace for 6 - hours.

Savlon

- 1 Graduate jug each 2 students
- 1 10cc syringe each 2 students
- 2 bottle savlon - pure
- Blue basins - 2 each group (1 savlon 1 waste)
- Bucket water (theoretically boiled and cooled)
- 1 bag NS.
- 1 Squirt bottles each 2 students

1. Mix 1%
2. Mix 4%
3. Make 1% out of 4%

Hand Washing

Since contaminated hands are the prime cause of cross infection, hand washing is the most important and most basic technique for controlling the spread of microbes.

Since it is impossible to sterilize your hands (kill all the microbes). You must make them as clean as possible, decreasing the number of microbes, by thoroughly washing your hands. Proper hand washing helps prevent you from acquiring infections as well as prevents you transmitting microbes to other persons.

Technique For Hand Washing

1. Wet hands and lower arms thoroughly with water keep hands and forearms lower than elbows during washing. (The hands are the most contaminated parts to be washed. Water flows from the least to the most contaminated area).

2. Wash the hands with plenty of soap lather and friction. interlace the fingers and rub the palms and tack of hands with a circular motion. for 2 minutes.

3. Scrub the fingers, including under the nails, and the rest of the hand with a brush for one minute (if brush available).

4. Rinse with clean water.

5. Dry the hands thoroughly starting with the fingers, then down to the wrists and forearms. Dry from the cleanest area (fingertips) to the least clean (forearm) to avoid contamination.

Always wash your hands in the following situations:

1. Before and after caring for a patient, especially one with an infection.

2. Before and after performing invasive procedures such as injections. IV's catheterizations, dressing changes.

3. After touching organic material (food, dirt, blood, stool or urine, and other living things).
4. After using the toilet.
5. After handing contaminated equipment.
6. Before preparing medicines.

Hand Washing

Soap bar	1 each group
Brush	1 each 2 or 3 students
Water source (Outside is tika at dorm or water tanks)	
Clean towels	1 each student

Spirit - Squirt bottles
Savlon - Squirt bottles

Handwashing should be done whenever students will be seeing real patients on ward or in OPD. Also should be done before injection and IV practicals.

Use Of Sterile Gloves

1. Wash hands thoroughly, using a scrub brush.

2. Open outer wrapper.

3. Open inner wrapper. Take care not to touch the gloves in the process.

4. With the right hand grasp only the inside surface of the cuff of the left glove.

5. Carefully pull the glove over the left hand, leaving a cuff, and being sure the cuff does not roll up the wrist. Be sure thumb and fingers are in the proper spaces.

6. With the gloved left hand, slip fingers underneath the right hand glove cuff.

7. Carefully pull the second glove over the right hand. Do not allow the fingers and thumb of the gloved left hand to touch any part of the exposed right hand. Keep thumb of the left hand abducted.

8. Once both gloves are on, interlock fingers to force out air and adjust gloves to fingers, be sure to only touch the sterile sides. If cuffs roll down, do NOT pull them back up!

Gloves

1.	Disposable gloves	
2.	Paper packed sterile gloves (demo only)	1 pair/group
3.	Surgical Gloves	1 pair each plus 5
4.	Sterilizing packets	1 each & demo.
5.	Talc	

6. Blue Basin for talc
7. Destakhan 1 each group
8. Towels 1 each group

DRESSING OF WOUNDS

General instructions:

A) if possible, two nurses/attendants should attend the patient - one to do the dressing, and the other to assist.

B) All visitors/attendants of patients should leave the ward.

C) Have a good light.

D) Check dressing cart - that it is clean and adequately stocked.

Dressings

The use of dressings requires an understanding of wound healing. If applied incorrectly, it may hinder wound repair.

1. A dressing should not allow a draining wound to become overly dry, because a scab will form preventing healthy new tissue from growing

2. Ideally, a dressing leaves an open wound slightly moist to promote new tissue to grow.

3. The dressing should also be thick enough to absorb the drainage to prevent pooling that may produce bacteria growth.

4. For surgical wounds that are closed, it is common to remove dressings as soon as drainage stops.

5. For an open large wound, the dressing becomes a means to remove drainage and dead tissue.

6. A dressing protects a wound from contamination by bacteria.

7. For wounds that require debridement (removal of dead tissue and drainage), apply a moist gauze layer that is next to the tissue, followed by a dry dressing. When this dressing dries and is gently removed, the dead tissue and debris come off with the dressing.
   a. If the wound is deep, gently pack the moist gauze into the wound with forceps until all the wound surfaces are in contact with the moist gauze.

8. For wounds with minimal drainage, apply 3 dry gauze dressing.

9. As always, only use sterile dressing materials and maintain sterile technique.

Opening a Dressing change Kit

1. Wash hand thoroughly.

2. Place kit on a clean dry surface at waist level or above, with taped side towards you.

3. Remove tape. Check to make sure package is sterile.

4. Grasp the end of the outer flap and open it away from the body, keeping the arms outstretched and away from the sterile field.

5. Next open both side flaps, in the same manner, making sure the arms are kept to the side and not over the sterile field.

6. Then grab the outside surface of the last flap. Stand away from the sterile kit and pull the flap towards you, letting it fall flat.

7. The inner surface of the linen wrap is sterile except for a one inch border around the edges. This sterile field can be used to place any additional sterile items (such as more gauze sponges). The outer one inch border can be used to move the sterile field if necessary.

8. If additional sterile supplies need to be placed on the sterile field - carefully place them, making sure they do not come in contact with the unsterile one inch border. Do not reach over the sterile field in the process.

Opening Dressing Kits

Complete kit 1 each students plus demos

1. Open, lay out any repack kits.

Dressing Cart

1 Dressing drum
1 squirt bottle SAVLON 1%
1 squirt bottle SPIRIT
N.S.
Chetal jar with forceps and bandage scissors
Disposable gloves
Plastic bags
Roll gauze 4", 6", - 2 each
Crepe bandage 4", 6" - 2 each
10cc syringes - 5
Towels
Macintosh
Petroleum gauze

Wound Care Management

1. Wounds - wound Healing

A wound is any injury that goes through the skin and underlying tissue. The skin protects the body against microbes, and when it is broken, microbes get inside and cause infections. Skin heals more slowly if there is an infection present or with a very dirty wound. Therefore, the most important treatment for wound healing and preventing infections is proper daily cleaning of the wound with dressing changes.

5 Types of Wounds

1. Incised wounds - sharp cuts (like a razor or knife cut, or surgery)
2. Laceration - irregular or rough out
3. Abrasion - caused by scraping or rubbing
4. Punctures - caused by sharp pointed object (nail, splinter or teeth).
5. Avulsion - skin is torn from the body

Wounds are dangerous because

1. May affect the use of limbs if nerves, tendons or muscles are cut.
2. Deep wounds can cause internal bleeding (cut arteries or bone)
3. Can lead to severe infection

Classification of wounds

Every wound will have some microbes present on the skin so there is always a chance of infection.

1. Clean wound - one that has not been invaded by pathogenic microbes, so it heals without infection.
2. Contaminated wound - wounds which occurred under traumatic conditions - tissues are damaged and not healthy - chance of infection is high.

These wounds are most likely to become dangerously infected:

a. Dirty wounds, or wounds made with dirty objects.

b. Puncture wounds and other deep wounds that do not bleed much.
c. Wounds made where animals are kept: in corrals, pens, etc.
d. Large wounds with severe mashing or bruising.
e. Bites, especially from dogs, or people.
f. Bullet wounds.

3. Infected wounds

Wounds with present signs of infection

a. Signs and Symptoms of a local wound infection:
   1. redness
   2. heat

3. swelling
4. pain
5. loss of function limited motion of body part)
6. pus (may be bad smelling)

b. If the pus is sealed off from surrounding tissues inside.

SUTURING

Suturing

In order to know when to safely suture a wound so that it will heal without complications, you must first understand wound healing.

Wound Healing

when the normal inflammation process resolves and debris is removed from the wound, healing begins. New c[illegible] are formed at the base of the wound and from surrounding tissues which fill in the break in the skin and tissue. Healing takes place in two ways:

1. Primary Healing (First Intention)
   These wounds have little or no tissues loss. The edges of skin are very close together without any tension (approximated) and risk of infection is low. Special parts of the blood fill in the wound and by the fourth day, granulation or scar tissue has formed.

2. Secondary healing (Secondary Intention)
   There has been large tissue loss or damage an the edges of skin do not close together and/or the wound is infected. These wounds heals more slowly as the hole must be filled with granulation tissue.

   A wound can heal in two ways. Either it can heal by first intention, quickly, with No sepsis, and with the minimum of scarring, OR it can heal by second intention, slowly by granulation, perhaps with the discharge of pus, and eventually with much scarring. Unfortunately, when you see a wound you often will not know what it is going to do. If you sew it up immediately by primary suture, will it heal well by first intention? Or will it break down and pour out pus?

Answering this question depends on understanding the timing of events as a wound heals after a major injury in a shocked patient. During the first few hours the body's first priority is to maintain the circulation to the patient's brain at the expense of that to the less essential organs, including his skin and bones. Meanwhile, the bacteria which have entered his wound have their own time scale. What they do depends greatly on the nature of his wound, and on much foreign material and dead tissue there is in it, especially dead muscle. Even if there is much debris and dead tissue and conditions favor them, they multiply but after 24 hours they are multiplying fast. If infection is going to occur, it will be established after 24 hours. By about the third day, the body's priorities will have changed, the blood supply to the patient's wound will have increased, and it will be the ideal state for healing and resisting infection.

Note: The <u>most important</u> and <u>most effective</u> treatment of any wound for healing is <u>thorough daily cleansing</u> - NOT SUTURING!

<u>Immediate Primary Suture</u>

- Suturing a wound within 6 hours of the injury, but it is only safe if the wound is clean and if it contains no dead tissue.

<u>Delayed Primary Suture</u>

- Closing a wound between the 3rd and 7th day, usually on the 3rd day.

After you have thoroughly cleaned a wound, when should you close it? This depends on three factors:

1. How much dead debris and tissue there is inside the wound.

<u>Important</u>

Many tragedies, including osteomyelitis and death, result from treatment which is perfect in every way, except that the wound was sutured immediately, when delayed closure would have been wiser. The temptation is great because a wound looks so much tidier when it is neatly sewn up. Unfortunately, dirt, dead

tissue and bacteria may all be hidden under a beautifully sutured wound. If a patient arrives with his wound sutured, and you are not sure about the adequacy of the cleansing or the correctness of immediate primary suture, reopen his wound and look at it. If necessary, leave it open and suture it later.

Methods for Immediate Primary Suture

1. Before suturing, it is essential to clean the wound thoroughly, and to debride any dead or damaged tissue. A wound will only heal if it is clean and if the tissue is alive and has a good blood supply.

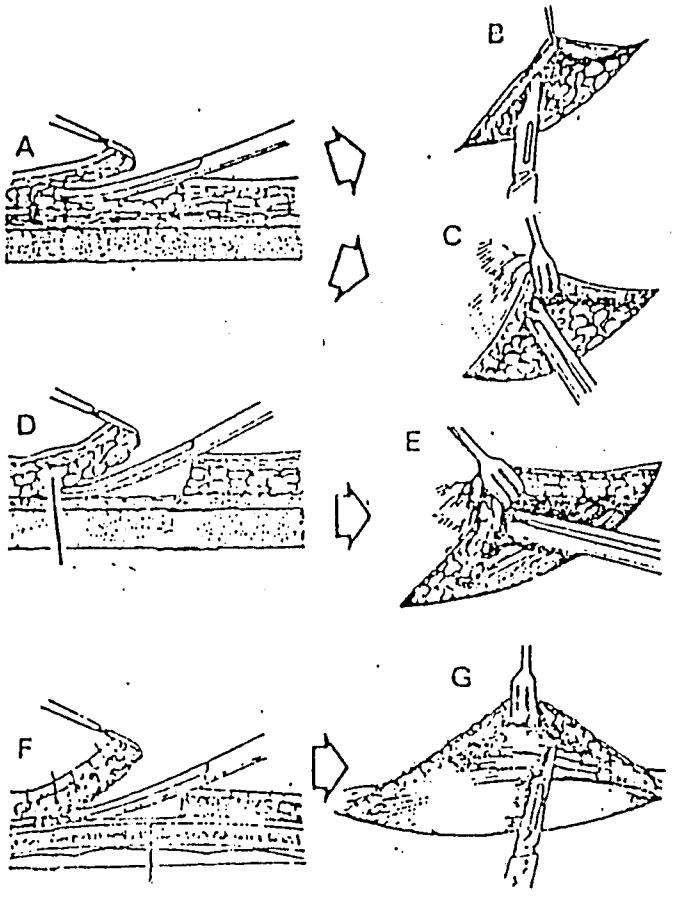
2. Before your start to close a wound, be sure to control bleeding adequately. Failure to do this is a common cause of infection, necrosis and breakdown of wound healing. Try to control bleeding by pressure rather than tying of blood vessels with a suture if at all possible. (sutures left inside are always a possible cause of infection.)

3. Close the wound at all points - do not leave large gaps. Make sure to suture so that there are not any empty spaces or pockets underneath the skin where blood and exudate can collect, because this can lead to infection. Do not make the sutures too tight or too close together. Exudate should be able to escape from between the sutures.

4. Cause as little trauma as you can by using sharp needles and fine sutures. Avoid using blunt knives and plain tissues forceps on the skin edges. use tooth forceps.

5. Do not close a wound under tension where you hav to pull the skin tightly to have the edges meet. The sutures will tear through the skin and the wound will reopen.
   a. If you cannot bring the edges of the wound together, cut underneath the skin edges - no more then one centimeter. To release the top layer of skin. If the edges still do not meet, do not suture the wound.

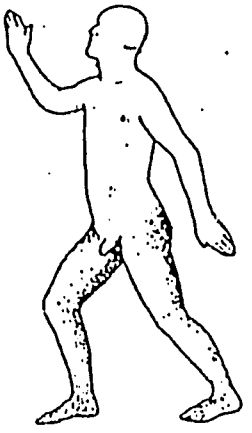
b. Always leave some fat underneath the skin. If you cut under the skin too superficially, it will die due to lack of good blood supply. (see picture below).



2. Where the wound is.

a. You can close most wounds of a patient's hands or face by immediate primary suture.

b. In the picture below, in <u>the shaded areas</u>, because of the risk of infection, and particularly gas gangrene, do not close a wound by immediate primary suture, especially if the wound is heavily contaminated.



3. The time since the injury. You may be a le to close a wound immediately if you have cleaned it within 6 hours of the injury, before the bacteria in it have started to divide. But if there is much dead tissue or debris, you would be wiser to leave it for delayed primary suture. <u>If you are in any doubt leave a wound open for delayed primary closure on the third day</u>. The patient will have overcome his infection, and his tissues will be in their most active healing state. His wound will heal by first, not second intention, just as it would do if you sutured it immediately, but it will heal much more certainly.

4. <u>The common mistakes are</u>:
   a. Not to do an adequate wound cleaning.
   b. not to leave a wound open for delayed primary closure. Neglect of these things delays wound healing and may cause traumatic osteomyelitis, or the need for an amputation. There is seldom any indication for suturing any wound in the interval between 6 hours and the third day, with the possible exception of clean knife wounds.

Immediate Primary Suture

Suture of a wound within 6 hours

Indications

1. In most parts of the body, primary suture is only indicated if a wound:
   a. Is clean cut, as by a knife or broken glass
   b. Is less than 6 hours old.
   c. Contains no doubtful living tissue.
   d. Can be sutured without undo tension of skin.

2. Most wounds of the head, face, and neck, and small clean wounds on the hands, arms, and scalp, are suitable for immediate primary closure for up to 24 hours because their blood supply is so good.

Contraindications

(These are also mostly the indications for delayed primary suture)

1. Wounds more than 6 hours old, or with dirty or damaged tissue.
2. All severe wounds, crush injuries, gunshot wounds and bites, either animal or human.
3. Wounds in patient in severe shock, whose peripheral (near the skin) circulation is so poor, weakening the chances of wound healing.
4. Most open joint wounds.
5. Wounds in anyone about to be sent on a long journey
6. Lack of antibiotics, so that you have nothing to give a patient if his wound does become infected.
7. All war wound - Especially all bullet wounds.
6. When tying the sutures, do not pull them tight. This makes the skin pucker (makes folds) and cuts off the circulation to the wound edges.
7. After suturing, clean the wound and apply a pressure dressing. If wound is on a limb, splint to immobilize it to prevent tension which would pull sutures apart.
8. Leave skin sutures in from 4 to 14 days, depending on the thickness and blood supply of the patient's skin and closeness to a joint (movement).

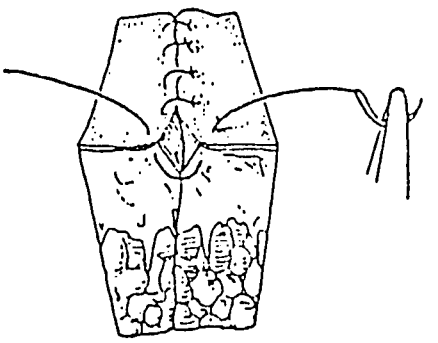
a. Four days will be enough on the face, neck or scalp
b. Ten to 14 days may be necessary on the lower leg feet and toes.
c. Remove sutures earlier if there is increasing pain, pyrexia or pus.

C. Skin closure Techniques/Laceration Repair

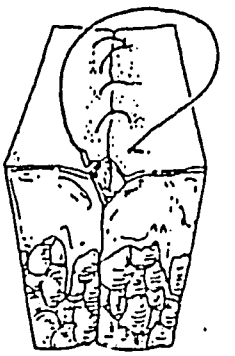
The most frequently used skin-closure techniques include the following:

Interrupted sutures
Continuous sutures:
  Running continuous suture
  Continuous looking suture.

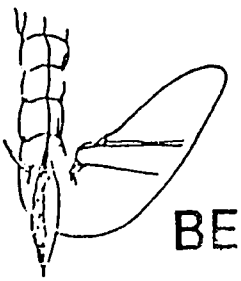
1. Interrupted Sutures:



2. Running Continuous Suture:



3. Continuous Looking Suture:

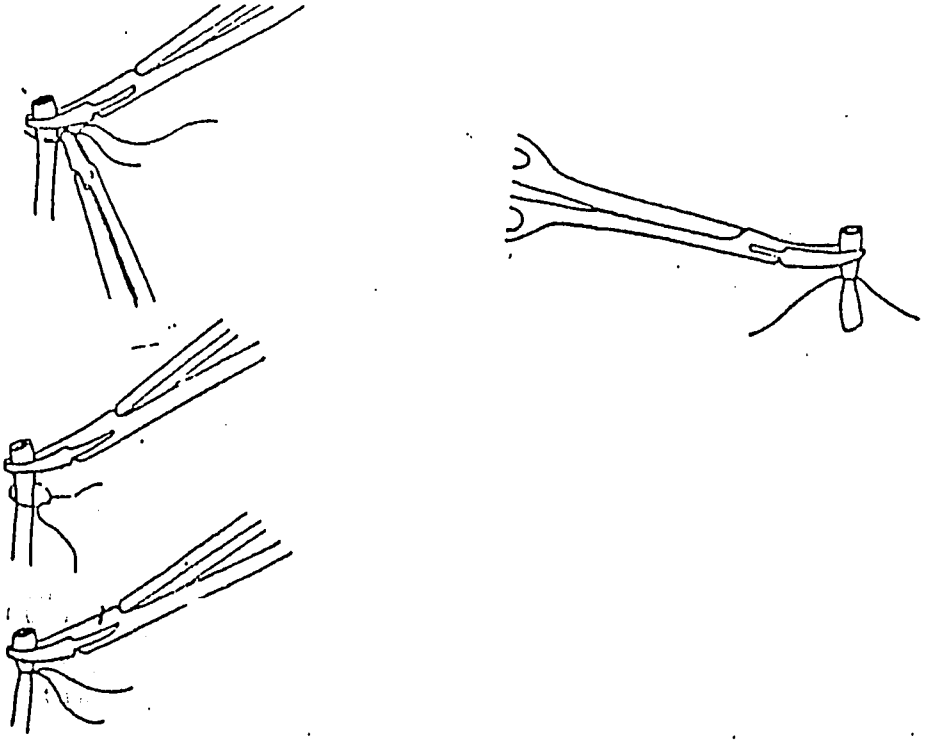


BEST AVAILABLE COPY

Arterial

Ligation: (tying off) of blood vessels is still the most frequently used system of obtaining hemostasis. While it may be tedious and time-consuming, it is the most secure method.

Ligation can be carried out in several ways: Free-hand tie, or suture ligation. For most superficial and small vessels, the free hand tie is the simplest. A fine (#4-0 or #5-0) absorbable suture (plain or chromic catgut) is the best for small bleeders. Larger vessels may require heavier gauze and non-absorbable sutures.



It is called an Abscess. When the pus is not sealed off, but spreads into the surrounding tissues, it is called cellulitis.

Cellulitis

If the infection is spreading to other parts of the body:

1. it causes fever
2. there is a red line above the wound
3. lymph nodes become swollen and tender

When the infection travels from the wound into the blood stream, a dangerous condition called SEPTICEMIA Occurs.

Signs and symptoms of Septicemia:

1. High temperature
2. Increased pulse and respiration
3. Malaise, anorexia, nausea, headache, chills

Wound Healing

When the normal inflammation process resolves and debris is removed from the wound, healing begins. New cells are formed at the base of the wound and from surrounding tissues which fill in the break in the skin and tissue. healing takes place in two ways:

1. Primary Healing

   These wounds have little or no tissue loss. The edge of skin are very close together without any tension (approximated) and risk of infection is low. Special parts of the blood fill in the wound and by the fourth day, granulation or scar tissue has formed.

2. Secondary Healing

   There has been large tissue loss or damage and the edges of skin do not close together and/or the wound is infect . These wounds heal more slowly as the hole must be filled with granulation tissue.

   Secondary healing generally causes large uneven scars, with less felling. Large scars may shrink causing contractures. In some people there may be excessive scar formation, know as KELOID.

Note: When wound tissues fail to heal, NECROSIS or death of the tissues may occur. Invasion of bacteria results in decomposition of the tissues. called GANGRENE. Such a wound must be debrided of all the necrotic tissue before the wound can heal.

Factors Affecting Wound Healing

1. Wounds heal best if there are sterile conditions, a good blood supply and no dead tissue or foreign bodies are present.

2. Wounds heal faster in young people than in the elderly.
3. Poor nutrition (especially low protein intake and decreased vitamins) retards healing.
4. Anemia, infections elsewhere, hemorrhage, obesity, wound infection and lack of rest to injured part also slow down healing.

Complications of wound Healing

When a wound fails to heal properly, the following complications may develop.

1. Hemorrhage

   Bleedings from a wound is normal after the initial injury, but it usually stops after several minutes. The risk for hemorrhage is usually great during the first 24 to 48 hours. Hemorrhage can occur internally or externally. A HEMATOMA is a localized collection of blood beneath the tissues, which often appears as a bluish swelling or mass.

2. Infection

   Infection can slow down healing by increasing tissue damage. A contaminated or traumatic wound infection may develop within 2 to 3 day, and surgical wound infections within 4 to 5 days.

3. Dehiscence

   When a wound fails to heal properly, the layers of skin and tissue may separate. This usually occurs 3 to 11 days after the injury. it occurs most often in abdominal surgical wounds after a sudden strain such as coughing, vomiting or sitting up in bed.

4. Evisceration

   Occurs when the wound layers of an abdominal wound separate and the intestines protrude through the wound. This is a medical emergency which requires sterile saline soaked gauze or towels to be placed over the intestines to reduce the chance of bacteria invading and drying of tissues before surgical repair.

5. Fistula

An abnormal passage or tube which forms between no organs or between an organ and the outside of the body. Most fistulas result from poor wound healing caused by trauma, infection or cancer. They drain continuously and cause the skin to breakdown, and increase the chance of infection.

Wound Care Management

II. Wound Care

Initial Wound Care

(In an emergency situation you would always check ABC's, control bleeding and control shock before you actually cared for the wound. If there is a penetrating object such as a knife or large piece of shrapnel protruding from the wound, do not remove it, as this could cause massive hemorrhage. Apply pressure around the object to stop any bleeding, but no pressure directly on the object. Apply a dry sterile dressing and transport to an OPD or hospital.

1. Wash your hands with soap a water. (If none available, wash with alcohol on 1% Savlon). One of the major objectives is the prevent infection. In order to do this, do not touch the wound or surrounding skin it you bare hands.

2. Cleanse the wound well with soap and boiled water or a cleansing solution (savlon 1% or Betadine). Clean the wound GENTLY - vigorous cleaning can cause bleeding or further injury.

3. When cleaning the wound, be sure to clean out ALL the dirt and foreign bodies - Use forceps to do this. Lift up and clean under any flaps of skin. Any foreign body or dirt left in a wound can cause an infection and delay wound healing.

4. If possible irrigate the wound, squirting the wound with the cleansing solution in a syringe.

a. For deeper wounds it is <u>necessary</u> to irrigate. Be careful not to touch the tip of the syringe to the wound.

b. For a puncture or bullet wound, do not block the opening with the tip, because this will prevent the fluid from draining out and will push any debris further into the wounds. (A puncture wound is initially allowed to bleed, to help bring dirt an debris out of the wound).

c. Do a final irrigation with normal saline for deep or puncture wounds.

5. Debride the wound of all damaged and dead tissue. Use scissors and forceps to remove this tissue. being careful not to cut any blood vessels or nerves. Dead or damaged tissue does not bleed. Healthy good tissue will ooze blood.

6. Close a small laceration with tape strips.

7. Suture a larger <u>superficial</u> laceration <u>only if needed</u>.
   A. <u>Do Not Suture</u>:
      1. A wound that involves damage to nerves, tendons, muscles or major arteries.
      2. A wound that is more that 6 hours old.
      3. A wound with red edges, discharge or other signs of infections.
      4. A bite or puncture wound of any kind.

8. Apply a dry sterile dressing and tape securely.
   a. If it is a large wound or a wound with much drainage, use a thick dressing made from cotton wrapped in gauze, for better absorbency.

9. For large or contaminated wounds, give antibiotic.
10. Treat for tetanus (with ATS) if possible.

Wound inspection

Whenever you cleanse a wound or change a dressing, there are certain things you must look for or observe.

1. Appearance of the wound
   Closeness of the wound edges; presence of drainage; condition of underlying tissue in an open wound; signs of dehiscence, evisceration or infection.
   a. Also note the color of the surrounding skin - look for ecchymosis or redness, (the outer edges of a wound normally appear inflamed for the first 2-3 days, but this slowly disappears.)

2. Assess the character of the wound drainage - note the amount, color, odor and consistency.
   a. Bloody or watery bloody drainage is common with fresh wounds.
   b. Purulent drainage is thick and may be yellow, green or brown. If it has a strong (foul) odor, an infection is likely.

3. For surgical wounds, check:
   a. Sutures - for irritation, and if they are intact. After the first few days, when normal swelling around sutures usually subsides, continued swelling may indicate sutures that are too tight. (this could lead to wound separation.)
   b. If a drain is in place, check to make sure it is secure nd note the type and amount of drainage.

4. Pain assessment is very important, for detecting complications and planning wound care. Serious discomfort suggests an underlying problem (ex: infection or hematoma) and pain on removal or applying a dressing calls for administering an analgesic 1/2 hour before the next dressing change.

General Care for a Clean Wound (Dressing Change)

1. Wash hands.
2. Prepare dressing change equipment and prepare patients. Always maintain sterile technique. (See lecture "Dressing of Wounds")

3. Remove old dressing, If it is stuck, wet dressing with sterile saline or water, or 1% Savlon.
4. Inspect the wound.
5. Cleanse with saline or cleansing solution (Savlon 1% or Betadine). Cleanse the wound going from the LESS dirty part to the MORE dirty part. Never clean the skin twice with the <u>same part of the swab</u>. Never put alcohol, tincture of Iodine or merthiolate directly into a wound - it will only damage the flesh and make healing slower.
6. Debride (remove) any dead tissues or debris from wound.
7. For deep wounds, irrigate.
8. For wounds closed with sutures, clean well around sutures to remove old dried blood or dry drainage.
9. For a deep wound pack gauze into the wound lightly - this helps drainage.
10. Dry the wound with a gauze swab and then apply gentian violet, especially if saline was used as cleansing solution
11. If new skin is growing, apply vaseline gauze to prevent the dressing from sticking and pulling the new skin off.
12. Apply sterile dressing and secure well.
13. Repeat the whole process daily.
14. Wash you hands after every dressing change.
15. Burn all old dressing to prevent spread of infection and disease.

<u>General Care For A Dirty Or Infected Wound</u>

1. Follow the same steps for care of a clean wound.
2. If the wound is very dirty or infected, soak with warm salt water for 20 minutes to help remove debris and old drainage.
   a. Apply hot wet compresses for 20 minutes, 4 times a day.
   b. For a foot or hand, immerse in a pail or bowl of warm salt water for 20 minutes, 4 times a day.
3. Irrigate an infected wound, with a syringe
4. After drying wound, apply gentian violet.
5. Apply sterile dressing. (If large amount of drainage, apply a thick absorbent dressing).
6. Never close an infected wound with sutures or tape strips. Let it heal open so the infection can drain out.
7. If an infected wound is deep, after irrigating insert a loosely packed moist gauze strip to enable discharge to drain out.

8. Change dressing daily or frequently if large amount of drainage. A wet dressing is a good breeding ground for bacteria.
9. Definitely burn all dressings from an infected wound.
10. Definitely wash your hands after changing an infected wound.
11. Continue antibiotic therapy.

Wound Irrigations

1. Irrigating helps rid a wound of debris and exudate.
2. Position the patient for proper drainage with a kidney basin to catch the fluid, and plastic underneath to protect the bed.
3. When irrigating, always allow the fluid to run from the least contaminated area to the most contaminated area.
4. Use sterile water, sterile saline or an antiseptic solution (Savlon 1% or Betadine) for irrigation.
5. Never block the wound opening with the tip of the catheter the pressure of the fluid could cause tissue damage and discomfort to the patient.
6. The catheter tip should be over, but not inside the wound, not should it ever touch the wound tissue.
7. Make sure the irrigating solution is room temperature warm, never cold.

Debridement

Debridement - The excision or removal of damaged or dead tissue, and other debris such a bone fragments, shrapnel cloth, or dirt etc.

Thorough and complete debridement is essential in order to have a wound heal without complications. Dead tissue and debris are major causes of wound infections, because bacteria will grow in them.

Initial debridement of a wound:

1. For a wound that is less than 6 hours old and not yet infected, do a vigorous cleaning and debridement. All wounds need to be washed and then explored to remove dirt and debris.

2. Important: do not hesitate to anesthetize the wound with xylocaine, even if the wound is quite small, so you can adequately clean and debride the wound without causing pain.

3. First pack the wound with sterile gauze to keep it dry and then clean the skin around the wound with soap and water and a brush if available. Pour on more water till it is very clean. (This prevents more dirt from entering the wound.)

4. Remove the packing and clean the wound itself with gloved or well scrubbed hands, remove dirt that is ingrained in the tissue with a brush if available, using gentle rotating motions. Put a basin under the wound so an assistant can continuously pour water over the wound as you're cleaning. (Don't immerse the wound in a basin as the dirty water would continue to contaminate the wound).

5. After cleaning, cleanse the wound with an antiseptic solution, and do the necessary surgical debridement.

6. Caution: Treat the tissues gently. Do not grab them hard with the artery forceps or swab at them violently - this injures them and makes them less able to resist infection.

7. Use a scalpel or scissors to cut away all dirt or ingrained debris. flush smaller foreign bodies out of the wound with saline or sterile water in a 50 ml syringe. You may find pieces of wood, metal, gravel or clothing.

   a. EXPLORE the patient's wound. Probing for foreign material is NOT enough. If necessary, cut the wound open wider to look into its depths.
   b. If for any reason you have to leave a foreign body, such as a deeply imbedded bullet, tell the patient so.
   c. Remove all blood clots.

d. If the wound has separate cavities, cut them so they are joined so that they will readily and properly drain.

8. ALL INJURED TISSUE IN A WOUND MUST BE REMOVED.

a. Injured Skin. Except on a patient's face, cut away 2mm of the skin margin around the wound. Do not cut under the skin edges to loosen the skin from underlying tissue.

b. Injured fat. Fat tissue readily dies, so cut it out freely until you reach healthy yellow fat which is not bruised.

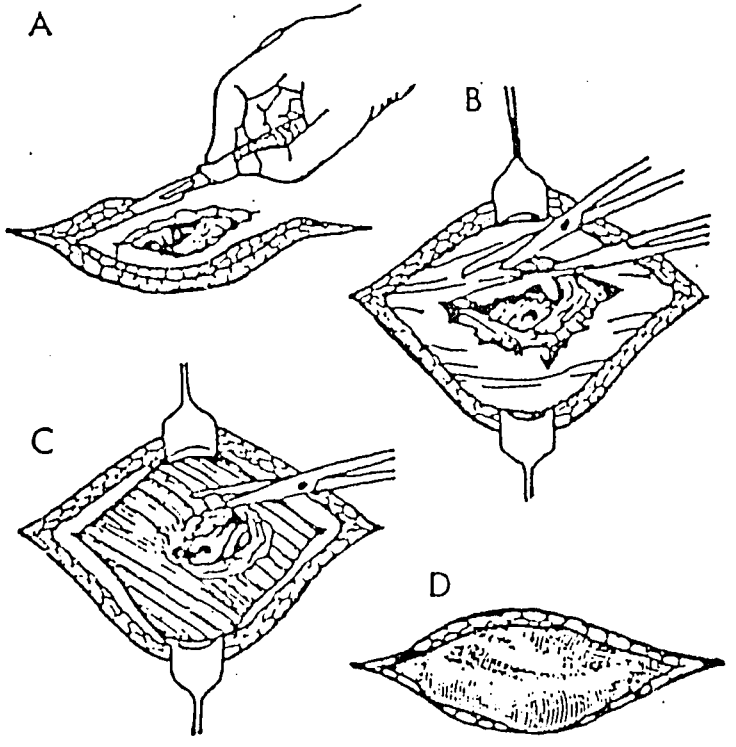
c. Injured muscle and fascia. Cut away all torn fascia. Cut away all dead muscle. Dead muscle looks darker and bluish, it does not bleed when you cut it, and it does not contract when you pinch it with forceps. Snip it away until you reach healthy muscle which contracts and oozes blood when you cut it. Be radical - dead muscle is an ideal culture in doubt as to whether muscle is alive or dead, cut it out! The patient has muscle to spare and will not miss it.

d. If there are loose pieces of bone which are not attached to bone or muscle, they already have loss of blood supply and will die away. Leave pieces which are attached still to the rest of a bone.

e. If you are not sure if tissue is alive or dead, it is alive if it bleeds or blanches (turns paler in color) on pressure. If you still are not sure, inspect the wound after 48 hours and remove more dead tissue as necessary. This is wiser than waiting for infection to start.

f. <u>BE VERY CAREFUL</u> When debriding with a scalpel or scissors. Work VERY slowly, only making small cuts at a time. You must by all means avoid cutting blood vessels, nerves or cuts at a time. (Remember the first rule in treating any patient is <u>DO NOT HARM!)</u>

g. <u>Surgical debridement of a wound;</u>



A. Cut away 2mm of the skin edges.
B. Cut away torn fascia.
C. Cut away dead and damaged muscle.
D. Pack the wound with gauze and do not suture closed.

9. Irrigate the wound well after the debridement is completed. Pack the wound with gauze, and loosely bandage the gauze in place, making sure the bandages do not restrict the circulation.

10. If a patient arrives with an <u>infected wound</u> more than 8 hours old, a vigorous cleaning might spread the organisms causing the infection further, so do a <u>more gentle</u> but thorough cleaning.

a. If any stitches have already been placed in the patient's wound, remove them and lay wound open.

b. If the wound edges are inflamed and he has fever or swollen lymph node, start him on an antibiotic before cleaning the wound.
c. Remove all necrotic tissue; open up any pockets of pus; remove any infected blood clots, dead bone or foreign bodies.
d. Join any cavities so the wound will drain adequately.
e. Be cautious and try not to cut deep into tissues away from the wound edges, as this may spread the infection and cause septicemia.
f. Pack the wound with dry gauze.

Debridement

SUPPLIES	AMOUNT
Xylocaine 2% plain	1 bottle each group
Syringe and needle	1 each student
Savlon 1% for irrigation	1 each/2 students
N.S. for irrigation	1 each/group
Dirt for wounds	
Meat with wounds already made	1/2 kilo each student
Towels	1 each student
Plastic .5 m	1 each
(or large destakhans)	1 each group
Newspaper	1 sheet each student
Dressing kits	1 each
Blue basins	1 each
Garbage cans	1 each group
Scalpels, blades	1 each student

NOTE:

This practical is done at the same time as I&D of abscess. Al[illegible] [illegible]unds and abscesses need to be prepared before the class. [illegible] ordered several days before practical. 3 or [illegible] should be scheduled for the practical, if possible.

Treatment of an Abscess

Abscess (or Boil)

An abscess, or boil, is an infection that forms a sack of pus under the skin. Sometimes it results from a puncture wound or n injection given with a dirty needle.

Symptoms/signs

1. Initially there is a deep, painful, hard swelling. Overlying skin is red and warm.
2. Later the abscess will feel like bag of water under the skin. It may break and drain pus.
3. Occasionally cellulitis, swollen lymph nodes and fever may occur.

Treatment

1. Hot compresses over the abscess several times a day till it becomes soft. (It may break open as it softens preventing the need to cut it open later.)

2. When it is soft, clean the area with antiseptic, inject lidocaine (optional), then cut into abscess with sterile scalpel blade and make a hole that will allow adequate drainage of pus. (If the abscess has drained on its own, the drainage hole may need to be enlarged to allow better drainage of pus.)

3. If the abscess cavity is large, pack with gauze soaked in antiseptic solution (if available, betadine or tincture of Leave the end of the gauze hanging out of the incision. Change this packing daily and irrigate the wound with antiseptic. When pus decreases and the wound begins to heal, discontinue the packing and let the wound heal from inside out as with any open skin wound. If there is still some pus, continue to irrigate with antiseptic daily.

4. Aspirin or paracetamol for pain if needed.

5. Antibiotics are not necessary for most abscesses. The proper treatment, as outlined above, is drainage. However, if there is cellulitis swollen lymph nodes, or fever, treat with penicillin or erythromycin for ten days.

   a. Remember:
   Antibiotics cannot cure all bacterial infections. Often other things must be done for example, an abscess should be treated with hot compresses and lanced to drain infection. Incision and drainage is the treatment of choice. If antibiotic is given before abscess drainage, healing may actually be slowed. The treatment of an abscess is to drain pus. After pus is drained, if the abscess was very large, or there are signs of spreading infection or the patient is malnourished, an antibiotic should be given.

6. Caution: An abscess may be caused by suturing a wound that is more than six : hours old or not clean. Wound more than a few hours old should be cleaned thoroughly and allowed to heal from the inside out. this will allow drainage of pus. (If pus is trapped inside, the patient becomes ill.) Help remove pus by changing the bandage every day, washing the wound with antiseptic and removing any dead tissue (debridement).

7. If there is not a large enough hole for the wound to drain well, cut a bigger hole in the skin.

8. If a sutured wound is hot, red, painful, and draining pus remove the sutures, irrigate with antiseptic, debride dead tissue, and let it heal from the inside out.

Remember: Suturing wounds may cause more harm than good. If there is question about the age or cleanliness of a wound leave it open.

Technique for Surgical Incision of an Abscess

1. After cleaning the area well with antiseptic, choose a site in the middle of the softest part of the abscess.

2. Inject xylocaine (Lidocaine) around a 2cm line where you will make your icision. (This is optional)

3. With any incision there is always danger of cutting important structures (blood vessels, nerves, tendons etc) especially in the neck and axillae regions, so the following technique must be used:

   a. With your scalpel, cut slowly and carefully only through the skin and superficial tissue to the abscess itself. Do <u>not</u> push the scalpel into the abscess cavity!

   b. Then take a curved artery forcep and insert the end into the incision. Open the forceps, separating the ends which will make the incision hole wider. The incision be wide enough for a gauze drain to be inserted (this keeps the hole open so the pus can drain out).

4. Push down on all areas of the abscess to remove as much pus as possible.

5. Irrigate the abscess cavity and then pack it well with a gauze soaked with antiseptic solution. A larger thinner gauze packing is better than a shorter thicker one - it is easier to insert and will stay in better.

6. Cover with a thick dressing as there will usually be a lot of drainage.

Abscess

SUPPLIES	AMOUNT
Meat - must have facia no bone	1/2 kilo each student
Liquid soap	1 or 2 cartons
Balloons	1 each student and extra
10 cc Syringes	1 each student
Xylocaine or Normal Saline	each student
Sterile Kits	1 each student
Sterile gloves	1 pair each student
Scalpels, blades	1 each student
Dressing drums with Gauze	2 each class
Chetal jar & forceps	2 each class
Plastic sheets	1 each student
Towels	1 each student
Blue basins	1 each student
Garbage cans	1 each group
Cotton balls with Spirit	1 bottle each group

NOTE:

This practical is done with DEBRIDEMENT the same equipment is used for both procedures. Meat must be ordered several days in advance. Wounds and abscesses must be prepared before class. (Approx. 2 hours). Plan at least 3 hours for this practical.

Use of Xylocaine For Local Anesthesia

Xylocaine (also called lignocaine or lidocaine) is used to anesthetize the skin and tissues when debridement, suturing or incision of an abscess are being done. In order to thoroughly clean and debride a dirty wound, you must use xylocaine to numb the tissue.

Xylocaine must be used with extreme care, as serious complications will occur if you exceed the maximum dose for a patient.

How Does Xylocaine Work?

1. When injected into the skin and tissues, the xylocaine spreads into the nerve from the outside.

2. the small nerve fibers carrying the sensation of pain and controlling the blood vessels are blocked first, followed by the larger one responsible for touch, pressure, heat and cold.
   a. Therefore vasodilation is the first sign that the xylocaine has worked.
   b. This is followed by analgesia and then by the inability to feel touch and pressure.

3. Local anesthesia therefore can abolish all pain so you can operate, but the patient may still feel touch and pressure. Warn the patient about this.

4. When you inject xylocaine, some of it stays locally, but the rest is absorbed by the patient's circulation and carried else where in the body, which may cause bad side effects, such as lowering his blood pressure and depressing his respirations. Moderate doses will cause a general analgesia but an overdose can cause convulsion, coma and death.

5. When injecting xylocaine, if you exceed the maximum dose or inadvertently inject it into a blood vessel one of the following reactions may occur:
   a. Slow onset brain stimulation leading to nervousness, dizziness, blurred vision, nausea, tremors, convulsions an respiratory arrest.
   b. Rapid onset brain depression leading to respiratory and cardiac arrest.

6. The best way to avoid these reaction is to give the minimum effective dose and/or the lowest concentration; and also injecting the xylocaine slowly, frequently aspirating for blood.

7. Important Notes: Xylocaine is also available combined with adrenalin. The adrenalin constricts the blood vessels, reducing the speed with which the xylocaine goes into the blood circulation, making the numbness last longer, and also helps control bleeding.

But, the adrenalin is very dangerous if you inject it into the fingers, toes, nose, penis or ears, because it will stop the blood flow completely, causing gangrene - the tissue will die!

Dosages for Xylocaine Injection

1. When injecting xylocaine you must know the maximum safe dose in mls allowed for the person. this is determined by his body weight. You can easily give too much. especially in a child.
2. For example, the maximum dose of plain lignocaine without adrenaline is 3mg/kg. The maximum dose for a 70 kg adult is thus 210 mg. This is contained in 21 ml of 1% plain solution. or 10ml of 2% plain solution. Because overdosage is so easy, this is an important dose to remember. For a 7kg child the maximum dose of 2% lignocaine is only 1.5ml.
3. Larger volumes of a weaker solution are safer then smaller volumes of stronger ones, because they are less likely to enter the blood circulation rapidly. (example: 100ml or 0.5% xylocaine is safer then 50ml of 1%.
4. To figure our how much xylocaine (plain) you can safely use, either use the following formula or graph.

   a. Formula:

   $$\text{Maximum dose in mls} = \frac{\text{Weight in kg} \times 3\text{mg/kg}}{\text{Percent strength solution} \times 10}$$

   Example: Patient weight 70kg

   You use xylocaine 2% solution

   $$\frac{70 \text{ kg} \times 3 \text{ mg/kg}}{2\% \times 10} = \frac{210}{20}$$

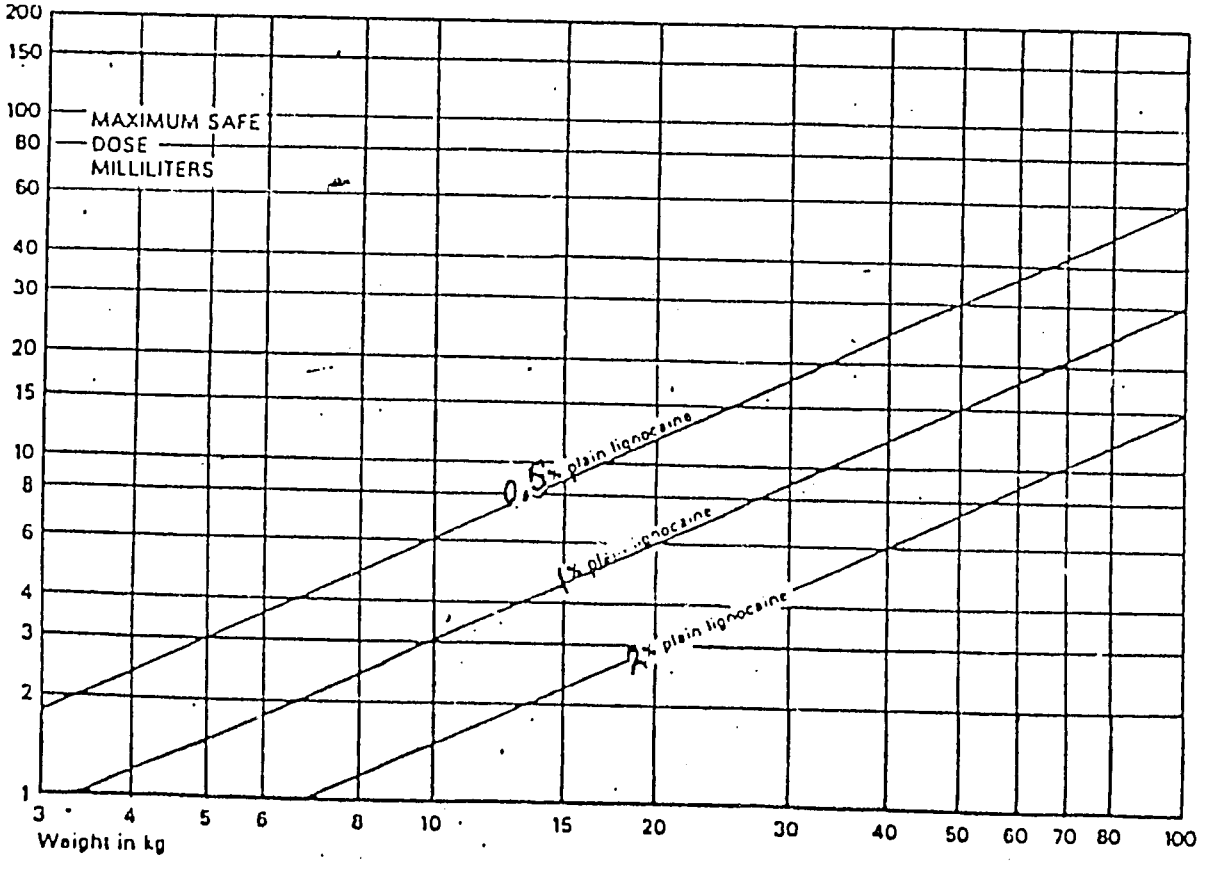
   $$\frac{210}{20} = 10.5\text{ml xylocaine } 2\%$$

   (maximum dose)

b. <u>Graph of Xylocaine (plain)</u>

1. Look underneath the sloping line showing the <u>strength</u> of xylocaine
2. Follow that line across to the vertical line showing the patient's weight, then read off the dose (in mls) on the left hand scale.
3. Note: These are maximum doses, and you may need much less!

MAXIMUM DOSES FOR LOCAL ANAESTHESIA



5. For adults, the maximum dose of xylocaine (plain) in the following dilutions is:

Dilution	Maximum dosage (volume)
Xylocaine 2% plain	10ml
Xylocaine 1% plain	20ml
Xylocaine 0.5% plain	40ml

6. For children, smaller amounts of xylocaine in lower concentrations should be used, dependent on body weight.

7. If your have a large area or more than one area to anesthetize, it is better to dilute the xylocaine and therefore increase the volume of xylocaine you can use. For superficial wounds, xylocaine 0.5% or 1% works just as well as 2%. Dilute the xylocaine with equal amount xylocaine and sterile water.

   a. Example:

```
 10ml xylocaine 2%
+10ml sterile water
-------------------
=20mol xylocaine 1%

 20ml xylocaine 1%
+20ml sterile water
-------------------
=40ml xylocaine 0.5%
```

Technique for Injecting xylocaine

1. Tell the patient exactly what you are going to do.

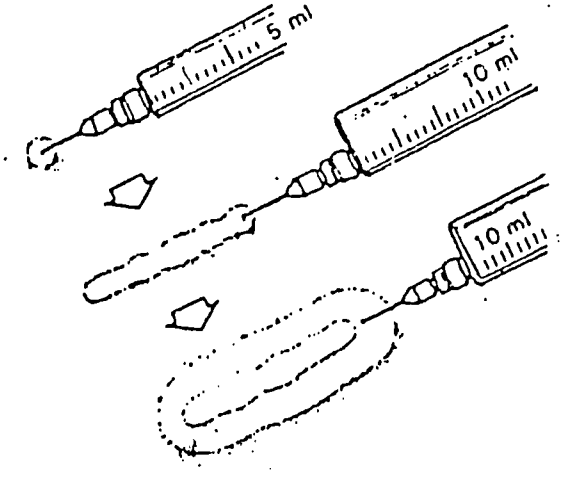
2. Clean the skin area well with antiseptic solution.

3. For a superficial skin wound, use a 23g needle as it is less painful. Make sure the needle is tightly on the syringe, as the pressure of injecting the xylocaine may force the needle and syringe to come apart.

4. Inject both into and under the skin. Start by injecting in one spot at the wound edge. Wait 2 minutes for this to work (area becomes numb).

5. Then push the needle through this numb spot and continue to slowly pull it along the edge of the wound, injecting about 0.5ml solution for each 1-2cm. Aspriate before injecting the xylocaine to make sure you are not in a blood vessel. (If you keep the needle moving slowly as you inject, you don't have to aspirate.)

6. Continue around the edge of the wound until you have completed a circle. See diagram below.



7. Keep the needle close to the surface of the skin as you inject the solution into the tissues. Injection may be hard, and you may need firm pressure, especially in the scalp. An "orange peel" appearance in his skin shows that the solution is going into the right place.

8. Then inject into deeper tissues if needed for debridement and suturing. If the wound is clean you can inject into the sides of the wound itself. For an abscess. inject about 0.5ml xylocaine into the place where you will make your incision.

9. After you finish injecting the xylocaine ALWAYS WAIT ABOUT 5 MINUTES. Then prick the skin with a needle to make sure the patient cannot feel any pain.

10. The anesthetic effects of xylocaine usually lasts for 60 to 90 minutes. If when suturing or debriding the patient complains of pain, stop and inject more xylocaine, but do not exceed the maximum dose.

11. As with any medicine, always have adrenalin and an antihistamine (like promethazine) available in case the patient has a severe reaction to the xylocaine.

<u>Xylocaine</u>

SUPPLIES	AMOUNT
2% plain Xylocaine	1 bottle/group
Cotton balls with Spirit	2 bottle/group
10cc syringes	1 each/student and demos
Files for ampules	1 each/student and demo
Distilled water or N.S.	1 each/student and extra
Meat for injection demo	1/2 kilo

NOTE:

Students will practice injection of xylocaine when they do <u>DEBRIDEMENT</u> and <u>I & D OF ABSCESS</u>, and also when they do <u>SUTURING</u>

5. <u>Burns</u>:

A lesion caused by heat or any chemical cauterizing agent.

a. Causes:

1) Sunburn
2) Chemical agents
3) Thermal injuries
4) Electricity

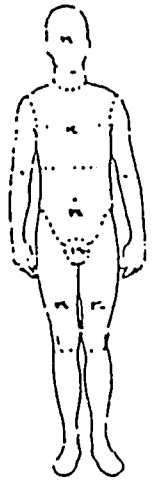
5) Friction

6) Moist heat (scald).

b. Classification: burns are classified by extent, depth, and patient age:

1) Extent: The rule of nines is useful for rapid assessment of extent of burns by Medics--

Head and neck 9%
Right arm 9%
Left arm 9%
Right leg 18%
Left leg 18%
Ant chest & abdomen 18%
Post. chest & abdomen 18%
Genital area 1%
Total 100%



2) Depth:

<u>First degree burn</u> - is red and involves superficia layer of epidermis, causes itching and is very painful.

<u>Second degree burn</u> - with blisters involves all epidermis layer with superficial layer of dermis, is painful. Patient loses fluids, does not involve sebaceous glands, hair follicle, and sweat glands.

<u>Third degree burn</u> - involves the dermis and epidermis, the skin is white and painless, hair follicle, sweat glands and sebaceous glands are all destroyed.

3) Age of the patient: Even a relatively small burn in an elderly patient or infant may be fatal.

c. Initial management:

1) Airway: an injury commonly associated with burn is smoke inhalation, so the first priority is establishment of an airway with airway tube.

2) Pain: administer Temgesic to prevent shock, or if Temgesic is not available give other kind of analgesic.

3) If patient is in shock, need management for shock.

5) Introduce a foley catheter to assess the amount of fluids; the output of urine must be around 30-60 cc/hour to prevent renal failure.

6) If vomiting occurs insert an NG tube to empty the stomach and prevent vomiting.

7) Immunize against tetanus: Give tetanus toxoid as follows - at start 0.5 cc. IM After 6 weeks 0.5cc IM; after 6 months 0.5cc IM. This method immunizes the patient for 10 years.

d. Fluid resuscitation:

1) First 24 hours: Give crystalloid solutions such as Saline, Ringers according to this formula: 4cc x % burns x body weight in kg. (e.g. in a 70 kg victim with 40% second degree burn the amount of fluid calculated as follows - 4cc x 40 x 70 = 11200 ml.) Give 1/2 in first 8 hours and remaining over next 16 hours.

2) Second 24 hours: Give colloid fluids such as plasma, albumin, dextrose, glucose as follows: 0.5cc x % burns x body weight in kg. In victim 70 kg with 40% burn give 0.5 x 40 x 70=1400 ml. in second 24 hours.

e. Burn wound management: After treating shock and giving analgesia remove all clothes and wash burned area with antiseptic solution. Puncture the blisters and irrigate the area with saline. If the condition is o.k. remove the blister with scissor' otherwise leave it for prevention of infection. Debride the area well and

and cover with vaseline gauze and bandage with elastic bandage.

Elevate the limb. Dressing may need replacement according to the amount of discharge.

Replace the dressing in 3 days and if new dressing is not wet, change the dressing 7-10 days after that. Apply another dressing for next 7 days.

A second degree burn with out infection is cured in 14 days.

f. Complications of burns:

1) Shock
2) Infection
3) Respiratory complication (pneumonia)
4) Gastric ulcer.

g. Causes of death:

1) Asphyxia
2) Shock
3) Pneumonia
4) Septicemia
5) Tetanus and gas gangrene

h. Later management:

1) Prevent of contracture by applying splint.
2) Skin graft.

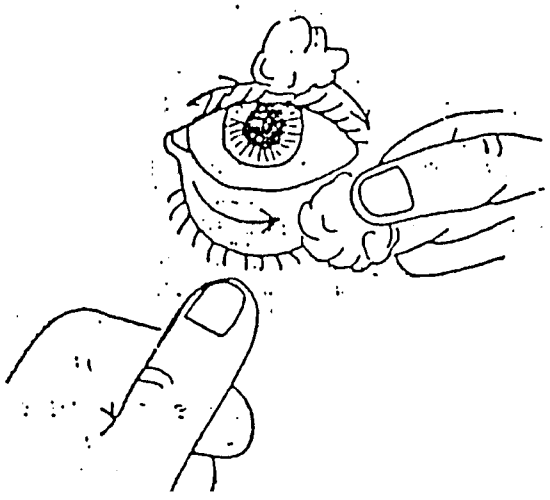
EYE CARE

How To Clean An Eye

When To Clean An Eye

1. If pus is coming from the eye
2. Crusts on the eyelashes.
3. Foreign body in the eye.

How To Clean An Eye



Equipment Needed

- Soap and water to wash your hands
- Salt and water (1 pinch salt in a glass of water)
- Metal kidney bowl
- Cotton wool swabs

1. Sit patient in a chair and ask him to tilt his head to the side you are going to clean.

2. Ask him to hold the kidney dish under the eye to catch water and dirty swabs.

3. Wash your hands with soap and water.

4. Soak cotton wool swab in the salt water and gently clean eye <u>from the nose outward</u>. Throw swab in the kidney dish and repeat the process using a new swab each time till the eye is clean.

5. Soak any crusts that are dried and difficult to remove by applying a damp cloth or wet cotton ball over the eye for a few minutes.

6. Wash your hands again to stop your spreading the infection to another patient.

How to irrigate the eye

1. Use salt solution (one liter of cool boiled water with two pinches of salt)

2. Use a 10ml syringe with a plastic catheter from an IV catheter.

3. With the patient lying down turn the head towards the injured side so the water will drain out over the cheek, away from the uninjured eye.
4. Place a piece of plastic under a kidney basin below the injured eye.

5. Gently hold the eye by holding the upper and lower lids open. Do not apply pressure on the eyeball.

6. if there is a foreign body, aim the salt solution flow towards it.

7. If chemicals or other foreign materials are in the eye, irrigate the eye from the nose to the outside of the eye.

8. In an emergency for chemical burns, use a bag of IV normal saline and with the tubing continue to flush out the eye.

9. Be careful not to touch the tip of the catheter or tubing to the eye. Do not use great force when irrigating as you will damage the eye.

How To Examine The Eye

1. Have the patient in a good light.
2. Ask him to look up, down, right and left.
3. Gently pull down the lower lid and examine the inside. Ask him again to look up, down, left and right.
4. To examine under the upper lid:
   a. Take hold of his upper eyelashes with your thumb and first finger. Pull his upper eyelid gently forwards and downwards, away from his eye.

b. Put a matchstick on the top of the back of his upper eyelid
c. Turn the eyelid upward and slightly outward over the matchstick, so that its inside turns outward.
d. Then carefully look at the inside of the eye for foreign bodies, trachoma or conjunctivitis.

How To Prevent Eye Disease

1. Wash hands with soap and water often. Wash children hands especially.
2. Do not share a towel with somebody who has eye disease.
3. Wash your eyes as soon as they become sticky and do not rub them. This will prevent them getting more serious eye disease.
4. Eat food with plenty of vitamin a (green vegetables, orange fruit and vegetables, milk and eggs).
5. Control flies by using latrines, covering food and burying rubbish.

Foreign Body in the Ear

Children like putting things in their ears, for example beads or peas. Insects can climb into the ear canal. Wax is very common in older people. The patient complains of mild pain or itching and deafness. If an insect is in the ear, he may feel vibrations or head buzzing.

Treatment:

1. For wax

a. Put Glycerine in the ear each morning, and clean out the ear. The wax should dissolve.

b. If the wax is persistant, syringe the ear.

2. For small object

a. beware do not push the small object further into the ear as you will damage the ear drum. Do not use forceps.

b. Syringe the ear

c. Use a paper clip as a hook.

<u>How to syringe the ear</u>

a. Use an ear syringe if this is available, Otherwise use a large injection syringe.

b. Fill a cup of luke warm water .... this should be 37°C which is body temperature. Put your finger in the water..... it should not feel hot nor cold.

c. If you are treating a child, sit him on mother's knee as if you are going to use an otoscope.

d. Fill the syringe with water.

e. Hold a dish under the ear.

f. Pull the ear backwards.

g. Put the syringe in the ear canal pointing it upwards and forwards.

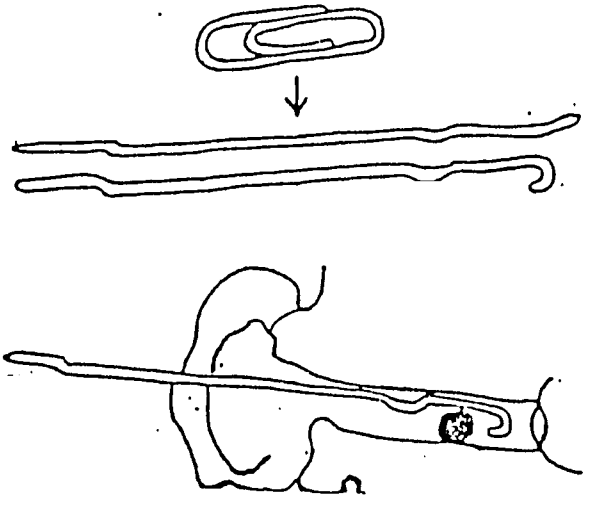
BEWARE: Do not push the water in too quickly as you will damage the ear drum.

<u>Using a paper clip to remove a small object in the ear</u>

a. Bend the clip straight.

b. Bend one end of the clip into a hook about 3mm long.

d. Place the hook gently into the ear along the wall of the ear canal so that you pass the small object. BEWARE.... do not push the object into the ear as you will damage the ear drum.



CERUMEN REMOVAL (ear wax)

Removal of cerumen is often required to see the ear drum. If the patient has decreased hearing from cerumen impaction, it may also have therapeutic effect.

1. Mix 1 glass of clean, warm water with 1/2 teaspoon salt.
2. Let patient hold kidney tray below his ear.
3. Draw outer ear gently upwards and backwards to straighten the ear canal (downwards and backwards in children < 1 years). Tell patient you are going to put water into his ear (reassure him).
4. Using large syringe, inject water under moderate pressure into the outer ear canal (the syringe tip <u>must not</u> occlude the canal; water injection in this instance would result in damage to the ear drum). Repeat until cerumen washes out and ear drum can be seen (may have to dry ear canal with small amount of absorbent paper).
5. <u>If irrigation is not successful, dissolve the cerumen</u>:
   a) With patient lying so that affected ear is turned upwards, instill 1 ml glycerin.
   b) After 10 minutes, attempt to remove dissolved cerumen using above irrigation technique.

Nasogastric Tubes

<u>Definition</u>

A tube that is passed into the stomach through the nose.

<u>Purposes</u>

1. To feed a patient
2. To remove poisons or other irritating substances
3. To treat vomiting and distension of the stomach
4. For continuous aspiration of stomach contents
5. For diagnostic purposes (gastric analysis)

<u>Equipment</u>:

1. Nasogastric tube
2. Lubricant (lignocaine gel, glycerine etc.)
3. Piece of plastic and a towel
4. Large syringe (10ml or 50ml)
5. Kidney basin

6. Cup with water if allowed
7. Scissors and adhesive tape

Points to remember

1. Insertion of a nasogastric tube does not require sterile Technique - use good clean technique.

2. The procedure is uncomfortable - the patient experiences a burning sensation as tube passes through the nose.

3. When the tube reaches the pharynx, the patient may begin to gag. You must help him try to relax so as to make tube insertion easier.

4. You must Always chick to make sure the tube is positioned properly in the stomach and not in the lungs or respiratory tract.

Procedure

1. Wash your hands.
2. Assemble all equipment.
3. Explain procedure thoroughly to patient, and screen patient.
4. Put patient in sitting position and cover his chest.
5. Remove false teeth if any.
6. Instruct patient to relax and breathe through one nares with the other blocked. Repeat for other side. Choose Nares that has the greatest air flow for tube passage.
7. Measure the distance to insert the tube by placing tip of tube at patient nose and extending tube first to tip of earlobe and then down to the bottom of the sternum (xyphoid process). Mark this point on the tube with a piece of tape.
8. Curve 4-6 inches (10-15cm) of end of tube tightly around index finger then release (this curve aids insertion).
9. Lubricate 3-4 inches (7.5 - 10cm) of end of tube with lubricant.
10. Stand at the right side of patient (if right handed). Grasp end of tube with right hand and remained of tube with left hand.
11. Initially have patient extend his head back and insert tube into nares with curved end pointing down.

12. Continue to pass tube along the floor of the nose, aiming down towards the ear. When resistance is felt, apply gentle downward pressure.
    a. If tube will not pass any further, remove, relubricate and pass through other nares.
13. Continue to insert tube, rotating it slowly between thumb and forefinger. Stop when end of tube reaches nasopharynx (back of throat)
14. Explain to patient that now he must swallow. Tilt his head forward with chin on neck. Have him swallow air or sips of water if allowed. Advance tube with each swallow.
15. If patient begins to cough, gag or choke, stop and instruct him to breathe easily and take sips of water if allowed.
    a. If he continues to cough, pull tube back slightly (may be going into lung)
    b. If he continues to gag, check the back of throat - the tube may be coiled up there.
16. Continue to advance tube till you reach the point marked with tape, indicating it should now be in the stomach.
17. After checking to make sure tube is properly in the stomach, tape the tube to the nose.
    a. Cut 4 inches (10cm) long piece of tape. Split one end lengthwise 2 inches (5cm). Place other end over bridge of nose. Wrap the 2 split ends around tube as it exits nose. This prevents pressure on nares. Apply a piece of tape further down on tube and pin tube through this to clothing.

Checking tube placement

You must always check to make sure the tube is in the stomach and not the lungs. The following are ways to check proper tube placement.

1. Ask the patient to talk or hum. He would be unable to talk if the tube passed through the vocal cords.

2. Place a stethoscope over the stomach and listen while you quickly push 10-20 cc's of air with a syringe through the NG tube. There will be gurgling sound as the air enters the stomach.

3. Aspirate (pull back) on a syringe connected to the NG tube. Gastric fluid should come back through the tube.

4. Listen for a crackling sound at the free end of the tube which may occur if tube is in the lung.

5. Obseve patient for cyanosis or difficulty breathing which may occur if tube is in trachea or lung.

Care of patient with Nasogastric tube

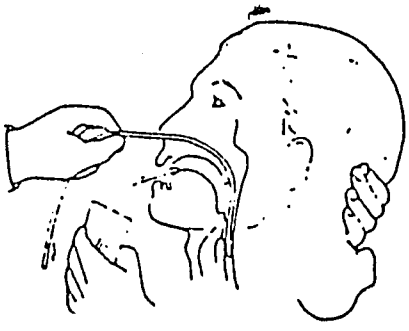
1. Keep patient's upper body/head elevated 30° to prevent aspiration into lungs.

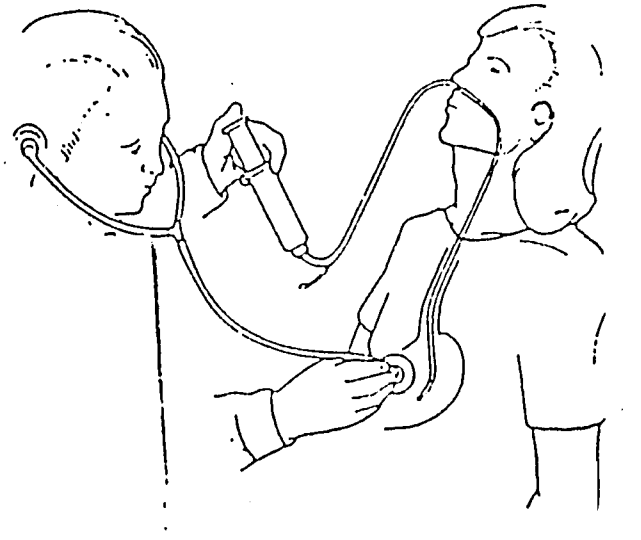
2. Apply vaseline to nares to help decrease irritation from tube - check nose frequently for redness and excoriation.

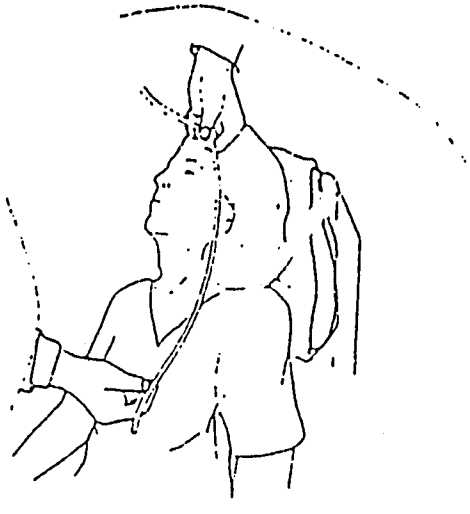
3. Give frequent mouth care as patient will breathe through his mouth, which will become dry.

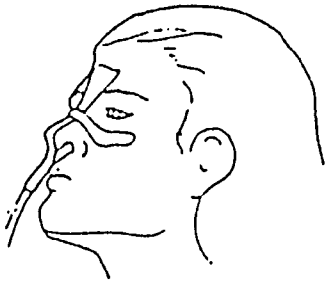
4. If the tube becomes blocked, irrigate it with 10-20 cc Normal Saline.

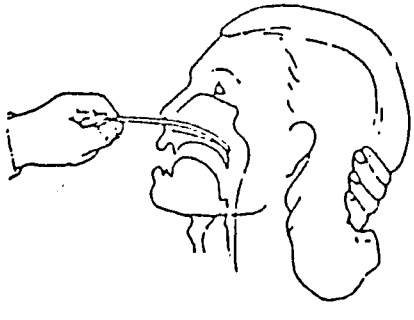
5. When removing a nasogastric tube, pinch the free end so that stomach contents cannot be aspirated into the lungs. While patient holds his breath, pull the tube out quickly and evenly to prevent gagging.











.ng into the mouth.

BEST AVAILABLE DOCUMENT

Nasogastric Tubes

1.	N-G tube size 12	1 each and demonstration
2.	Kidney basin	1 each 2 students
3.	Catheter tip syringe	1 each 2 students
4.	Towels	1 each student
5.	Rose Petal tissues	1 box
6.	Water	
7.	Cups	1 each group
8.	Stethoscope from FA bag	1 each 2 students
9.	Lubricant (KY or Xylocaine)	1 each group
10.	Plaster	1 each group
11.	Scissor	1 each group
12.	Disposable gloves	1 each student
13.	Buckets	2

NOTE:
This practical should be done in the morning, and the students should not eat before class. This will give you a more pleasant experience.

If the demonstration is done on a tolerant patient with good control of gag reflex, the students will be more relaxed and able to participate.

Urinary Catheterization

Catheter
A long narrow tube for withdrawing urine from the bladder.

Catheterization
Removal of urine from the bladder by means of a catheter

Purpose
1. To release distention of the bladder caused by retention of urine.
2. To get sterile specimen of urine
3. To prevent the patient from passing urine after perineal surgery, in order to prevent infection
4. To keep incontinent patient dry
5. To make sure bladder is empty before doing pelvic operation

Equipment

1. Foley urinary catheter
2. Lubricant
3. Sterile small bowl
4. 10ml syringe with normal saline
5. Sterile kidney dish
6. Antiseptic solution
7. 5 cotton balls
8. 2 Sterile towels
10. Tape, scissors and gauze roll
11. Plastic and towel
12. Sterile gloves
13. Urine collection bag

Procedure Important Note: Observe utmost sterile technique. if you introduce any infection into the bladder, it will soon reach the kidney and the patient will become seriously ill.

1. Explain procedure to patient to get his cooperation.

2. Screen the bed. Bring equipment to bedside.

3. Have the patient lie on his back. Remove shalwar.

4. Place plastic and towel underneath patient.

5. Wash the penis and the whole area around it well with soap and water.

6. Wash your hands well with soap and water. Wear sterile gloves. (If this is not possible, wash your hands again with alcohol. If you have no sterile gloves, try to handle catheter only with sterile forceps.

7. Prepare equipment. On a sterile towel, place small bowl with antiseptic solution; 5 cotton balls; sterile plain forceps and artery forceps, catheter. Fill a 10cc syringe with sterile normal saline (to blow up balloon).

8. Place a sterile towel (or very clean towel if no sterile cloth available) underneath the penis.

9. Place sterile kidney dish between thighs. Place catheter in kidney dish. If no sterile dish, open catheter wrapping to expose catheter.

10. With the left hand retract the foreskin, if present, and hold the penis by the shaft.

11. With the right hand, clean the head of the penis with sterile cotton ball soaked with antiseptic solution. Wash the head of the penis in a circular motion from the urethral opening outward. Clean the penis 5 times. using a new sterile cotton ball each time.

12. Then touch nothing but the catheter with your right hand.

13. If you do not have sterile gloves, or sterile kidney dish, grasp eyelet end of catheter about 2 inches (5cm) down with the plain forceps and apply lubricant. Hold the open end of catheter, with the artery forceps. Hold both forceps in right hand.

14. Raise the shaft of the penis straight up with left hand.

15. Insert the catheter gently into the urethra, being careful that catheter doesn't touch anything unsterile. Never force a catheter in. Roll it gently between your fingers, or push it in gently with plain forceps, little by little.

16. As you advance the catheter, bring the penis down towards the thigh, which may help the catheter pass into the bladder.

17. Insert the catheter almost to the "Y" shaped division in the catheter tube. When the bladder is reached, urine should be dripping from the catheter. Advance the catheter an inch (1.2 cm) after the urine starts coming.

18. Put the end of the catheter in the sterile kidney dish (if not sterile, hold catheter end with forceps so it does not become contaminated).

19. Inflate the balloon with sterile Normal Saline.

20. Then gently pull back on the catheter tube until slight resistance is felt. This indicates the balloon is against the bladder wall.

21. Attach the urinary drainage bag (first wiping the end of the drainage tube with alcohol.

22. Tape the tube to the inner thigh. Avoid any tension or pulling on the catheter.

23. If the bladder has been extremely full, release the urine little by little over 15 minutes to prevent bladder spasms.

24. Clean equipment and wash your hands.

Urinary Catheters

1.	Dummies with full bladders and male and female parts	
2.	Sterile gloves	1 each student
3.	Sterile kit	1 each 2 students
4.	Catheter-foley 16F	1 each group
5.	Drainage bag	1 each group
6.	Lubricant (KY,Xylocaine gel)	1 each group
7.	10 cc syringe	2 each group
8.	Normal Saline	1 each group
9.	18 ga needle	1 each group
10.	1% Savlon	1 each group
11.	Catheter tip syringe	1 each group
12.	Macintosh	1 each group
13.	Towel	1 each group
14.	Plaster	1 each group
15.	Scissor	1 each group

NOTE:
This is an important procedure for practicing sterile technique.

Application of Heat and Cold

The local application of heat and cold to an injured body part can provide therapeutic benefits. Before using these therapies, however, you must understand normal body responses to local temperature variations, assess the skin of the body part, determine the patient's ability to sense temperature variations, and ensure proper technique and use of equipment.

Factors influencing Heat and Cold Tolerance

The body's response to heat and cold therapies depends on a number of factors.

1. Duration of application. A person is better able to tolerate short exposures to temperature extremes.

2. Body part. The neck, inner aspect of the wrist and forearm, and perineal regions are more sensitive to temperature variation. The foot and the palm of the hand are less sensitive.

3. Damage to body surface. Exposed skin layer are more sensitive to temperature variation.

4. Prior skin temperature. The body responds best to minor temperature adjustments.

5. Body surface area. a person is less tolerant of temperature changes over a large area of the body.

6. Age and physical condition. The very young and elderly are most sensitive to heat and cold. If a patient's physical condition reduces the reception or perception of sensory stimuli, the tolerance to temperature extremes is high but the risk of injury is also high.

Conditions that increase Risk of Injury From heat and Cold Application

1. very young elderly
2. Open wounds, broken skin
3. Areas of edema or scar formation

4. Peripheral vascular disease (e.g diabetes or arteriosclerosis)
5. Confusion or unconsciousness
6. Spinal cord injury
7. Abscessed tooth or appendix.

Body's Response to Heat and Cold

1. Exposure to heat or cold produces both systemic and local responses. Systemically, the body can try to lose heat through sweating or produce heat by shivering.

2. Local Response Form Heat
   a. Improved blood flow (through vasodilation)
   b. Continued exposure to heat can damage skin cells, causing redness, tenderness and blistering of the skin.

   Local Response to Cold
   a. Decreased blood flow (through vasoconstriction)
   b. Prolonged exposure to cold can damage tissue due to dangerously low blood supply to area, causing skin to initially look red, then turn bluish-purple (mottled), with numbness and a burning type pain. The skin's tissues can actually freeze.

Uses of Heat

1. Therapeutic Benefits of Heat

   1. Improves blood flow to injured body part; promotes delivery of nutrients and removal of wastes; lessens verous congestion in injured tissues.

   2. Improves delivery of leukocytes and antibiotics to wound site

   3. Promotes muscle relaxation and reduces pain from spasm or stiffness

   4. Increases blood flow; provides local warmth

   5. Promotes movement of waste products and nutrients

2. Example of Conditions Treated with Heat

Inflamed or edematous body part; new surgical wound; infected wound; arthritis, degenerative joint disease; localized joint pain; muscle strains; low back pain; menstrual cramping; hemorrhoidal, perianal, and vaginal inflammations local abscesses

Uses Of Cold

1. Therapeutic Benefits of Cold

   1. Reduces blood flow to injured site, preventing edema formation, reduces inflammation
   2. Reduces localized pain
   3. Reduces oxygen needs of tissues
   4. Promotes blood coagulation at injury site
   5. relieves pain

2. Examples of conditions Treated with Cold

Immediately after direct trauma-for first 24 hours (e.g. sprains, strains, fractures, muscle spasms); superficial laceration or puncture wound; minor burn; when malignancy is suspected in area of injury or pain; after injection; arthritis, joint trauma.

Choice Of Moist or Dry Applications Of Heat/Cold

1. Both heat and cold applications can be administered in dry or moist forms. The type of wound or injury, the location of they body part, and the presence of drainage or inflammation are factors considered in selecting dry or moist applications.

2. Moist heat applications include baths, soaks and wet compresses. Dry heat would be a hot water bottle.

3. Moist cold application would include cold compresses or packs and sponge baths. Dry cold would be an ice pack.

4. Moist applications of either heat or cold are more penetrating then dry ones.

Applications of Heat

Hot Moist Compresses

1. For open wounds, sterile hot moist compresses improve circulation, relieve edema, and promote consolidation of pus and drainage. A compress is a piece of gauze dressing moistened with a warmed solution. a pack is larger cloth or dressing applied to a larger body area. Heat from hot compresses evaporates quickly. To maintain a constant temperature you must either change the compress frequently or apply a warm water bottle over the compress. A layer of plastic wrap or a dry towel can also be used to insulate the compress and retain heat.

2. Procedure
   1. Sterile normal saline or water should be approximately 43-46 C (110-115 F)
   2. Apply vaseline around wound edges (do not apply inside wound) to prevent burns.
   3. Pack sterile gauze wet with saline or water into the wound
   4. Cover with plastic and a towel and change every 5 minutes. or cover with a hot water bottle for 20-30 minutes.
   5. Apply moist compresses 2-4 times a day

Warm Soaks

1. Immersion of a body part in warmed solution promotes circulation, lessens edema, increases muscle relaxation, and can provide a means to debride wounds and apply medicated solution. A soak can also be accomplished by wrapping the body part in dressings and saturating them with the warmed solution.

2. Procedure

   Position the patient comfortably. Place waterproof pads under the area to be treated, and heat the solution to approximately 40.5 to 43 C (105 to 110F). After immersing the body part cover the container and extremity with a towel to reduce heat loss. It is usually necessary to remove the cooled solution and the body part and add heated solution

after about 10 minutes. The problem is to keep the solution at a constant temperature. Never add a hotter solution while the body part remains immersed. After any soak dry the body part thoroughly to prevent maceration.

Hot Water Bottle

A. Purpose:

1. To relieve pain
2. To supply heat over a longer period
3. To promote perspiration
4. To increase blood circulation
5. For sedative action
6. To produce relaxation of muscles, tendons and ligaments.

B. Contraindication:

Do Not give any Hot water bottles to any of the following patients:

1. Edematous patients
2. Unconscious patients
3. Paralysed patients
4. Babies and young children
5. Very weak and old patients
6. Leprosy patients
7. Appendicitis patients

   If for some reasons you have to give a hot water bottle nevertheless, take extra care to avoid burns. BUT NEVER GIVE A HOT WATER BOTTLE TO A PATIENT WITH SUSPECTED APPENDICITIS.

C. Procedure

1. First ensure there are no leaks. Fill the bottle with tap water, secure the cap, and turn the bottle upside down.
2. Use tap water, at a temperature of 40.5 to 46°C (105 to 110 F).
3. Fill the bag only two-thirds full, expel any air at the top, and secure the cap. The bag is then easier to mold over a body part.
4. Wipe off any moisture on the outside of the bag.
5. Never apply a water bottle directly to the skin surface. Cover it with a towel of pillow case.
6. Keep the bottle in place for 20 to 30 minutes.
7. Check skin frequently for undue redness.

D. Care of Hot Water Bag

1. Wash the bag with soapy water, scrub well with the brush.
2. Rinse with clean water and hang the bag on the rack to dry.
3. Fill air in the bag an screw the cover of the bag, powder the bag and store in a cupboard.

Tepid Sponging

A. It is often employed to reduce temperature in febrile cases and is also useful for its sedative action

- The reduction of temperature may not be more then 2 degrees.
- The patient is usually much more comfortable after the treatment and will probably sleep

Requirements

1. One large washing bowl
2. Two jugs for hot and cold water
3. Bath thermometer or lotion thermometer
4. Small bowl with cold or iced water and compress (sponges) to apply to the head
5. Soap, methylated spirit and powder to give the necessary attention to the back and other pressure points at the same time.
6. 6 or 8 sponges or wash cloths
7. Towel
8. Long mackintosh
9. 2 bath blankets

C. Procedure

1. Strip the bed and put long mackintosh and bath blankets
2. Take off the patient's clothes and leave between 2 bath blankets
3. The cold compress is applied to the head
4. Put hot and cold water into the basin
5. Test heat of the water with lotion thermometer should be 75F to 80F
6. Put cold sponges, one in each axilla and groin, and give sponges into the hands of the patients and change them often
7. The face is first sponged and dried

8. Sponge the arms in turn using long sweeping strokes from the shoulder to the hand

   Note: About 3 minutes is allowed for sponging of each part and should be well dried and covered afterwards

9. Then chest and abdomen is sponged
10. Then lower limbs are sponged in turn
11. The patient is turned carefully over and back is sponged with long strokes from neck to buttocks
12. Pressure points are treated
13. Put the patients on his back and take his temperature. If it is 2 degrees less then rearrange the patient's bed and put him in comfortable position.
14. If the temperature does not come low then do the procedure gain till it comes down
15. Chart the temperature and write Sponged and time.

d. Points to remember

1. hot drinks should also be kept at hand (patient is liable to get collapse or shivering).
2. The temperature of the water should be kept from 75F - 80F during the treatment.

Applications Of cold

Cold Moist Compresses

The procedure for applying cold moist compresses is the same as that for warm compresses. cold compresses should be applied for 230 minutes at a temperature of 15 C (59 F) to relieve inflammation and swelling. They may be clean or sterile. the nurse observes for adverse reactions such as burning or numbness, mottling of the skin, redness, extreme paleness, or a bluish skin discoloration.

Cold Soaks

The procedure for preparing cold soaks and immersing a body part is the same as for warm soaks. The desired temperature for a 20 minutes soak is 15 C (59 F). the nurse takes precautions to protect the patient form chilling.

Ice Bag or Pack

A. For a client who has a muscle sprain, localized hemorrhage, or hematoma or has undergone dental surgery, an ice bag is ideal to prevent edema formation, control bleeding, and anesthetize the body part. for sprain injuries, apply cold for the first 24 hours, then heat applications after that.

B. Procedure

1. Fill the bag with water, secure the cap, invert to check of leaks, and pour out the water.
2. Fill the bag two thirds full with crushed ice, so that bag can mold easily over a body part.
3. Release any air from the bag by squeezing its sides before securing the cap (since excess air interferes with conduction of cold).
4. Wipe off excess moisture.
5. Cover the bag with a flannel cover, towel, or pillow case.
6. Apply the bag to the injury site for 30 minutes; the bag can be reapplied in an hour.
7. If you do not have an ice bag, use a heavy plastic bag and tie the opening securely with a knot.
8. Replace the ice before the previous ice has completely melted.
9. Precautions:
   Check the condition of the skin: if there is some change in the colour (dark red or violet). remove the bag.

C. Care of Ice Bag:

1. Wash the bag with soapy water and scrub well with the brush.
2. Rinse under tap water.
3. Dry the bag from inside with the help of a forceps, and dry the out side.
4. Fill with air, apply the cover, powder the bag and store it.

Heat and Cold (Demo)

1. Hot water bottle (any sealable, unbreakable container)
2. Ice bag
3. Towels
4. Dummy with wound
5. Thermos hot water
6. Jug cold water
7. Plastic bag
8. Big basin
9. Sheet
10. Normal Saline
11. Dressing kit

NOTE:

Demonstrate tepid sponging for fever control. Also demonstrate warm sterile compress for open wound. Also demonstrate warm soaks, and safely adding more hot water.

COLLECTION OF SPECIMENS

COLLECTION OF CAPILLARY BLOOD

A few drops of blood taken from the finger (or toe in infants) are enough for certain laboratory examinations.

A. Examples:
- blood cell number concentrations ("count")
- erythrocyte volume fractions
- hemoglobin estimation
- detection of blood parasites.

B. Materials.
- disposable blood lancets
- sterile lancets
- cotton wool
- alcohol

C. Sterilizing of Lancets and Needles:

Clean lancets and needles are placed in small glass tubes plugged with non-absorbent cotton wool and sterilized in the autoclave or the dry-heat sterilizer.

D. Method

Pricking the finger:

1. Find a spot on the 3rd or 4th finger of the left hand

   - the side of the finger is less sensitive than the tip

   - in babies under 6 months prick the heel or big toe

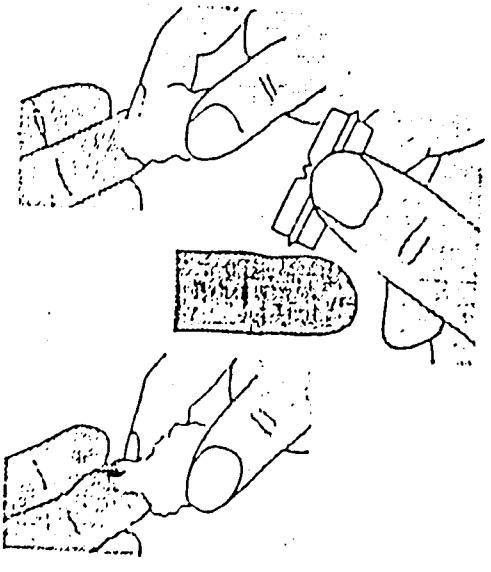
2. Clean the site:

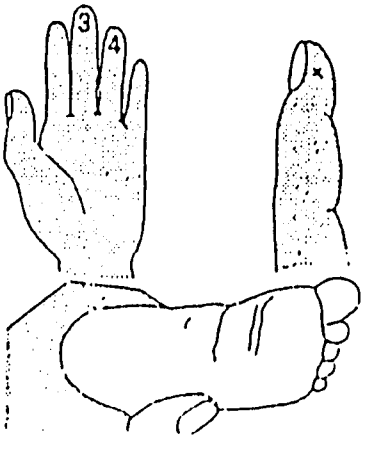
   - first with a cotton wool swab dipped in ethanol
   - then with a second dry cotton wool swab or pledget, to remove any ethanol remaining.

3. Pick the finger firmly and rapidly.

4. Wipe away the 1st drop of blood with dry cotton wool

5. Collect blood in pipette





BEST AVAILABLE DOCUMENT

PREPARATION OF THICK BLOOD FILM FOR MALARIA

A. Purpose: Detection of parasites in the blood

1. A drop of blood from the finger is placed on a slide, spread and dried. (procedure follows)

2. It is stained and examined under the microscope for the following.

   - malaria parasites
   - microfilaria
   - trypanosomes
   - borreliae.

3. The thick film method makes it possible to find parasites:

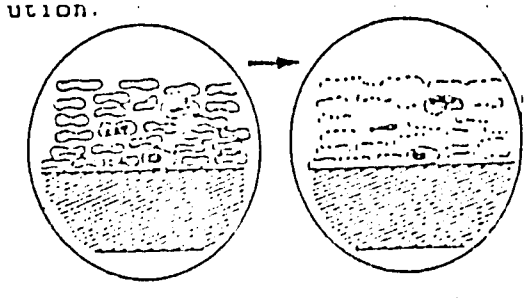
   - more quickly
   - if there are only a few present.

Principle:

1. During staining of the drop of dried blood, the hemoglobin in the cells dissolves and is washed out by water in the staining solution.

2. All that remain are:

   - the parasites
   - the white cells



which can then be seen under the microscope.

BEST AVAILABLE DOCUMENT

B. Materials:

- Clean glass slides
- Sterile lancet
- Methanol
- Cotton wool
- Grease pencil

Method:

1. Pricking the finger:

a. Find a spot on the 3rd or 4th finger of the left hand

- the side of the finger is less sensitive than the tip
- in babies under 6 months, prick the heel or big toe

Important

Do not take blood from:

- the index finger or thumb
- an infected finger (paronychia, etc.)
- the ear (too many monocytes).

b. Clean the site:

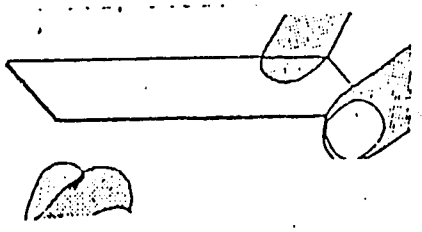
- first with a cotton wool swab dipped in ethanol
- then with a second dry cotton wool swab to remove any ethanol remaining.

c. Prick the finger firmly and rapidly.

d. Wipe away the 1st drop of blood with dry cotton wool

e. With your right hand:
- take a slide, holding it by the edges.

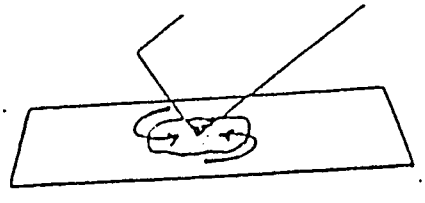
With your left hand:
Press the finger to produce a drop of blood, about this size: O



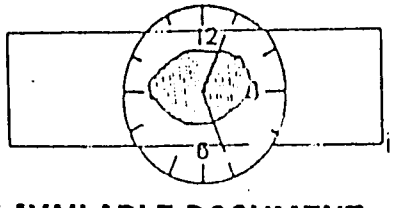
D. <u>Preparing the film</u>:

1. Make a thick smear in the center of the slide. Spread the blood with the corner of a clean slide to an even thickness; smears that are too thick or too thin will not stain well.

A correct thickness enables the hands of a watch to be seen through the smear. (A thin blood film may be useful if the identification of a species of malaria parasite proves difficult.)

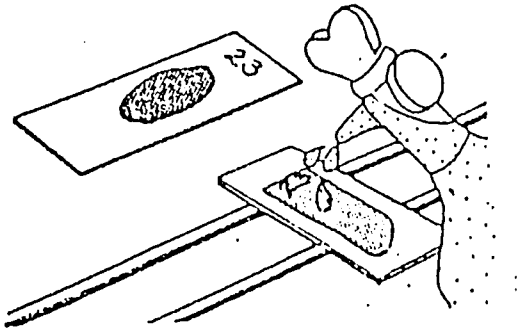


2. Label the end of the slide with the patient's number, using a grease pencil. Leave the thick film to dry in the air. A warm sunny bench is suitable, provided an electric fan, if available, will speed up drying and keep files away.



 BEST AVAILABLE DOCUMENT

3. Thin films should be dried in the air and immediately fixed with methanol (methyl alcohol).

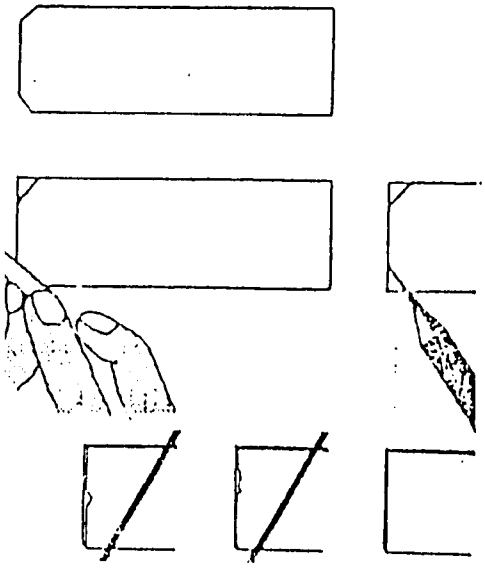


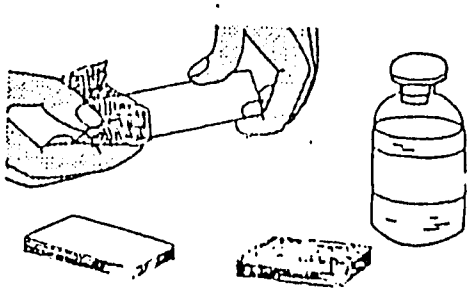
PREPARATION OF THIN BLOOD FILM

A. Principle:

A thin smear is prepared by spreading a small drop of blood evenly on a slide so that there is only one layer of cells (called a monolayer).

After staining, blood films are used:
- for determining leukocyte types and percents
- for detecting abnormal red cells
- for identifying certain blood parasites.





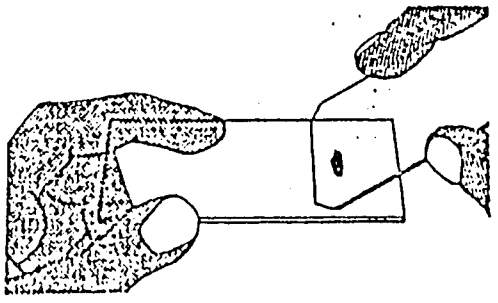
BEST AVAILABLE DOCUMENT

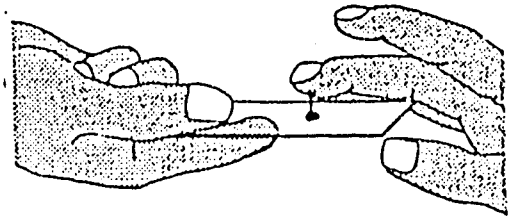
B. Materials:

* Clean grease-free glass slides (clean with ethanol/ether if necessary.
* Same materials as for thick blood film

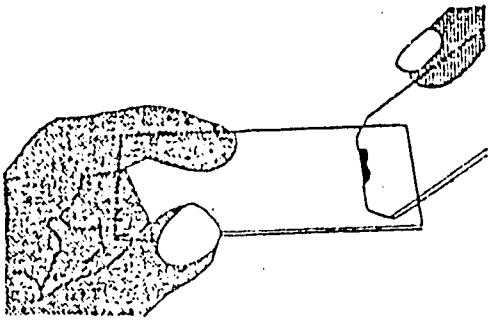
1. Making a glass spreader:

   a. Select a slide with a perfectly smooth edge.
   b. make a diagonal mark across the 2 corners at one end of the slide with a file.
   c. Snap off the 2 filed corners.





2. Collection of blood specimen:
   a. Take the blood from the 3rd or 4th finger on the side.
   b. Wipe away the first drop with dry cotton wool
   c. Let the blood flow freely. First take samples for determining blood cell number concentrations (if requested).



BEST AVAILABLE DOCUMENT

Important

Do not take blood from:
- the index finger or thumb
- an infected finger (paronychia, etc.)
- the ear (too many monocytes).

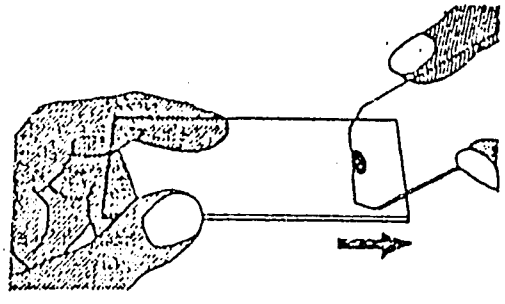
d. use of anticoagulants:

Use only dried EDTA dipotassium salt solution; other anticoagulants alter the appearance of leukocytes.

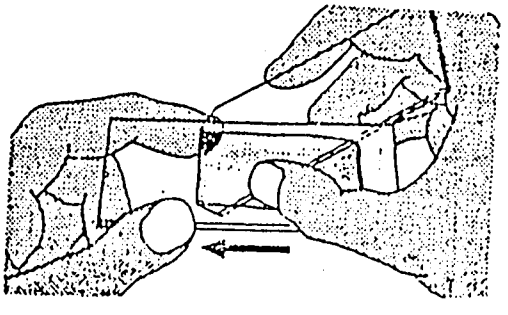
It is much better not to let blood stand in an anticoagulant before preparing the film.

3. Making the film:

a. Collect a drop of blood about this size, by touching it lightly with one end of the slide.



b. Hold the slide with one hand. Using the other hand, place the edge of the spreader just in front of the drop of blood holding the spreader at a 45 degrees angle (90 degrees angle being perpendicular to the slide).

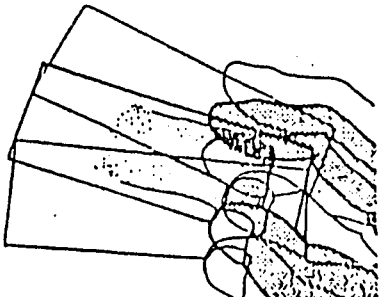


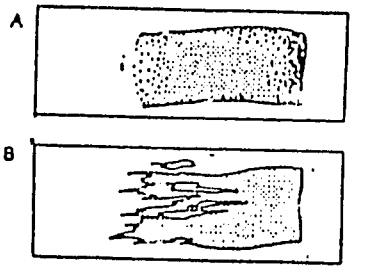
BEST AVAILABLE DOCUMENT

c. Draw the spreader back until it touches the drop of blood.

d. Let the blood run along the edge of the spreader.

e. Push the spreader to the end of the slide with a smooth movement (all the blood should be used up before you reach the end).

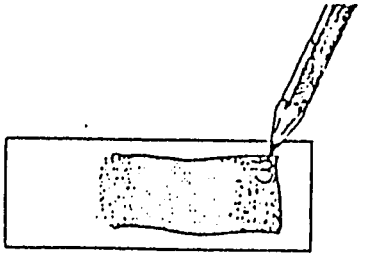


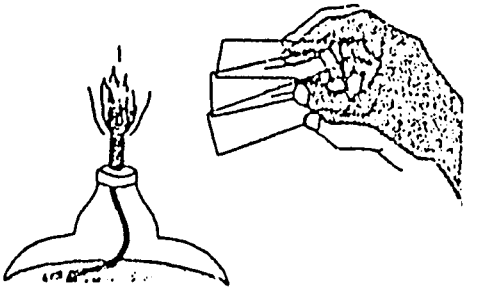


* Blood from patients with anemia should be spread more rapidly.

f. Check that the film is satisfactory (see A):

- there should be no lines extending across or down through the film
- the film must be smooth at the end, not ragged as shown in B
- the film must not be too long
- the film must not be too thick
- the film must not contain holes because a greasy slide has been used.





* A well spread film is great importance. A badly spread film will give wrong leukocyte type fractions and make morphology.

Only a lot of practice will make your slides good, so practice every chance you have.

5. Drying the film:

Adequate drying is essential to preserve the quality of the film, especially in humid climates.

In the wet season (in the tropics) - Dry the film by waving it rapidly about 5 cm. away from the flame of a spirit lamp; to the side and slightly above (but never directly over) the film from fire.

Mark the dry film with the patient's name or number. Write with a lead pencil on the thick part of the film, but not over the exam.

Health System Management Skills

Preparation and arrangement of BHWs' work-place:

For the effective and efficient delivery of the health services the arrangement of an adequate work-place is essential. If the number of daily visitors is large and you a few health workers are working as a group in one work-place, it will be better that each of you be appointed to see the patients simultaneously in separate sections so that the undesirable too long waiting of the patients be eased and prevented.

If it is so that you do not have a suitable place for waiting of the visitors, seek the cooperation of the local people and put up a shed in front of your work-place for this purpose.

Generally in arrangement of the work-place take the following points into consideration:

1- Arrangement of drugs and medical equipments:

- Store the drugs in a dry and cool place away from the sunshine.
- Write the name of each drug on its bottle or box distinctly, and also mark the drugs which you intend to issue out soon. In case of the rush or a large number of patients you ought to be beforehand with the preparation of requisite dosages of drugs which you would distribute to patients.
- Get the used equipments well-washed, dried up and placed in a proper place, and before using them again sterilize those of them which call for sterilization.

2- Working hours and table of daily duty:

For management and organization of daily affairs as to properly attend to visitors and deliver better health services to them every health worker is required to prepare a proper daily timetable for the effectively discharge of his related affairs. To handle emergency cases a health worker must be present on his duty around the clock.

Usually a health worker is expected to visit the patients from 8;00 am until 2:00 pm. In the afternoons he should employ himself in arranging and cleaning of the health center as well as in preparation of daily reports and arrangement of the drugs and medical equipments for the next day. Besides working in his work-place, a health worker also has duty to pay home visit to patients and deliver health education and services to the people.

Protection of work-place:

A health worker should make try to protect the health center and also feel responsibility to take care of the proper storage of the drugs, medical equipments and their relevant documents and records.

4- Disposal of waste materials:

Waste materials such as useless papers, syringes, used guazes and other garbages and waste materials must be disposed with either by burning or burying.

5- Recording of daily activities:

Health records usually mean the written information about the health of the people which help the health decission-makers to plan useful programs for the health of the people.

Health records which are usually indented in the book given by MOPH comprise reports about the wounded persons, patients, the number of birth and the number of deaths as well as the particular condition of sanitation.

9.1 POLICY STATEMENT

The mid-level health worker manages the work place to provide the best possible services to the community. To do this he:

Organizes the staff, facilities, and equipment of the health center

Organizes and maintains health center records

Arranges protection for the health center

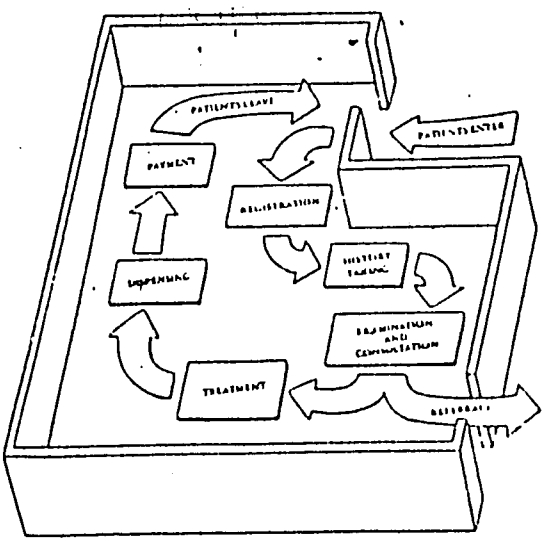
Prepares Handing Over Notes

Evaluates the management systems supporting the health center

9.2 ORGANIZING THE STAFF, FACILITIES, AND EQUIPMENT OF THE HEALTH CENTER

Staff Location and Patient Flow

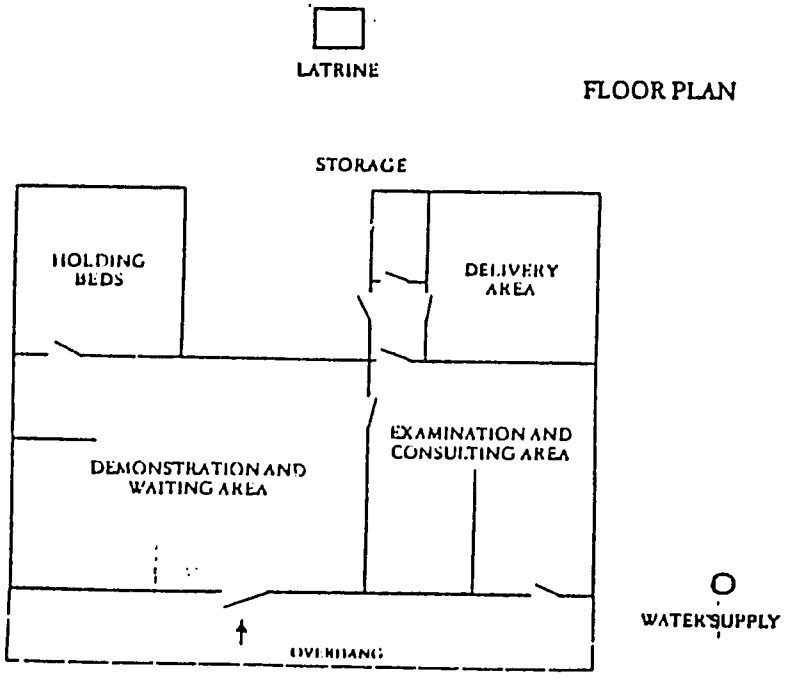
Set up work stations in the health center so you have a smooth and even flow of patients with no long waiting lines. Process the patients through the health center as follows.



BEST AVAILABLE DOCUMENT

In addition to these stations and services, you may have patients attend group health education sessions or stay in holding beds for observation if necessary. To reduce waiting time, provide several services at one station. Prepackage drugs which you dispense frequently.

Because you cannot eliminate all waiting at a busy health center, set aside a large enough area for registration and waiting. If there is not enough space inside the health center for waiting patients, seek community support to construct a canopy or simple shelter beside the center which will protect waiting patients from the sun and rain.



Hours of Operation and Clinic Schedule

Keep the health center open to the public for patient car from 8:00 a.m. to 3:00 p.m. Use the time after 3:00 p.m. to complete records, count the cash received and make entries in the Cash Receipts Book, organize supplies, and clean the center. Adjust the work schedule to meet any special local needs. The schedule must include the services and activities listed in the ministry of health standard work plan in Section 11.2 of this manual.

 BEST AVAILABLE DOCUMENT

Assign either yourself, the auxiliary nurse, or the midwife to be on call twenty four hours a day. If the team member assigned to on-call duty is not living near the health center, make arrangements for the guard to notify the team member of the arrival of an emergency case.

Schedule clinics and special programs and services such as mothers clubs, health education programs, and demonstrations to meet local needs.

Arrange health center operations so team members can make regular supervisory visits to community health workers and carry out other activities in the communities. Budget your time so that out of a five-day week, you will spend the equivalent of three days in the health center and two days working in the community.

9.3 ORGANIZING AND MAINTAINING HEALTH CENTER RECORDS

Keep the health center records current Keep the records where they are used. for example, keep the patient Register on the table where patients are registered and the Labor Charts in the room where you deliver babies. Place loose records in file folders at the end of every day so they can be found when they are needed. Store files and health center records in a specific place on a shelf, in a cupboard, or in file boxes where you and the staff can find them easily. Clearly label file folders, shelves, drawers or boxes containing health center records. Keep confidential files in a locked drawer or cabinet. Order blank forms monthly on the Inventory, Order, Issue, and Receipt Form for general supplies.

Filling System for the Health Center

Use the subject classification shown in the Health Center Files list below to organize the filing system for the health center. In addition, give each file a number to make it easier to file the items in their proper place and to see if any files are missing. Maintain a master list such as that shown below for orienting new personnel and to include in the Handing-Over Notes if you are transferred to another Health Center.

To add a new subject file to the system, label a file folder with the new subject, determine which main classification it belongs to, place the number on the file, and add the title to the master list of files.

HEALTH CENTER FILES

1. DRUGS AND MEDICAL SUPPLY
   - 1.1 Drug Orders Pending
   - 1.2 Drug Orders Received
2. GENERAL SUPPLY
   - 2.1 Supply Orders Pending
   - 2.2 Supply Order Received
   - 2.3 Local Purchase Order Requests
   - 2.4 Local Purchase Orders Received
   - 2.5 Reimbursement requests
   - 2.6 Reimbursements Received
3. FACILITIES AND EQUIPMENT MAINTENANCE
   - 3.1 Inventory and Maintenance
   - 3.2 Repair Requests
   - 3.3 Loss, Theft, or Damage
4. TRANSPORTATION
   - 4.1 Transportation Survey
   - 4.2 Vehicle Repair Requests
   - 4.3 Vehicle Accident Reports
5. COMMUNICATION
   - 5.1 Communication Survey
6. PERSONNEL
   - 6.1 Job Descriptions
   - 6.2 Orientation
   - 6.3 Training
   - 6.4 Leave Schedules
   - 6.5 Disciplinary Action (Confidential)

     Keep one file for each health team member, including community health workers. See Section 6.2 of this manual for details on the employees personnel files and a list of their contents.

7. FINANCE
   7.1 Annual Budget Estimates
   7.2 Statements from Patients Who Pay No Fees
   7.3 Travel and Subsistence Expenses
   7.4 Advance of Funds

8. HEALTH INFORMATION
   8.1 Monthly Patient Reports
   8.2 Labor Charts
   8.3 Community health Assessment Data
      8.5.1 Community A
      8.5.2 Community B
      8.5.2 Community C
      Keep a file for each major community, or group of communities in the health center's service area.

9. HEALTH CENTER OPERATIONS
   9.1 Incoming Correspondence
   9.2 Outgoing Correspondence
   9.3 Health Center Operations Planning
   9.4 Health Center Advisory Committee
   9.5 handing Over Notes

10. DISTRICT HEALTH SERVICES
   10.1 District health Team
   10.2 Maternal and Child health
   10.3 Immunizations
   10.4 Environmental Health
   10.5 Health Education
   10.6 Communicable disease Control
      10.6.1 Malaria
      10.6.2 Leprosy
      10.6.3 Tuberculosis
      There should be a file for each active disease control program.

11. MISCELLANEOUS

12. MANUALS
   To be placed on book shelf
   12.1 Health Center Operations Manual

12.2 Formulary and Diagnostic and Patient Care Guides
12.3 Patient Care Procedures
12.4 Community Health Reference manual
12.5 Community Health Worker Training Materials

Disposing of Records

Clean out health center files regularly to avoid cluttering them with useless and outdated material. Burn any confidential files that are to be disposed of. Use the following guidelines for keeping or disposing of records.

TYPE RECORD

a. Patient Register, Follow-Up Books, and Diary, transportation, communication and community health surveys; minutes of health committee meetings

b. Monthly Patient Reports

c. Drug and general supply records; inventory and repair records; loss and accident reports; letters, memos, and other correspondence; budget estimates and finance records except cash receipts book.

d. handing-over notes; cash receipts book

e. Personnel files

f. Manuals

RETENTION PERIOD

Keep five years

Keep three years
Keep two years

Keep permanently

Keep records for current employees only

Keep most recent edition; destroy outdated material

Receiving and Submitting Official Reports

Mark all incoming correspondence and reports with the date which they are received.

Act on official requests according to the instructions in the request Process and replay to all enquiries from employees and the public within five days of receipt if a reply is in order.

Insert in the Health Center Operations manual all new policies, procedures, regulations, and forms concerning health center operations. Destroy the outdated material.

Insert all new formulary, diagnostic and patient care guides, and patient care procedures information in the Formulary, Diagnostic and Patient Care Guides, and Patient Care Procedures manuals. Destroy any outdated material.

9.4 PROTECTING THE HEALTH CENTER

Responsibility for Keys and Locking Up

You have full and final responsibility for the protection of the health center and all the equipment, supplies, and records that are a part of it.

you may delegate this responsibility to other members of the team when you are off-duty or away from the health center. When away from the center, make it clear who is responsible and who is to keep the keys.

Lock the health center during non-duty Give a key to the team member who is on call for the purpose of responding to emergencies.

Securing and Closing the Health Center

Establish a routine procedure for ensuring the security of the facility when it is closed. Check the following on an inspection tour before closing and securing the health center for the night or weekend:

- Equipment, including the refrigerator, bicycles, and motorcycle
- Drugs and narcotics
- General supplies
- Records
- Foodstuffs
- Latrine
- Well
- all doors and windows
- Gates

Make sure the health center is cleaned, supplies and records put away, and equipment cleaned and put in its proper place before the health center is closed.

Supervising the Guard

Instruct the guard to remain on the health center grounds at all times during his duty hours. Tell him to move about the grounds, checking doors and windows, and investigating any unusual circumstances. Tell him to be constantly alert and not to engage in any activity which would divert his attention from guarding the health center.

Tell the guard to make a round of the health center and grounds, checking all doors, windows, and gates to make certain they are properly closed and locked after the team members have departed.

Tell the guard that in the case of emergency medical cases he is to send immediately for the team member on duty. He should not leave the health center, but should send someone else. In the event of security problems such as fire, theft, attempted break-in, or destruction of property, he should immediately notify you. If you are not available, he should notify the team member on duty. Inform the guard each day as to who is on duty and where he can be located in case of emergency.

Tell the guard to note any problems during his shift which are not of an emergency nature and report them to you at the end of his shift.

9.5 HANDING-OVER NOTES

When you transfer to another health center, you write Handing-Over Notes to assist the new person in assuming his duties. Prepare the notes in two parts:

PART 1 - Information, advice, and recommendations about the duties of the position

PART II - List of all government property for which the person is responsible and a description of its condition

Use this outline for preparing Handing-Over Notes

HANDING OVER NOTES

Date: _____

Health Center: _____

Address _____

Incoming Mid-Level
Health Worker: _____

Outgoing Mid-Level
Health Worker: _____

PART I - Duties of the Position

Position Description

Attach a copy of the official job description.
Describe work performed which varies from the officia position description.

Personnel

List the personnel who work for you, their functions and capabilities.

Describe other persons with whom you work, their functions, and how they relate to you.

Health Service Area

Briefly describe your health service area.

Describe each community served by a community health worker, its problems, leadership, and current health projects.

Describe each community health worker including his functions, capabilities, and community acceptance.

Describe gaps in coverage in the service area.

Make recommendations for improving coverage

Health Center Operations

Describe how the heath center functions Describe any special problems which need attention. Review.

- Facilities
- Equipment
- Drugs
- Supplies
- Transportation
- Communication
- Record Systems
- Housekeeping
- Preventive maintenance and repairs
- Security
- Hours of operation
- Patient load
- Special health problems
- Referral system

Make recommendations for improving health center operations

Supervision

Describe supervisory problems. Describe any methods of supervision which you have found helpful in working with the health center team and the community health workers.

Describe the supervision given to your health center by your district supervisor.

Make recommendations for improving supervision.

Current Work and Problems.

List all important current work assignments and problems which need attention. Make recommendations on how to handle each of them.

Priorities

list your idea of the priority needs of your health center. Needs may include equipment, facilities, staffing, training, recruiting more community health workers, improving community relations, transportation, communications, and more support from ministry of health programs.

personal Suggestions

List suggestions which will assist your replacement in adjusting to his new position. Suggestions may include persons who can help, places to buy things, recreational opportunities, valuable contacts in the community, and other suggestions.

PART II - Handing - Over Government Property

Prepare an up-to-date inventory of all government property including facilities, equipments, supplies, and drugs. Use the inventory forms provided in this manual

Review this inventory with your replacement. Both of you sign it, and submit a copy to your supervisor. Each of you keep a copy for your own records.

96. EVALUATING THE MANAGEMENT SYSTEMS SUPPORTING THE HEALTH CENTER

Evaluate the management systems supporting the health center and plan improvements when they are needed. Follow these steps in doing the evaluations:

STEP 1

Draw up a checklist for each of the eight support systems and the general operations of the health center. Involve the district supervisor and the members of the health team in making the checklist. See the sample checklist for personnel at the end of this section.

STEP 2

Review each support system and the general operations of the clinic with the health team members and the district supervisor, if he is available, using the checklist.

STEP 3

Write suggestions for improvement in the "Proposals for Improvement" column on the evaluation checklist.

STEP 4

Decide which improvements are most important Request the district supervisor's approval and assistance in implementing improvements that require action from higher levels of the ministry of health.

STEP 5

Follow up at regular intervals. Review the status of improvement actions in regular staff meetings of the health team.

CHECKLIST FOR EVALUATING HEALTH CENTER MANAGEMENT SUPPORT SYSTEMS

MANAGEMENTS SYSTEM: PERSONNEL				
PREPARED BY:		DATE:		
Question	Check Yes No		Comment	Proposals for Improvement
1.				
2.				
3.				
4,				
5. (CONTINUE WITH AS MANY QUESTIONS AS REQUIRED)				
6.				

HOME VISITING

PRINCIPLES OF BEHAVIOUR

You are expected to follow certain principles of behaviour in carrying out your responsibilities. These principles are:

- Know your job responsibilities and limitations. Offer only those services for which you are trained.

- Establish and maintain a good relationship with the other members of your team, and cooperate with them.

- Follow the rules and regulations of the health facility in which you are posted.

- Have respect for the rights and dignity of all people. Serve them without regard for sex, age or social status.

- Respect other people's customs and beliefs, and be polite and sympathetic.

- Practise what you teach about health. Be a good example for the community.

- Help people, within the limits of your training, and show interest and concern for their general welfare.

- Be fair and honest.

- Do not criticize, make judgements or gossip about people you are serving.

- Act with confidence. Be cheerful and enthusiastic. Maintain a neat and clean appearance.

- Remain open to community responses to health programmes. Do not take offence if the community refuses to accept a new service or if people have many questions.

. Evaluate the community's response to your activities and consider alternative approaches.

. Be loyal to the organization employing you, nd perform your duties accordingly.

. Meet regularly with your supervisor to report and discuss your activities and tc request help where needed.

COMMUNICATION

How does the MLHW get to know the community better, in order to be more effective?

The MLHW needs to be familiar with the structure and function of the community, so that he can better involve the people in the utilization of services available through the BHU.

No one can live alone, because man is a social being, This means that an individual needs others to interact with, this is why groups and families are formed. A community is made up of one or more groups of people. Groups are classified as informal or formal.

An informal group is one with a small and long lasting membership which interacts frequently. Examples of these groups are families, close friends and play groups. Each person in an informal group has a feeling of belonging and the group is bound together with strong ties of affection and loyalty. Children learn about the world through these informal Groups. This is where they develop lifetime behaviours and habits.

A formal group is a collection of individuals with a common goal.

Membership in these groups is voluntary. The formal group functions according to its regulations. Where the membership is large, there is less direct contact between members. With society becoming increasingly modernized, formal groups (such as schools) are taking over many of the activities of informal groups, such as the education and discipline of children.

Each individual in a group is expected to behave in a certain way, or to play a role. Certain responsibilities go with each role. a person usually belongs to a number of different groups and will have a different role in each group. for example, a man may be the head of his household and, as a citizen of the community, he may also have a special role in the mosque or in other village groups.

Groups usually have rules and regulations for behaviour. In rural areas, there may not be written rules, as in urban groups, but the rules still exist. Therefore, it is important to find out what these rules are in your particular area.

MAKING CONTACT WITH THE COMMUNITY

Since outreach work has not yet been started in all communities, you may first need to contact the community authorities to explain the programme and to arrange a time and place for you to meet them.

These authorities should also be told about your role in home visiting and be asked to identify families who would benefit from this service. These families should be visited first.

Since the MLHW is new to the health system you need to identify yourself to the village leaders so that they may facilitate your activities. You need to interact with them frequently and maintain a visible role in the community. In this way you will become more acceptable to the group. In other words, you need to make the community aware of your official role

Be sure you know the following information:

The location, size and resources of the community.

. Who lives in it.

. Who the leaders are.

YOUR ATTITUDE

How you talk and behave will greatly influence your success or failure as a MLHW. Your success will also greatly depend on your attitude. What do we mean by attitude? Attitude means a way of thinking or behaving towards a person or thing. Feelings are the internal experiences a person has and these show in his manner and moods. Our feelings may not be obvious from what we say but from how we say it. For example. "I do not have time now" can be said in a variety of ways. Below are some of these ways:

- "Can't you see I am busy?"

- "Go away and stop bothering me."
- "I am busy now, could you come back tomorrow?"

"Please forgive me for not seeing you, but I cannot leave what I am doing now, Could you come back later this evening?"

The third and fourth statements are made to someone having equal or higher status than the speaker. The first two statements indicate an angry or frustrated mood and may be directed to those who seem inferior in the community. They indicate disrespect and ignore the feelings of others. Unfortunately this attitude is common among Health Workers. This kind of approach is not only unkind, but also harmful to health programmes. If people are not made to feel good they will not welcome you and they will tell their friends and relatives to stay away as well.

If you are not liked in the community where you work, you may not be allowed to come back. If this happens, how can you justify your work?

As a ML Health Worker, you need to keep in mind that you are trained to serve people and to meet their health needs. Therefore, you need to make them feel good. Your attitude has to be the same towards all people regardless of their education, wealth, status or age. Treat everyone with respect and courtesy. Make them feel that you are there to help them.

Talk to them nicely, and make them feel comfortable, so that they are convinced that you care about their welfare and are truly interesting them.

Until you convince the people your attitude and behaviour ..... you are there to help them..... not have any time for you ..... your first contact be polite, ... with respect, listen and try ..... stand their needs before ..... them advice. Treat each per..... you would like to be treated ..... way you will gain the respect ..... confidence of the community necessary for a successful MLHW.

Reasons for Home Visit:

1) follow-up of home care teaching/advice
2) home assessment
3) outreach for preventive health purposes
   a> eg: TB, other contagious diseases
   b> accident prevention

Planning for Home:
Your plan will depend on the purpose and umber of home visits to be done.

You will need to divide the area and make plans for visiting within the time limits of your working hours. Make your home visits on a priority basis.

PREPARING FOR HOME

VISITS: Before you make home visits, know what you are going to do and what you will need.

. Review your records of the families to be visited.

. Review the procedures you will use and make sure you have the necessary materials with you.

. Make sure you have information with you about other valuable services which may be requested during your Visit.

. Determine which visits can be postponed. (A new antepartum case may be visited later, but a child with diarrhoea should be visited immediately.)

. Visit those you have promised to visit.

. Visit those families who have come to you requesting you to assess their needs.

. Visit those who have not returned to the clinic for follow-up.

have with you the name and addresses of other resources, such as the LHVs, TBAs, etc.

. Make sure BHWS bring necessary equipment and supplies, including teaching aids.

PROCEDURE FOR HOME VISITS:

FIRST VISIT: Start your visit with greeting.

. introduce yourself. "I am (Name) from the BHU located in (Name).

. Ask if you can spend a few minutes with the people in the house.

. if you are not asked to sit down, suggest "May I sit here and talk for a while?

. Explain the purpose of this visit.

. Thank the family for cooperating and tell them you may soon stop again.

. End each visit with a discussion of what was done during the visit and enquire if they have any questions.

. Record your visit.

FOLLOW UP VISIT: Start the visit with a greeting and explain the purpose of this visit. For example.

"Today I am here to see how your child with diarrhoea is doing."

"I came to find out how you are doing with your treatment of Malaria" (or worms, etc.)

. Conduct the visit by:

Interviewing their patient or assessing the condition of a child.

Review the treatment requirements, how the patient feels. his observations and yours.

. Discuss your findings with him.

. Make plans for future follow-up visits or end the visits with a concluding remark such as:

. "You need to come to the BHU to be examined.

. Conclude by reviewing the visit and saying. "I can be found at.... (Place).... If you need me, let me know.

. Record your plan for the patient.

INSTRUCTIONS FOR FILLING OUT THE MLHW'S DAILY ACTIVITY REPORT.

You are to fill out one form for each day you work, whether or not you served anyone. This is a record showing where you worked, what you did and for whom.

. Write down your name as it appears in official documents.
. Write down the date for which you are reporting.
. Write down the name of your BHU.
. Write down the name of the village you are reporting on.
. TYPE OF ACTIVITY - You can make four types of visits.

Health Promotion - Includes all interactions that have to do with helping individuals or groups in self care, such as health education talks, giving information on the utilization of health services, growth monitoring, and EPI clinic etc.

Sick Visit - New - This means seeing any sick person for the first time.

Sick Visit-Previously Known Person- This means seeing a sick person for the second or consequent visit. This could also include a person who has recovered from a previous illness and may be here for the first time with a new disease.

TCICHALATH PROBLEMS/SERVICE - Check the box which best describes the focus of your activity.

Nutrition - Anything to do with eating or eating habits.

Immunization - This refers to any activity directly or indirectly related to an immunization programme you are helping.

Disease control - malaria, TB, ARI, diarrhoea, other - Check the appropriate box if you were involved with the prevention, diagnosis, treatment, referral or follow-up of one of these diseases.

OTHER MCH ACTIVITIES

Ante-natal and Post-natal Mothers - Any service relating to pregnancy and child birth.

Newborn infants - Anything about the newborn.

Environmental Health - Any activity associated with water, sanitation or personal hygiene.

Other (accident etc) First Aid and Emergency Situations.

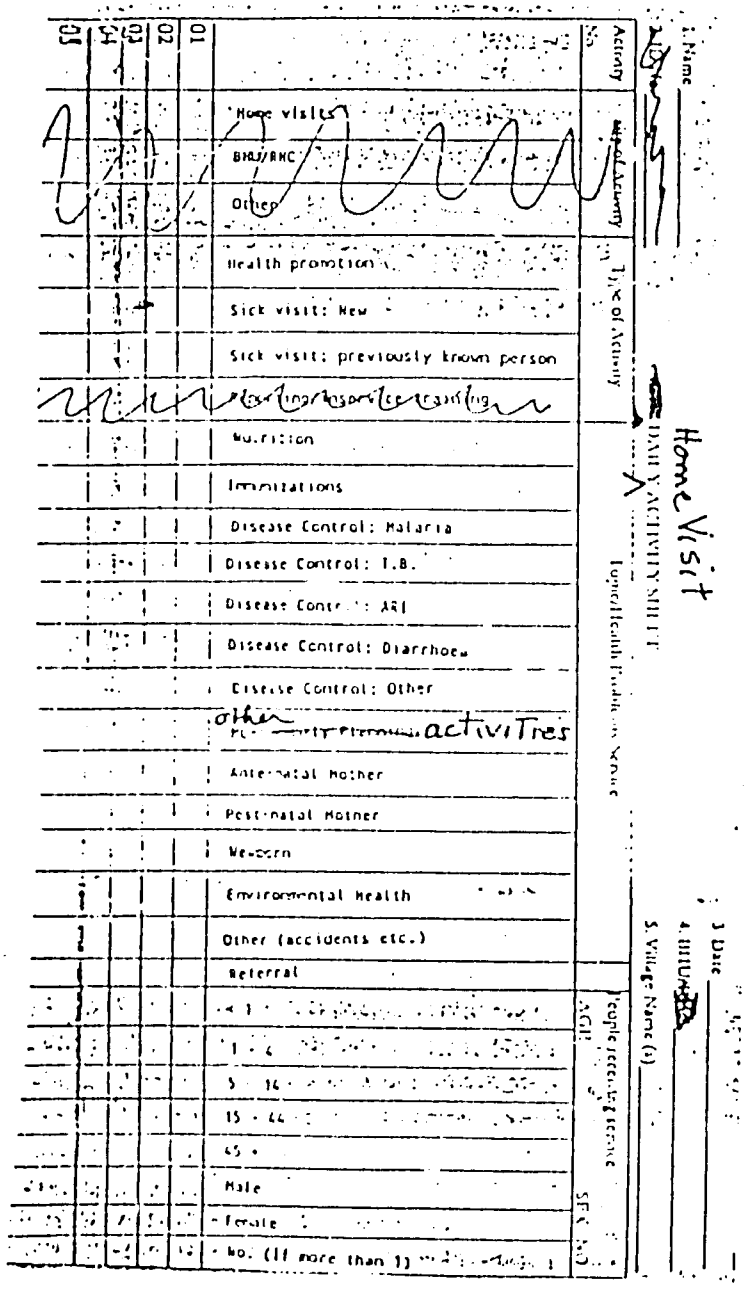
Referral - When a person is directed to another health facility, person, government or non-government organization.

PEOPLE RECEIVING SERVICE

Age - Tick appropriate box of individual you are helping. You may Tick more than one box if you were serving more than one age group.

Sex - Check male or female, depending on whom you were helping or advising (if it was a mixed group of people tick both).

Number - For group activities, enter the number of participants.



BEST AVAILABLE DOCUMENT

YOUR KIT

You will need to bring certain supplier with you on your home visit.

How the items are arranged in your bag is up to you as long as you pay particular attention to the following points.

- All liquids should be placed upright and within smaller pockets.

- Infrequently used items should be placed on the bottom.

- Frequently used items should be on top.

How do you use the bag properly to ensure cleanliness? In carrying out community and outreach activities, the bag must be taken to many dirty and dusty places. it is not possible to keep a kit that is used in outreach activities as clean as a kit that is used for classroom demonstration only. However, by following certain guidelines the kit and its contents will remain clean enough to use safely. These guidelines are:

- Items that do not touch the body can be kept in the outside compartments/pockets.

- Do not touch the contents on the inner compartment without first washing your hands.

- Loosen the snaps before washing your hands. After wards put your finger inside the flap and open the kit.

- Take out only those items that are necessary and lay them on a clean working surface.

- After using the items, clean and replace them.

- Look for a clean, easy to reach space on which to place the bag.

. Always keep your eyes on the bag when you are carrying out a procedure so that children and animals do not get to the inside compartment.

. Always wash your hands before entering the inner compartment.

. Place the kit on your lap while travelling by bus or car.

. Never put the kit near your feet because the dirt and micro-organisms carried on your shoes may be transferred to the kit.

. Wash the bag with soap and water and sun dry it as it gets dirty or at least once every six months.

Suggested

The contents of the kit and their suggested uses are listed below:

Suggested Contents	Suggested use
Soap in a dish	- For washing hands before and after giving first aid, attending deliveries and washing wounds and animal bites.
Scissors	- For cutting bandages, cords adhesive plasters etc.
Tweezers	- For pulling out thorns and picking up boiled items.
Thermometer	- For taking body temperatures.
Cotton	- For cleaning wounds and cuts.

Gauze squares	- For packing and dressing wounds.
Gauze roll	- For bandaging and splinting.
1 Litre measuring jug	- For measuring 1 litre when preparing ORS.
ORS packets	- For distributing to families who needs them.
Arm circumference hand	- For measuring arm circumferences of 1 to 5 year old children in order to determine their nutritional status.
Antiseptic solutions	- For cleaning wounds and injection sites. (Use externally only).
Note book	- For keeping your daily notes.
Forms	- For collection information.
stethoscope	
BP apparatus	

WHAT IS FIRST AID?

What is first aid? (Scope of first aid)

1. First aid is the help we give a person who is hurt or sick.
2. it helps keep the person alive.
3. It stops the condition from getting worse.
4. it also means knowing when to send a patient to an OPD or hospital.

Aim: The first aid worker must learn the following:

1. He must know that he is responsible for giving first aid in cases of accidents and illnesses.
2. He must get a seriously injured or sick victim to an OPD or hospital as soon as possible.
3. He must know EXACTLY what to do.
4. he must work in a calm and skillful way.
5. The first aid worker must know:
   - what to look for
   - what to do and what NOT to do
   - how to do it
6. A first aid worker has the skills and knowledge for giving first aid.

What does first aid training do?

1. it helps us prevent accidents and do the right thing at the right time.
2. it save live.
3. it prevents further injury.
4. It means learning about first aid.
5. It means using whatever materials are available to deal with accidents.
6. It means repeated practice and full understanding of what to do.

General directions:

Every accident and illness are different, but the first aider can learn the actions that are necessary all the time.

1. Keep calm and get others to help by giving clear orders.
2. Keep crowds away - you need space to work.

Protective measures:

1. You must understand the dangers to the casualty and yourself.

   a. Are the surroundings dangerous - live electricity, fighting, etc.?
   b. If they are, you may have to move the casualty or get a helper to help you.

2. Get the victim to lie down and then examine him. Do not change his position without a good reason.

3. Reassure the casualty. Talk to him. calm him. Show him you care.

4. If the casualty is unconscious, put him in the safety position.

5. do not let the patient get cold.

6. If force caused the injury, assume there are internal injuries.

7. Decide how to move the victim if you have to move him.

8. If it is necessary, transport him to an OPD or hospital.

FIRST AID CAR

URGENT CARE:

1. Prompt rescue

2. Determine KIND (type) and PRIORITY of injury

3. ABC's (airway, breathing, circulation)

4. Control of severe bleeding

5. First aid for poisoning

ADDITIONAL FIRST AID DIRECTIONS:

1. Limit movement, Keep in best position for injury.

2. Keep warm.

3. Methodically check victim for further injury:

   a) Loosen tight clothing - look a ENTIRE body for further injury.

   b) Note general appearance (skin color, etc)

   c) Check pulse and respiration.

   d) Check level of consciousness (check eyes)

4. Carry out first aid:

   a) Apply emergency dressings, bandages, splints.

   b) Transport safely to designated area.

5. Make every effort to AVOID FURTHER INJURY when you handle and treat the victim

ASSESSMENT OF TRAUMA

Before you can give first aid care to a sick or injured patient, you MUST determine what type of injuries he has, in order to know what kind of first aid is needed.

In order to do this, you must perform a quick, but thorough and methodical physical examination of the victim by

- looking with your eyes
- listening with you ears
- feeling with your hands

Always remember, you want to prevent further injury to the victim. Do not handle him roughly, and move him as little as possible during the exam.

The following steps must be done in this order:

1) Check the level of consciousness.

   a) Is he conscious?
   b) Does he respond when you talk to him?
   c) Check his eyes - can he see you?

2) ALWAYS examine the neck FIRST!

   a) Do not move his head or any other part of his body till you have felt under his neck for any injury, such as a bleeding wound or abnormal position of bone. Is neck in abnormal position?

   b) If you think there is a neck injury, do NOT move his head or turn the rest of his body, because you could cause fatal damage or paralysis.

3) Examine the head.

   a) Any bleeding wounds?
   b) Skull bones fell abnormal or fractured?

4) Check the back.

a) Do NOT turn him to check - reach underneath with your hand and feel if the broken feels broken or abnormal. Does the back look like it is in an abnormal position?

b) If you think there may be a back injury, do NOT move him, because you may cause fatal injury or paralysis depending on which part of his back is broken.

5) Press the sides of his chest with both hands to check if the ribs are broken.

6) Press the pelvis with both hands to check if it is fractured.

7) Methodically check the rest of the front of his body by looking, listening and feeling.

a) You MUST look UNDERNEATH his clothing to make sure you do not miss a wound or injury!
b) Check his arms and hands.
c) Check his legs and feet.

8) If there were NO NECK or BACK injury, turn the victim on his side and check the back part of his body.

a) LIFT UP HIS SHIRT to check his back. This is very important especially with gunshot wounds of the chest. If he were shot in the chest there may be an exit bullet wound on the other side.

9) After you have finished examining the victim's body, and know WHAT the injuries are, begin your first aid care.

a) The proper order of first aid care is ALWAYS:
1. A - Airway
2. B - Breathing
3. C - Circulation
4. Contorl of severe bleeding/shock
5. First aid for poisoning.

b) Remember, after only 4-6 minutes without oxygen, the victim can die.

- It does no good to splint a fracture or bandage a wound if you have not done ABC's, because you may be splinting or bandaging a dead person.

TRIAGE

Definition

Triage - A process used to sort patients in terms of priority care and transport based on severity of injury or illness.

I. Highest Priority
   1. Airway obstruction
   2. Uncontrolled severe bleeding
   3. Severe head trauma
   4. Open chest wounds
   5. Open abdominal wounds
   6. Severe shock
   7. Burns involving respiratory tract.
   8. Unconsciousness
   9. Severe medical problems (ex: heat stroke, poisoning)

II. Second Priority
   1. Severe burns
   2. Cervical spine injury
   3. Moderate bleeding
   4. Conscious patient with head injury
   5. Multiple fractures

III. Lowest
   1. Minor bleeding
   2. Minor fracture and soft tissue injury
   3. Obvious mortal wounds where survival not expected

BLOCKED AIRWAY

The complete block of an upper airway is the most sudden and dangerous kind of respiratory problem which can occur.

A foreign body often causes such a block.

A large piece of food may stick in a person's throat while he is eating. children may put marbles, coins or other small round objects into their mouths and choke. Infants sometimes choke on peanuts or pea-sized pieces of food. A complete airway block can kill a person in only five or six minutes.

Swollen tissues, severe burns, neck injuries and even the tongue of an unconscious person can block an airway. Some infections of throat can also block the airway.

Always make sure a person is breathing before taking any medical history or performing any physical examination.

Clinical Picture

a. Presenting complaint

A person who is choking on a foreign body in his throat will be gagging and fighting for breath or he will already be unconscious. Swollen tissues rarely block a person's airway completely. The person, usually a child, will have trouble breathing. His effort to breathe may cause anxiety and pain. A person with severe burns on his face will have great trouble breathing. he may be unconscious. He may not be breathing at all.

A person with a neck injury may be gagging because of swollen tissues, blood, or mucus blocking his throat. A severe neck injury may also collapse the trachea and block the airway.

An unconscious person may be gasping as he tries to draw air into his lungs. The block usually is his tongue which falls back against his throat and blocks his airway.

b. <u>Medical History</u>

A person with a blocked airway may have a history of a foreign body in his throat, a throat infection such as diphtheria or croup, severe burn and inhalation of hot gas or smoke; strangulation, trauma to the neck or unconsciousness.

<u>Patient Care</u>

First, clear the person's airway. Use back blows, manual thrusts or fingers to remove a foreign body that is blocking a person's airway. Back blows and manual thrusts increase pressure on the chest. The sudden force helps dislodge the foreign body. Start the person's breathing again.

Begin treating any infection that blocks or threatens to block a patient's airway.

a. Strike the patient vigorously on his back to help remove a foreign object from his upper airway. If the patient is a child hold him with his head down and then strike him on the back.

b. If back blows do not relieve the obstruction, use manual thrusts.

c. If manual thrusts also fail to relieve the obstruction open the patient's mouth with the fingers of one hand. Reach into the back of his throat with you other hand. Attempt to feel any foreign body and pull it out of his throat.

d. If these procedures fail to relieve the patient, begin mouth-to-mouth resuscitation. Watch the patient's chest as you blow to determine if air enters his lungs. If air is not entering his lungs, repeat the manual thrusts. Then resume mouth-to-mouth resuscitation.

e. If swollen tissue from an infection is blocking the patient's airway, transfer him to a hospital as quickly as possible.

Acute respiratory failure occurs when something interferes with a person's normal process of breathing. The person's body tissues do not get the oxygen they need and the tissues begin to die. Brain tissues die first because they are the most sensitive. Severe brain damage will affect the normal function of the lungs and the person will stop breathing.

Acute respiratory failure occurs without any airway block. The most common causes of acute respiratory failure are:

- Drowning
- Poisoning
- Electric shock
- Trauma to the head
- Lack of oxygen
- Carbon monoxide poisoning

Clinical Picture

a. **Presenting complaint**

A person with acute respiratory failure will not be breathing. he will be unconscious.

b. **Medical History**

Do not delay treatment of acute respiratory failure to determine its cause. After you have started the patient's breathing, ask about the condition in which he was found. Was he water? Was an empty bottle of medicine found by his s[illegible]. Ask whether the patient had any accident or any injury to his head. Ask whether he was found in a closed room with a burning fire.

c. **Physical Examination**

The patient suffering acute respiratory failure will be unconscious. you will not see any movement of his abdomen or chest. you will not hear any movement of the air through his mouth or nose. His pulse may be weak and rapid, slow and irregular, or absent. his blood pressure may be low. His skin will be cool. check for cyanosis. Also check his pupils. His pupils may be dilated and react slowly to light. H[illegible]ll have no reactio[illegible]in. Look for signs of injury to the patient's head a[illegible]k. Look for signs of shock,

bleeding, or dehydration. Look for burns on the hands, a sign of an electric shock. The patient's lips and nail beds will be pink or red he suffered carbon monoxide poisoning.

Patient Care

First open the airway of a person suffering acute respiratory failure. Then start mouth-to-mouth respiration. Check the patient's carotid pulse by placing your fingers on his neck beside the trachea.

Use your fist to give the patient a firm thump on the lower third of his strbum if you do not feel any pulse. Sudden pressure on the chest may start the heart breathing properly. Continue mouth-to-mouth respiration for at least fifteen minutes. Check the patient every few minutes to see whether he has begun to breathe on his own. Look at the patient's chest and abdomen for movement. Listen carefully for his breath while you try to feel it on your cheek.

If the patient has no carotid pulse or other sign of heart-beat and is not breathing on his own after fifteen minutes, stop your efforts to revive him.

OPEN AIRWAY * BREATHING

STEPS:

1. Check consciousness - can he talk?

2. Tilt head.

3. Clear airway (finger sweep)

4. Check pulse for 30 second - IF NO PULSE, STOP!

5. LOOK, LISTEN and FEEL for breathing for 30 seconds.

6. if PULSE PRESENT and NO BREATHING:

   a) Pinch nose - give 4 quick breaths

   b) LOOK, LISTEN and FEEL for breaths

c) If chest DOES rise (airway is NOT blocked) go to step # 8.

d) If chest doesn't rise (airway is blocked):

- Turn on side - 4 back blows
- Turn on back - 4 abdominal thrusts
- Tilt head - clear airway (finger sweep)
- Pinch nose - give 4 quick breaths
- LOOK, LISTEN and FEEL

7. If chest DOES NOT rise, repeat <u>step 6</u>. (Repeat 2 more times if necessary).

a) If chest doesn't rise after 3 times - STOP!

b) If chest DOES rise (airway no longer blocked), go on to <u>step 8</u>

8. ARTIFICIAL RESPIRATION

a) Tilt head - pinch nose

b) Give one breath every five seconds

c) After 3 breaths, check pulse and respiration

9. When to stop artificial respiration:

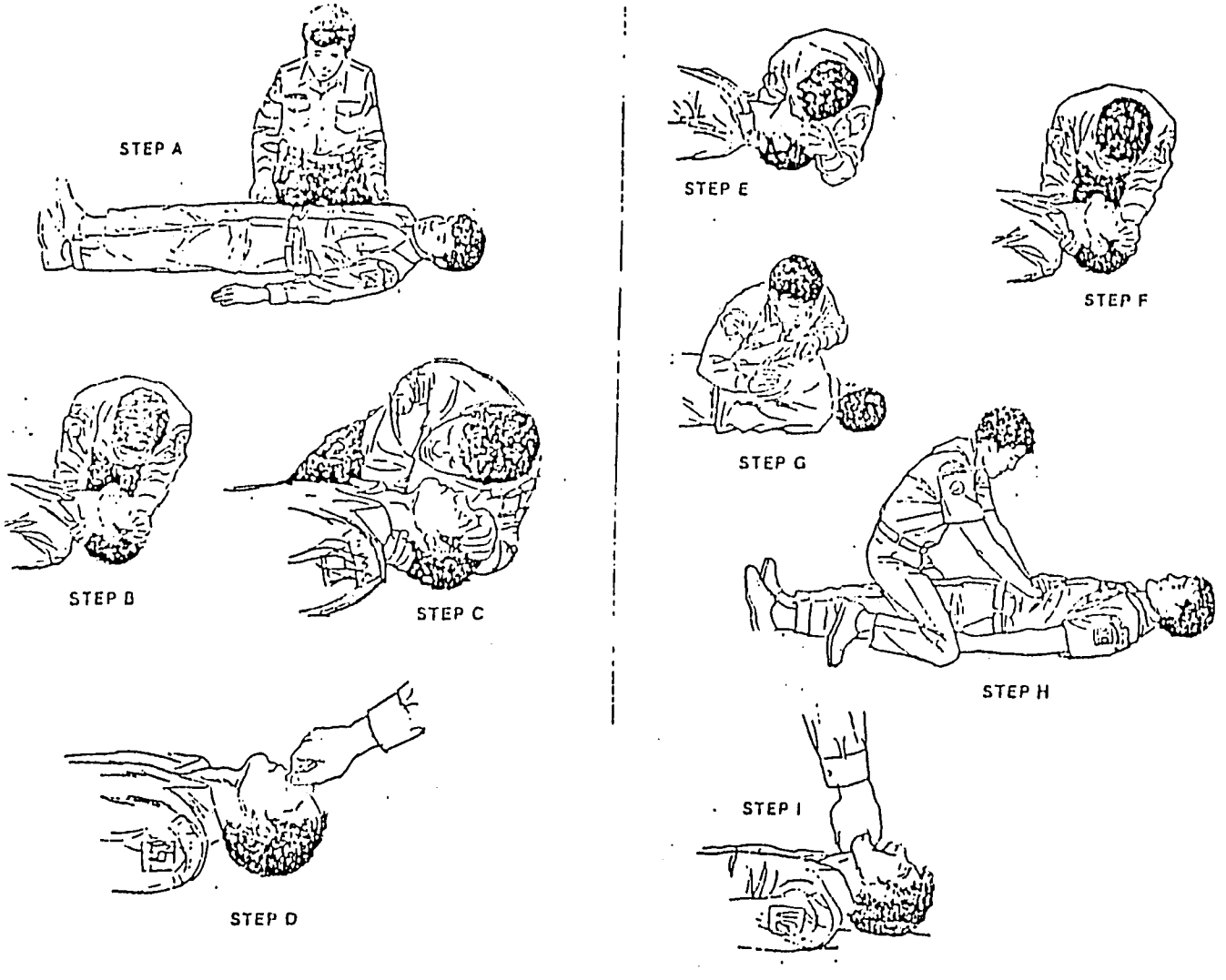
a) Victim starts breathing (chest rises and falls on its own).

b) Pulse stops.

c) If after 15 minutes, the victim is still not breathing by himself.

<u>NOTE</u>: If the victim has a <u>neck injury</u>, do NOT tilt the head - use the "jaw thrust" method for opening the airway, and do not turn vadium to give back blows.

POSITIONING FOR OPEN AIRWAY - BREATHING

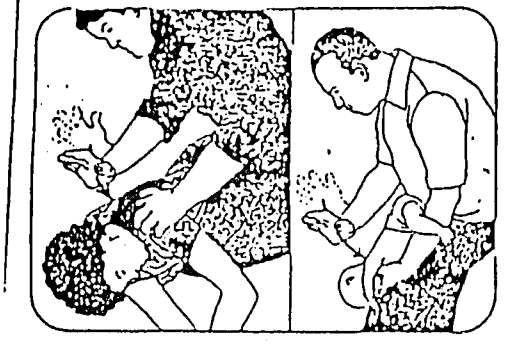


BEST AVAILABLE DOCUMENT

OPEN AIRWAY - BREATHING FOR CHILDREN

BACK BLOWS

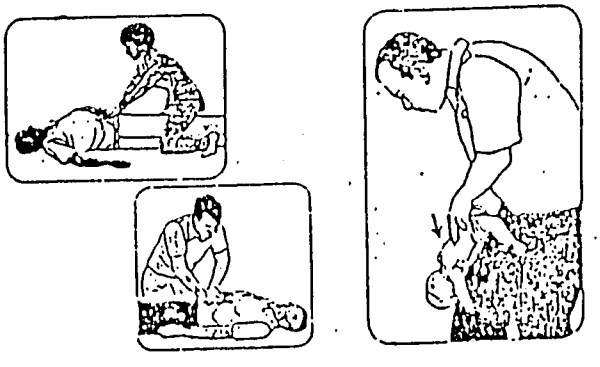
BACK BLOWS



An infant or a small child may be turned head down over one arm and given four sharp blows between the shoulder blades

ABDOMINAL THRUSTS

ABDOMINAL THRUSTS

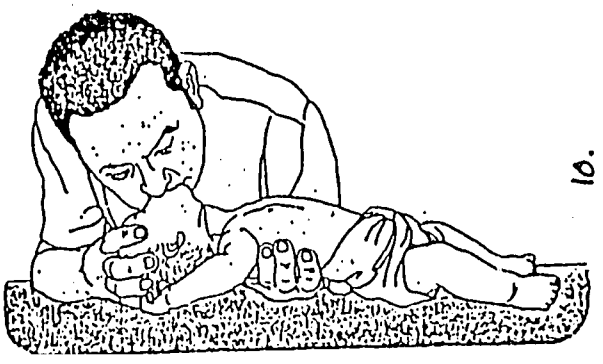


For infants and small children , place the victim face up on your forearm, with his head down, this maneuver may be performed more easily by resting your forearm on your slightly elevated thigh. Place two or three finger tips on the middle of the victim's abdomen, slightly above the navel and below the rib cage, and press into the victim's abdomen with four quick upward thrusts.

BEST AVAILABLE DOCUMENT

ARTIFICIAL RESPIRATIO

ARTIFICIAL RESPIRATION



10.

NOTE. Small children and infants are administered mouth-to-mouth and nose resuscitation as described above, except that the backward head tilt should not be as extensive as that for adults - big children.

Both mouth and nose of the infant or small child should be sealed off by your mouth . Blow into the child's mouth and nose every 3 seconds (about 20 breaths per minute) with less pressure and volume than used for an adult, the amount determined by the size of the child. Small puffs of air will suffice for infants.

CARE OF THE UNCONSCIOUS PATIENT

Definition: ss of consciousness or unconsciousness is a dition in which a person is unaware of event around him and cannot be awakened. he does not wake up when he is called by name or when he is shaken or when he feels light or strong pain.

Causes of unconsciousness:

1. Lack of oxygen to the body (asphyxia)
2. Head injuries
3. Bleeding into the brain
4. Electric shock
5. Convulsions
6. Shock
7. Poison and drugs or alcohol

BEST AVAILABLE DOCUMENT

8. Diabetes - Insulin shock - malaria
9. Fainting

Signs of unconsciousness:

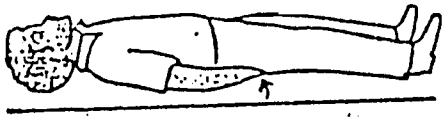
1. Patient will not resound when called or touched
2. Signs vary according to the cause of the unconsciousness.
   a) Shock weak rapid pulse low blood pressure cold clammy pale skin blue lips and nailbeds, dehydration.
   b) Head trauma - signs of injury, unequal pupils

Care of the unconscious patient

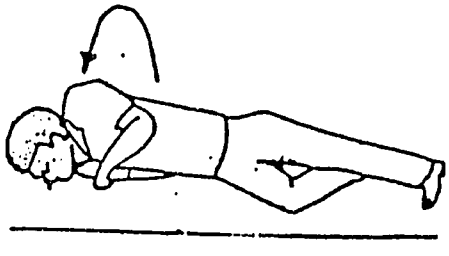
1. ABC's make sure the airway is clear first:
   a) The muscles of an unconscious person are completely relaxed. If he is lying on his back the tongue will fall back and block the throat so air cannot get through.

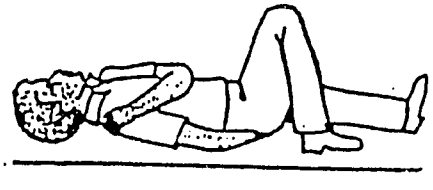
2. If the victim is breathing place him in the recovery or safety position.

   a) Kneel down on the side to which you will turn the victim. Stretch his nearest arm along his body and place that hand under his buttock.



   b) Bend his nearest leg at the hip and knee. Place his other arm across his chest with his other hand on his shoulder.

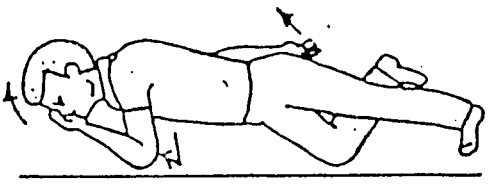




BEST AVAILABLE DOCUMENT

c) Place one of your hands on his shoulder and the other on his hip then pull him onto his side. Move your hand from his shoulder and support his head during the rest of the turn.

d) Pull the victim's lower arm away from his back. Move his head back to ensure a clear air passage. Put the hand of the other arm under his cheek. Correct the position of his legs.



2. An unconscious victim MUST be turned to the recovery position. if he vomits the fluid will then drain out of his mouth and will not get into his air passage and cause choking.

4. Transport an unconscious person in the recovery position if possible. This will ensure that he does not inhale his vomit and choke, or that his tongue will not fall to the back of his throat and block the air passage.

5. Assess the patient carefully for possible causes of his unconsciousness and treat accordingly.

BEST AVAILABLE DOCUMENT

CONTROL OF SEVERE BLEEDING

Severe Bleeding

1. A life-threatening emergency - a sudden loss of blood or slow continuous bleeding can lead to shock, loss of consciousness and death.

2. There are 5-6 liters of blood in the body. Even losing one liter of blood can cause death. If you cut a large blood vessel, you can bleed to death in one minute.

3. Bleeding can be internal or external.

4. Signs and Symptoms - low blood pressure; rapid weak pulse; confused; may be unconscious.

First Aid for Severe Bleeding

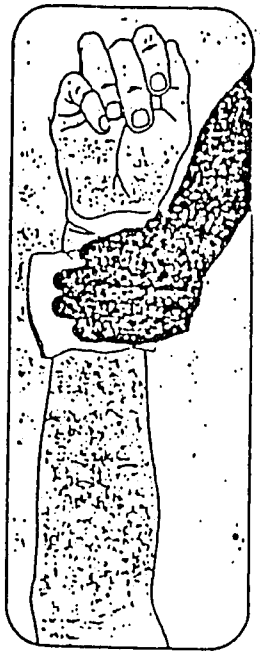
A. Direct Pressure
B. Elevation
C. Pressure Point
D. Tourniquet

A. **Direct Pressure**

1. Applying pressure by hand directly over wound is preferred way to control severe bleeding because it does not interfere with normal circulation. In most cases this will stop the bleeding.
2. Place a dressing on wound and apply pressure with palm of your hand. (in emergency, with no dressings available, bare hand may be used.)
   a. Dressing helps control bleeding by absorbing blood and allowing it to clot.

3. DO NOT remove dressing - if blood soaks through, put another dressing over first one, and continue direct pressure.

2.



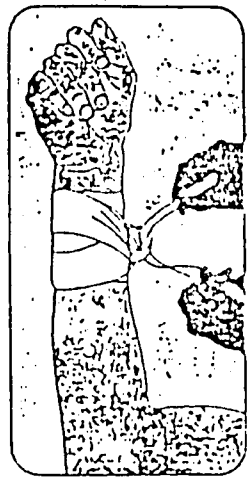
3.

4. Apply pressure dressing.
   a. Place center of bandage or cloth over dressing
   b. Pull ends tight and wrap around body part
   c. Tie square knot directly over dressing
   d. Continue direct pressure with hand.

(4-a)

(4-b)

(4-c)



BEST AVAILABLE DOCUMENT

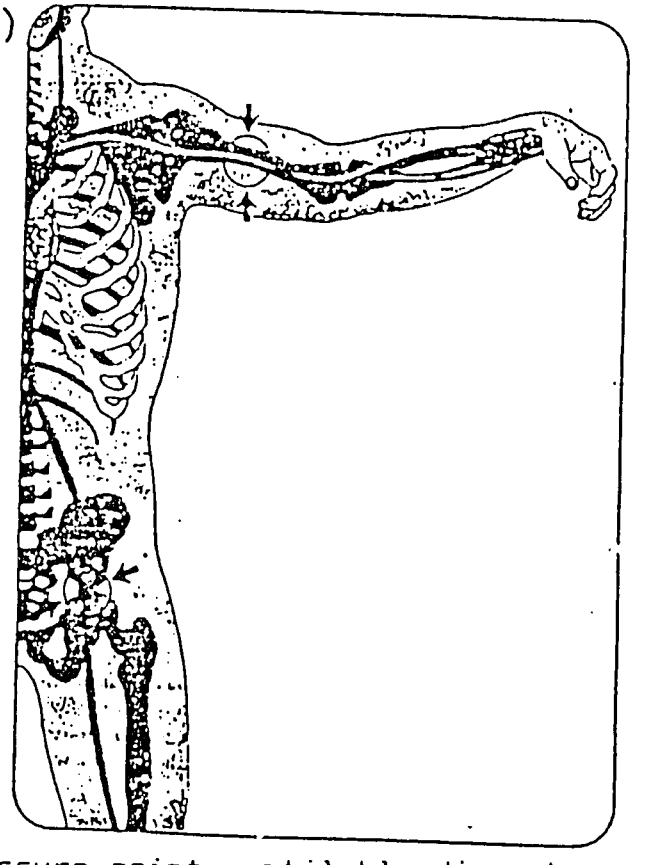
B. <u>Elevation</u>

1. Unless there is a fracture, a severely bleeding wound of <u>hand, arm, neck, or leg</u> should be elevated.
2. Raise injured part above the level of the heart.
3. Elevation uses force of gravity to help reduce blood pressure in injured part and helps slow down loss of blood.
4. Continue direct pressure.

C. <u>Pressure point</u>

1. If bleeding does not stop with direct pressure and elevation, press hard on the main artery supplying blood to the wound area. Press against the bone underneath.

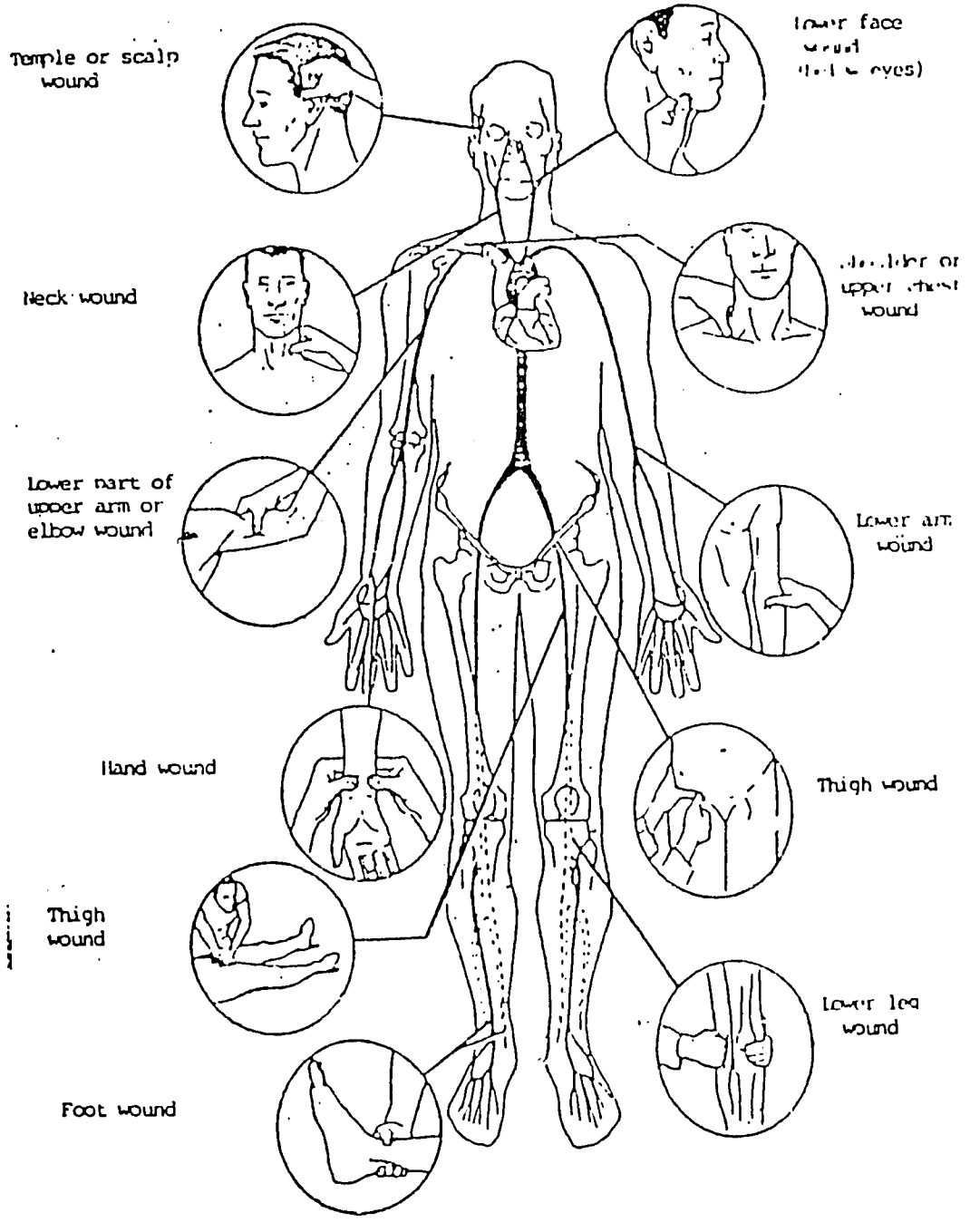
(1.)



2. Only use pressure point until bleeding has stopped, because it stops circulation to entire limb (arm or leg). NOT just the wound.

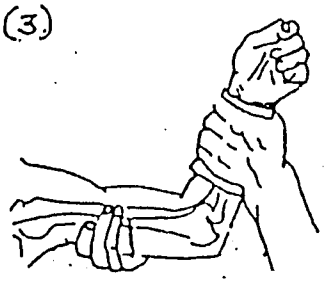
BEST AVAILABLE DOCUMENT

Pressure Points for Temporary Control of Arterial Bleeding



BEST AVAILABLE DOCUMENT

3. For open ARM wound, use <u>upper arm pressure point</u>
   a. Press <u>fingers</u> against the <u>middle inside</u> part of upper. arm, against the arm bone.



4. For open LEG wound, <u>use groin pressure point</u>.
   a. Place heel of your hand directly over pressure point in groin.
   b. With arm straight, lean forward and apply only enough pressure to stop bleeding.

D. <u>Tourniquet</u>

1. A tourniquet is VERY DANGEROUS - use only in life threatening hemorrhage when bleeding cannot be controlled by direct pressure, elevation, pressure point.
   a. Example: an arm or leg cut off or artery is cut.
   b. tourniquet can cause shock, loss of the limb (kills tissue beyond the wound) or death if not used properly.
   c. You will risk losing the arm or leg in order to save the victim's life.

   Applying Tourniquet
   a. place tourniquet just above wound (5 cm).
      1. If wound in a joint area or just below joint, place immediately above joint.
      2. tourniquet cloth must be at least 5 cm wide.
   b. Wrap tourniquet cloth tightly around limb <u>twice</u> and tie a half knot.
   c. Place a short strong stick or other object on the knot and tie a square knot on top of stick.
   d. Twist the stick <u>only</u> until bleeding stops.

BEST AVAILABLE DOCUMENT

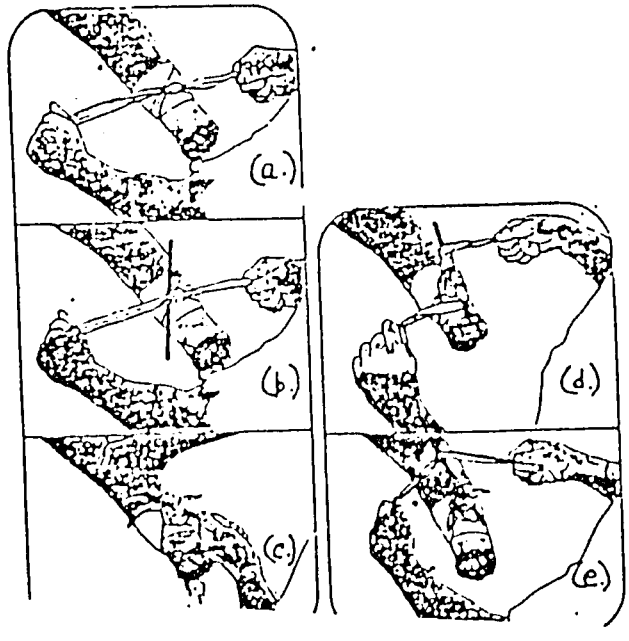
e. Tie the stick in place with the ends of the tourniquet or another piece of cloth.

f. Do NOT loosen the tourniquet.

g. Mark a "T" on the victim's forehead so others will know a tourniquet is being used. Also write the time applied.

h. Do NOT cover a tourniquet.

i. Treat victim for shock.



SHOCK

Definition: In general, it is a condition in which an inadequate amount of blood reaches the vital organs (brain, heart, Kidney and liver).

Causes of Shock:

A. Severe injuries of all types:
   1. Severe hemorrhage
   2. Loss of other body fluids (from diarrhea, severe vomiting or burns)
   3. Extensive tissue trauma from injury
   4. Infection (septic shock)
   5. Poisoning (by chemicals, gases, drugs)
   6. Lack of oxygen (obstructed airway, respiratory tract trauma)

BEST AVAILABLE DOCUMENT

7. Heat exhaustion (severe loss of body fluid by sweating)
8. Anaphylactic shock (drug allergy, bee stings)

B. Degree of shock is increased by:
   1. Abnormal changes in body temperature
   2. Poor resistance to stress by.

C. Shock is aggravated by:
   1. Pain
   2. Rough handing
   3. Delay in treatment

Signs and Symptoms:

1. Skin - pale or blue color
   - cold to touch
   - moist or clammy (if perspiring)
2. Weakness
3. Pulse - faine and rapid (over 100 beats/minute)
4. Breathing - increased, rapid
   - usually shallow, sometimes deep
   - irregular
5. Blood pressure - decreased
6. Restless and anxious (due to lack of oxygen)
7. Severe thirst
8. Nausea/vomiting
9. Later stages of shock:
   a. Lethargic or unresponsive
   b. Eyes - sunken
      - vacant expression
      - pupils widely dilated
   c. Skin mottled (purple patches)
   d. Loss of consciousness
   e. body temperature decreases
   f. Death

Treatment

Immediately eliminate the CAUSE of shock

1. Keep him lying down
2. ABC's
3. Control bleeding
4. Body position (depends on injury)
   a. Raise feet 10-12 inches higher than rest of body (if this causes increased pain or difficulty breathing, lower feet).
   b. Prevent movement of large bone fracture.
   c. For head injury, raise head and shoulders slightly higher than rest of body.
   d. For severe wounds of lower face, place on side to allow drainage of fluids and avoid blocked airway from blood or vomit.
5. Control body temperature
   a. If cold, cover with blanket (only enough to prevent loss of body heat).
   b. Cool victim if hot (from heat exhaustion. infection).
6. Administer fluids
   a. Do NOT give fluids by mouth if victim is:
      - unconscious
      - vomiting
      - has convulsions
      - is likely to have surgery
      - brain or abdominal injury
   b. for shock due to severe bleeding or fluid loss:
      - Start intravenous infusion of normal saline.
7. Take vital signs every 10 minutes
8. Relieve pain and anxiety (stress)
9. adrenalin For Anophylactic shock

BANDAGING

DRESSING- compress or gauze applied directly over wound

1. Assist in control of bleeding

2. Absorb blood and wound secretions

3. Prevent additional contamination

4. Eases pain

<u>BANDAGE</u>- strip of material that holds a dressing or splint in place

1. it helps immobilize, support and protect an injured body part.

<u>Application of bandages</u>:

1. it should be snug but not too tight to interfere with circulation.

2. Leave fingertips or toes exposed when applying bandages or splints to arm, hands, feet or legs.

3. to check for good circulation after bandage or splint applied:

   a. watch for swelling
   b. change of color
   c. coldness of fingertips or toes
   d. press nails (for capillary refill)
   e. ask about numbness or tingling of hand or foot

4. Loosen and redo bandage if circulation not good

5. Never apply tight circular bandage around the neck

6. Elastic or crepe bandages: do NOT stretch too tightly

7. Choose appropriate type of bandaging for the body part:

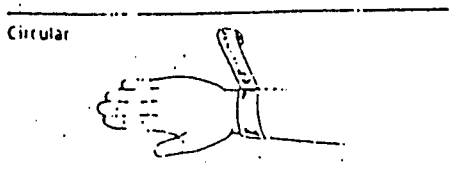
   a. <u>Circular</u> - anchors any bandage: also for fingers and toes

   b. <u>Spiral</u> - for parts like wrist and upper arm
   c. <u>Spiral reverse</u> - for forearm, thigh, calf
   d. <u>Figure eight</u> - for joints

e. <u>recurrent</u> - uneven body parts like head or amputated limb

Circular

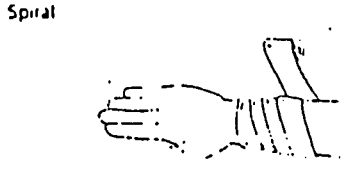
Description:
Bandage turn overlapping previous turn completely.



Purpose or use:
Anchors a bandage at the first and final turn covers a small part (e.g. finger or toe)

Spiral

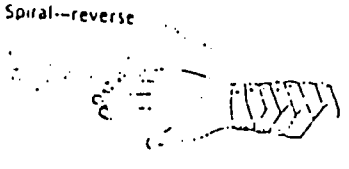
Description:
Bandage ascending body part with each turn overlapping previous one by one ball or two third width of bandage



Purpose or use:
Covers cylindrical body parts such as wrist or upper arm

Spiral-reverse

Description:
Turn requires a twist traversal of bandage half way through each turn



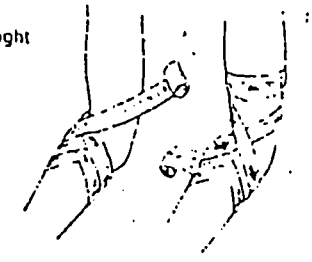
Purpose or use:
Covers cone shaped body parts such as the forearm, thigh or calf useful with non stretching bandages such as gauze or flannel

 BEST AVAILABLE DOCUMENT

Fig·ıre eight

Description:
Oblique overlapping turns alternately ascending and descending over bandaged part each turn crossing previous one to form a figure eight.

Figure-eight

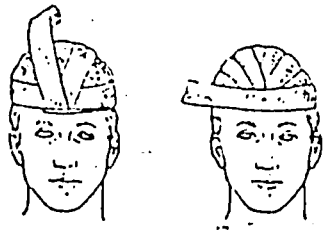


Purpose or use:
Covers parts snug it provides relent mobilization

Recurrent

Description:
Bandage first secured with two circular turns around proximal end of body part half turn made perpendicular up from bandage edge body of bandage brought over distal end of body part to be covered with each turn folded back over on itself.

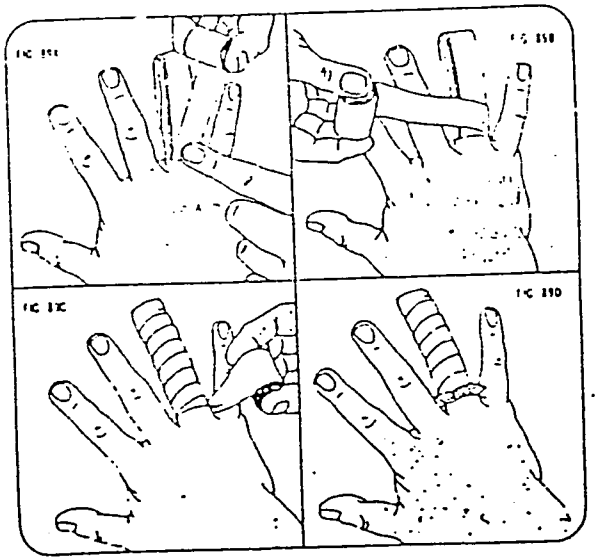
Recurrent



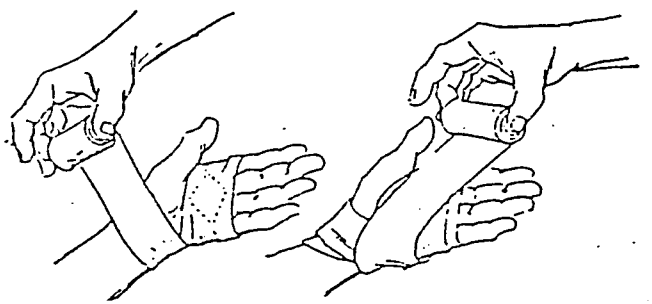
Purpose or use:
Covers uneven body parts such as head of amparted limb

BEST AVAILABLE DOCUMENT

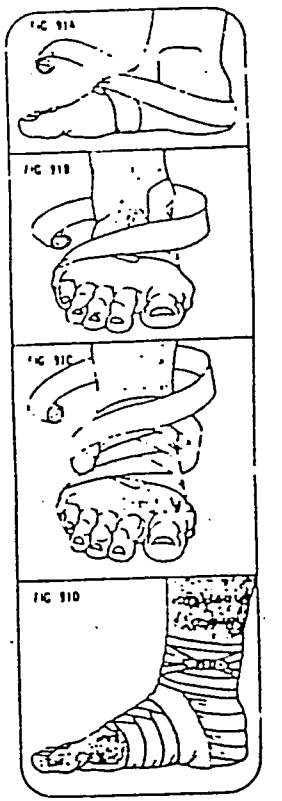
Finger:



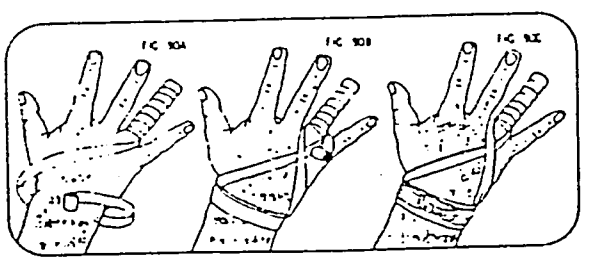
HAND



Foot - Ankle:



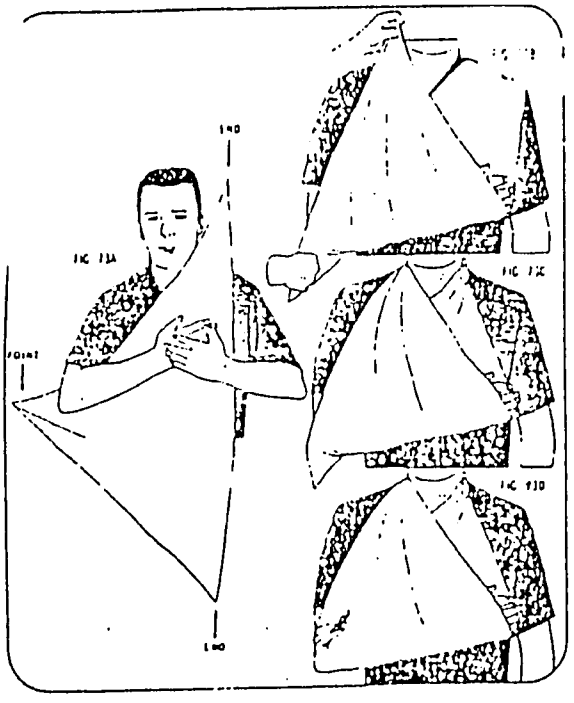
Finger:



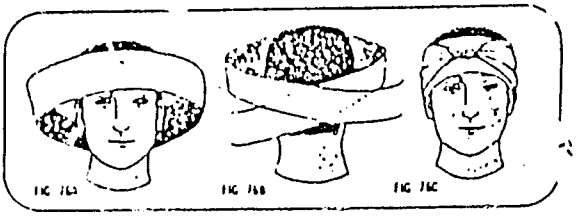
(912)

BEST AVAILABLE DOCUMENT

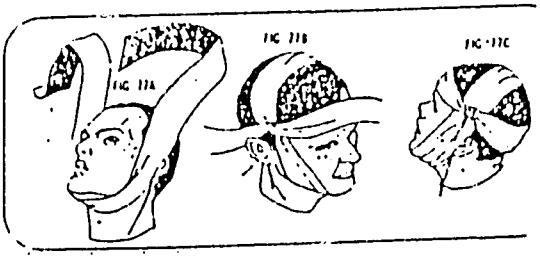
Sling:



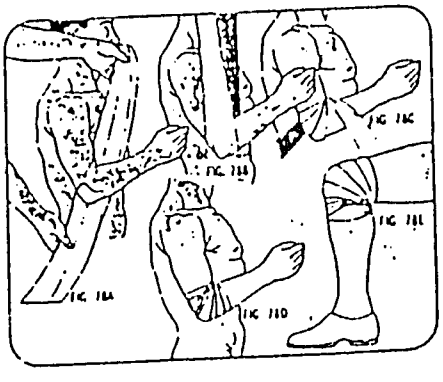
Forehead - Ear - Eyes:



Cheek - Ear



Elbow - Knee:

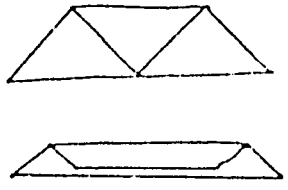


BEST AVAILABLE DOCUMENT

TRIANGLE BANDAGES

This kind of bandage can be used for many purpose, and can be prepared from any kind of cloth.

The base of the bandage should be at least 3 feet (nearly one meter), and the height should be 60 centimeters.



It can be used both open or folded to cover injures.

practice for triangle bandages:

head	knee	arm
foot	hand	chest

HEAD:

1. Injury should be covered with dressing or perfectly clean cloth.

2. Place triangle bandage so that point is facing towards injury (face or neck).

3. Pull the ends of the bandage around the head (not the lower head) and tie a knot.

4. Insert the ends under the bandage.

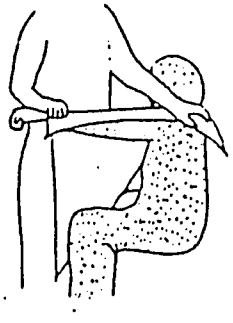
BEST AVAILABLE DOCUMENT

ARM:

1. Cover injury with dressing or clean cloth.

2. Place bandage parallel on the arm, so that the point is located on the arm the one of the ends is on the shoulder.

3. Wrap triangle bandage up the arm and tie the two ends with a knot at the shoulder.



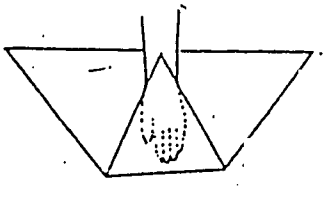
HAND:

1. Put the hand/wrist on the triangle bandage so that the injury will be covered, with the point of the bandage towards the fingers.

2. Cover the injury with a dressing or clean cloth.

3. Bring the point of the bandage up to the wrist.

4. Cross the two ends of the triangle bandage over the top and then tie around the wrist, using only one knot.



BEST AVAILABLE DOCUMENT

KNEE:

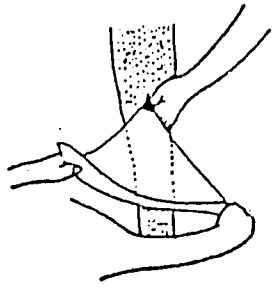
1. Bend the knee a little.

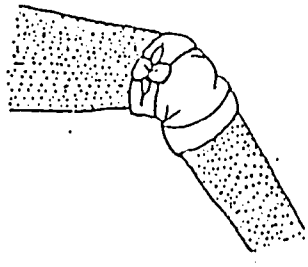
2. Cover the knee injury with a dressing or clean piece of cloth.

3. Put the triangle bandage on the knee with the point towards the body.

4. Wrap the other two ends around the knee and tie in the back.

5. Then put the ends around till they reach the top of the knee and tie a knot.



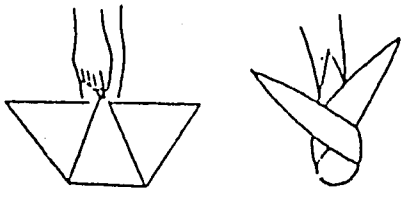


FOOT:

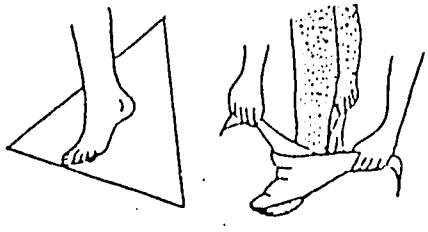
1. Put the foot on the bandage with the point towards the toes if the injury is on the surface of the foot; and if the injury is at the back of the foot, place the bandage so that the point is towards the heel.

2. Cover the injury with a dressing or a clean piece of cloth.

3. Pull the point of the bandage upwards. Wrap the ends around the surface (or heel) and pull towards the ankle. Tie with one knot.



For surface of foot



For heel

BEST AVAILABLE DOCUMENT

CHEST:

1. Place the point of the bandage on the shoulder.

2. Wrap the ends around the chest, and tie a knot in the back, leaving one of the ends very long.

3. Tie the long end to the point at the shoulder.

4. Note: The same principle and technique is used to bandage a back injury.

PRACTICE FOR PREPARING A FOLDED TRIANGLE BANDAGE

1. The folded bandage should be 3-4 inches (8-10 cms) wide.

2. Folded bandages are used for:
   - Stabilizing splints
   - tourniquet
   - bandage for pressure
   - combined covering, or bolded bandage.

COMBINED BANDAGE (FOLDED):

Used to cover wounds of : Shoulder Buttocks, Thing

Shoulder:

1. Cover the injured part with a dressing or clean piece of cloth.

2. Put the triangle bandage on the shoulder so that the point reaches the neck.

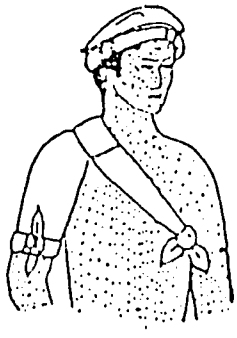
BEST AVAILABLE DOCUMENT

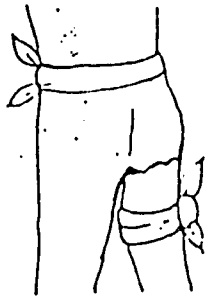
3. Fold the bottom edge of the bandage into a cuff and wrap the ends around the arm and make a knot.

4. Place the point of the first bandage into a second <u>folded</u> triangle bandage and fold down together, tightly, till it reaches the base of the neck.

5. Wrap the ends of the folded bandage around the chest and make a knot.

6. Note: This same bandage could be applied to the buttock and thigh.





7. Note: another way to make a prepared combined bandage:

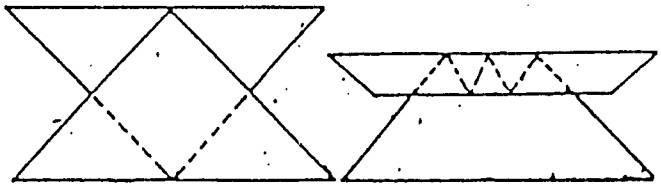
a) Lay one triangle bandage on the floor, and place the second bandage with its point touching the middle of the bottom of the first bandage.

b) Fold the bottom edge of the first bandage together with the point of the second bandage, making 4-5 folds.

c) Place this combined bandage on the shoulder, over the dressing, with the folded section at the neck, and tie this around the chest.

BEST AVAILABLE DOCUMENT

d) Pull the remaining bandage snugly over the injury/dressing; make a cuff with the bottom edge of the bandage on the arm and wrap ends around the arm and tie a knot.



NOTE:

1. When using triangle bandages, ALWAYS tie a SQUARE KNOT, so the bandage will not loosen.
2. Tuck in the loose ends of the bandage, and place padding under the knots, to prevent pressure injury to the victim

BONE AND JOINT INJURIES

Definitions:

Fractures - break or crack in bone
Dislocations - bone is displaced from join socket
Sprains - injury to tissue, ligament or tendon when joint is twisted beyond its normal range of movement
Strains - tearing injury to a muscle from overstretching

BEST AVAILABLE DOCUMENT

FRACTURES

A. **Definition** - break or crack in bone

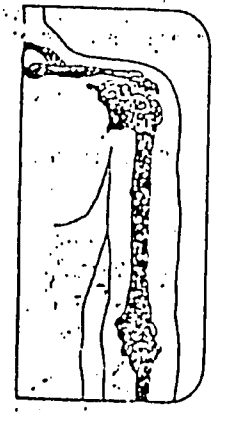
1. Closed (simple) fracture - bone has not cut through the skin
2. Open (compound) fracture - has open wound with bone exposed through skin

Open Fracture

Open Fracture

Closed Fracture

Closed Fracture



B. **Signs and symptoms of fractures:**

1. Pain or tenderness
2. Obvious deformity
3. Difference in shape or length of same bones on two sides of body
4. Swelling
5. Discoloration
6. Inability to use the injured part (or victim resists using the part)
7. Crepitus (grating together of fractured bone ends)
8. Severe bleeding and shock caused by long bone fractures
9. Infection from open fractures

BEST AVAILABLE DOCUMENT

C. General First Aid treatment rules for all fractures:

1. Do NOT move patient until you have immobilized fracture by splinting, (unless there is danger of further injury).
2. ABC's - control bleeding - treat for shock.
3. Prevent motion of injured part and adjacent joints.
4. Do not try to reduce (put in normal position) a fracture or put a protruding bone back in.
5. For an open fracture:
   a) Remove or cut away victim's clothing
   b) Control bleeding by direct pressure over dressing on the wound - apply pressure dressing if needed, but remove in one hour
   c) Do not wash wound or put your fingers in it
   d) If bone is protruding, cover with sterile dressing
   e) Do NOT put bone fragments back into the wound
6. Apply splints to immobilize the fracture.
7. Check circulation beyond fracture after bandaging and splinting.
8. Slightly elevate injured extremity if possible without disturbing the fracture (to reduce bleeding and swelling).
9. Never test a fracture by having victim move the part of or try walking.
10. Note: Always remember to check the circulation BEFORE splinting to have a baseline of normalcy, or to make sure there is circulation present.

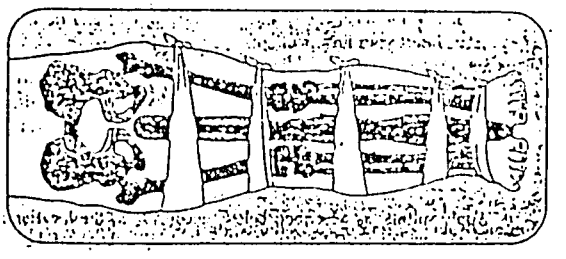
D. Splinting:

1. Splints immobilize (prevent movement) of injured part
   a. they decrease pain and chance of shock by preventing motion
   b. they protect against further injury during transport.
2. Splints can be made from cardboard boxes, sticks, blankets, newspaper, pillows, etc.
3. In an emergency, a simple splinting, technique is to tie the injured to the body:

a) place padding between the injured part and the body

b) tie one leg to the other leg

c) tie the arm to the chest if the elbow is bent, or to the side of the body if the elbow is straight.



4. Splints must extend beyond the joints on either side of the fracture.

5. Put a pad between the splint and skin, including on the end of the splint (unless it extends beyond the body).

6. Joints above and below the fracture should be immobilized.

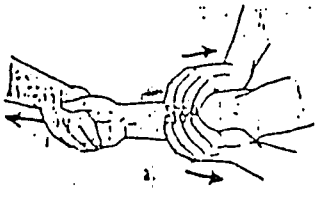
7. Check circulation beyond the fracture. If the following signs/symptoms appear, loosen and retie bandages to prevent nerve/tissue damage:

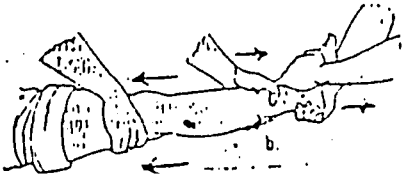
   - swelling
   - numbness
   - tingling
   - discoloration
   - inability to move finger or toes
   - faint or no pulse

8. if it is necessary to straighten a deformed limb before splinting:

   a) Place one hand above and one hand below the fracture for support

   b) Grasp end of limb and pull gently and steadily till splint is applied.



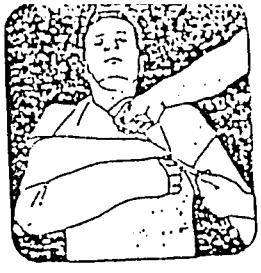


BEST AVAILABLE DOCUMENT

TREATMENT FOR SPECIFIC FRACTURES

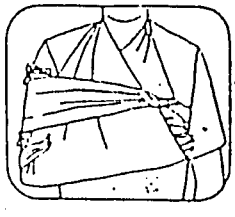
Shoulder/Clavicle Fracture

1. Apply sling; bandage arm to victim's chest.



Humerus Fracture

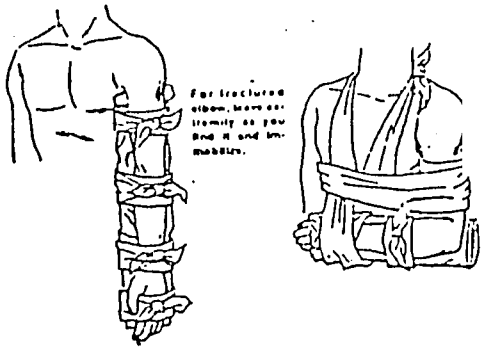
1. Place pad in victim's armpit and apply splint.
2. Tie above and below the fracture.
3. Apply sling.
4. Bandage arm to chest.



BEST AVAILABLE DOCUMENT

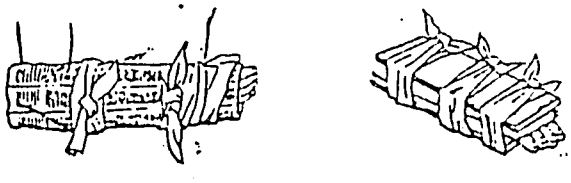
Elbow Fracture

1. may involve fracture of lower humerus or upper radius/ulna.
2. For fractured elbow, leave extremity in the position you find it.
3. If fracture occured with elbow straight, apply well-padded splint and tie along entire arm
4. If elbow bent, place arm in a sling and bandage to chest; apply forearm splint if necessary.



Forearm/Wrist Fracture

1. Immobilize broken bone ends, wrist and elbow by applying a well-padded splint on each side.
2. Bend elbow and apply sling with slight elevation, keeping thumb pointing up.

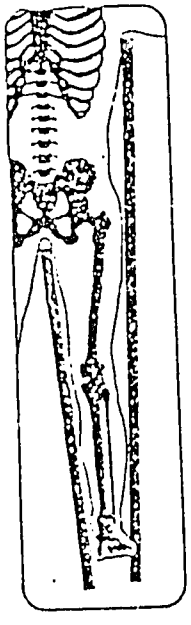


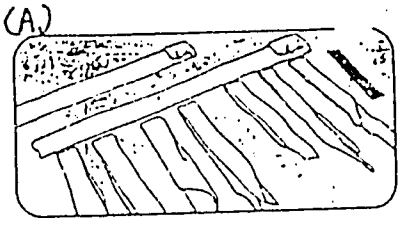
3. When splinting a wrist or forearm, place padding in the palm of the hand in a natural position if possible.

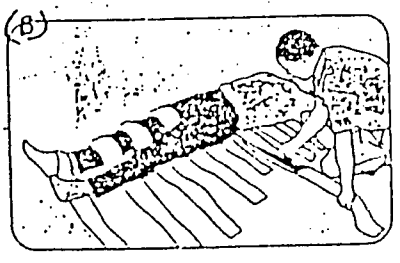
BEST AVAILABLE DOCUMENT

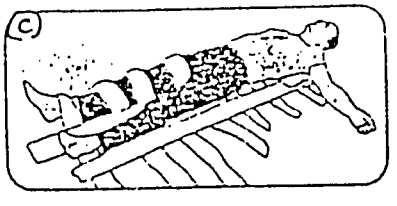
Femur Fracture

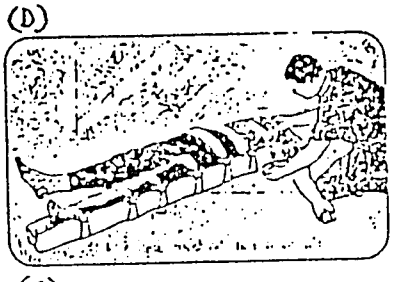
1. The foot usually turns outward and the leg is shorter (due to the bone ends overlapping and muscle spasm).
2. Pad the splint well.
3. Place outer splint from armpit to below heel.
4. Place inner splint from groin to below heel.
5. Place extra padding at ankle and knee.

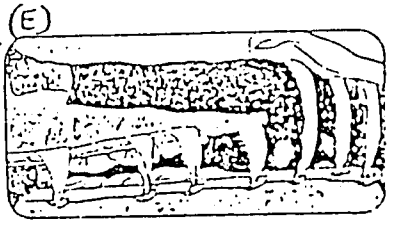








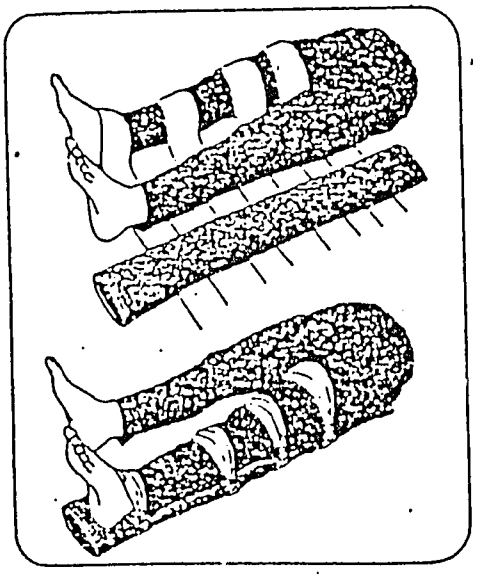




BEST AVAILABLE DOCUMENT

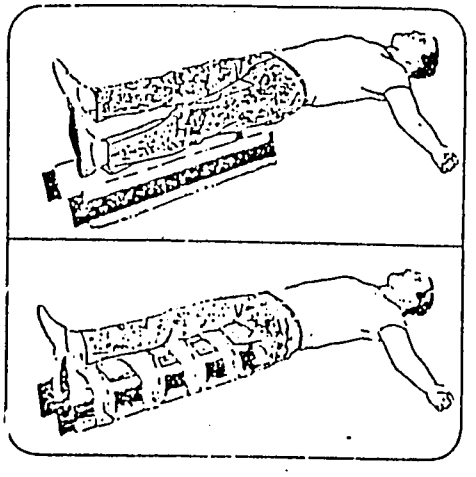
Kneecap Fracture

1. With leg straight, apply padded splint from below heel to the buttocks, along the back of the leg.
2. Another way - apply a pillow splint around the knee.



Lower Leg Fracture

1. Apply well padded splint on both sides of leg and foot.
2. Prevent movement of broken bone ends and knee and ankle.
3. Keep victim's foot pointing upwards.



BEST AVAILABLE DOCUMENT

Ankle and Foot Fracture

1. Loosen or remove shoe.
2. Splint firmly with pillow or blanket.
3. Lie down with leg elevated.
4. Note: for a fracture or sprain of an ankle or foot, if the person is wearing a boot, the boot can be left on, as this in itself can immobilize the foot.

   BUT, if a boot is left on a fractured ankle or foot, the toe should be cut out of the boot, to be able to monitor the circulation.

Spine Fractures

1. Fractures of back and neck are very dangerous - even slightest movement can cause further damage to spinal cord and result in paralysis.

2. Fractured neck:
   a) Do NOT allow head to be moved.
   b) Put small pad or towel under neck - do NOT use a pillow!
   c) Place rolled up blanket or clothing around head, sides of neck and shoulders, to prevent movement.
   d) Anchor blanket with stones or bricks if [illegible]
   e) Boots can also be used to immobilize the head in a neck injury.

BEST AVAILABLE DOCUMENT

3. Back Fracture:
   a) Handle victim as little as possible.
   b) Do not twist neck or back.
   c) Arrange rolled up blanket or clothing on both sides of trunk, head and neck for immobilization.
   d) If possible keep in position he was found in.
   e) If airway obstructed (example - face down in water), get help and turn entire body at one time.

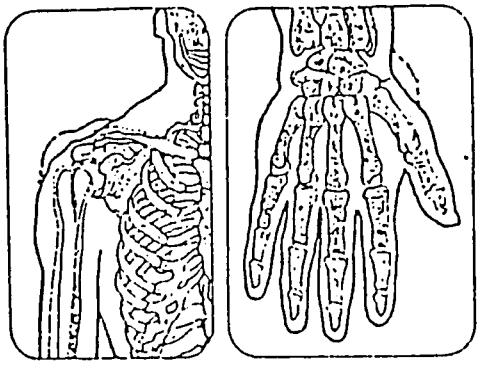
DISLOCATIONS

A. Definition - a bone is displaced from its joint socket.

1. Most often occurs with shoulder, elbow, finger or thumb.

B. Signs and symptoms of dislocation:

1. Swelling
2. Obvious deformity
3. Pain in joint on motion
4. Tender to touch
5. Discoloration
6. Inability to move joint normally.



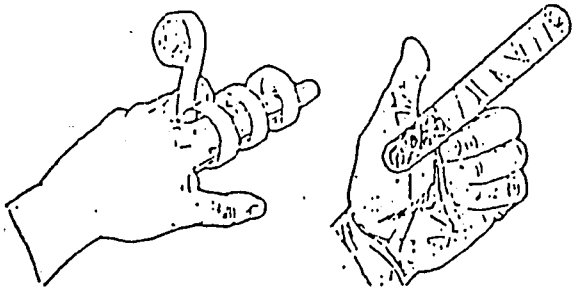
C. First Aid treatment:

1. Splint and immobilize joint in position it was found.
2. Apply a sling if appropriate.
3. Elevate the injured part if a limb is involved.
4. Do NOT attempt to reduce (put in normal position) a dislocation - you may further damage nerves, tissue or blood vessels.

BEST AVAILABLE DOCUMENT

5. Transport victim to OPD or hospital for reducing the dislocation.

Finger splint for dislocation or fracture:



SPRAINS

A. **Definition** - injury to soft tissues, ligaments or tendons around a joint when it is twisted more than its normal range of motion.

1. Most often occurs with ankles, wrists and knees.

B. **Signs and symptoms of sprains:**

1. Swelling
2. Tenderness
3. Sharp pain on motion
4. May be unable to move injured part
5. Discoloration (due to bleeding of tissues under skin
6. Joint may be red or warm

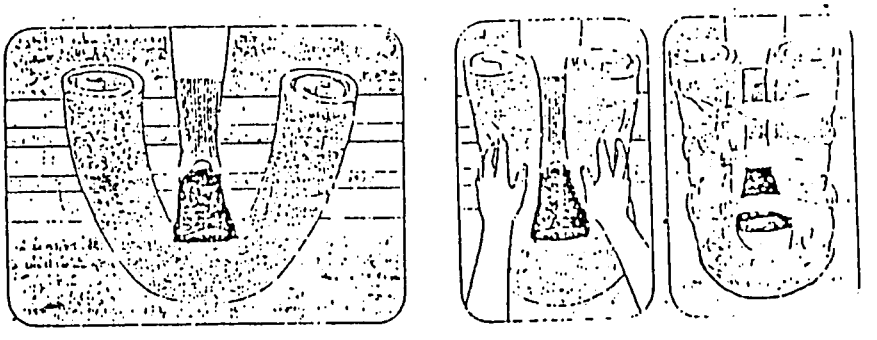
NOTE: a) It is usually impossible to tell a sprain from a fracture without an x-ray. if in doubt, TREAT AS A FRACTURE.

b) In children under 14 years, bones are weaker than tendons or ligaments, so they have more fractures than sprains. Treat all injuries in children that appear to be either a fracture or a sprain AS A FRACTURE.

 BEST AVAILABLE DOCUMENT

C. <u>First Aid For Sprains</u>:

1. Apply crepe or elastic bandage to immobilize the injured part.
2. Elevate the injured joint for 24 hours to decrease the swelling - (swelling can produce greater damage than the original injury).
3. Apply ice bags or cold compresses to joint for first 24 hours - (helps control swelling and relieves pain).
4. After 24-36 hours, apply warm compresses or soak in warm water - (give pain relief and aids heading by increasing blood supply).
5. For knee or ankle sprain, don't allow victim to walk.
6. For severe sprain of foot, apply a pillow or blanket splint:



7. For treatment of sprains, remember:
   R.I.C.E. - rest, ice, compression elevation.

STRAINS

A. <u>Definition</u> - tearing injury of muscle from overstretching

1. Most common is back strain from improper lifting.
   a) When lifting objects, the person should use his LEG muscles and NOT his BACK muscles.

B. <u>Signs and symptoms of strains</u>:

1. Acute onset of severe pain (for back, in lower part)
2. Sometimes spasms of the affected muscle.
3. Pain on motion

BEST AVAILABLE DOCUMENT

C. First Aid treatment:

1. Apply heat or warm wet compresses to the area.
2. Do not use affected muscle - let it rest to heal.
3. For back strain, bed rest on a hard surface.

DISLOCATION OF THE SHOULDER

An injury to the shoulder which results in inability to rotate the arm externally is more apt to be a dislocation than fracture. The patient may report falling backward on an outstretched arm the shoulder is more common than proximal humeral fracture in people under 50 years of age.

SYMPTOMS/SIGNS

- Extreme pain is present in the shoulder region.
- There is sagging of the shoulder with the patient often holding the forearm across the abdomen.
- the head of the humerus may be felt in an abnormal position.
- Rotating the arm outward will cause marked discomfort.

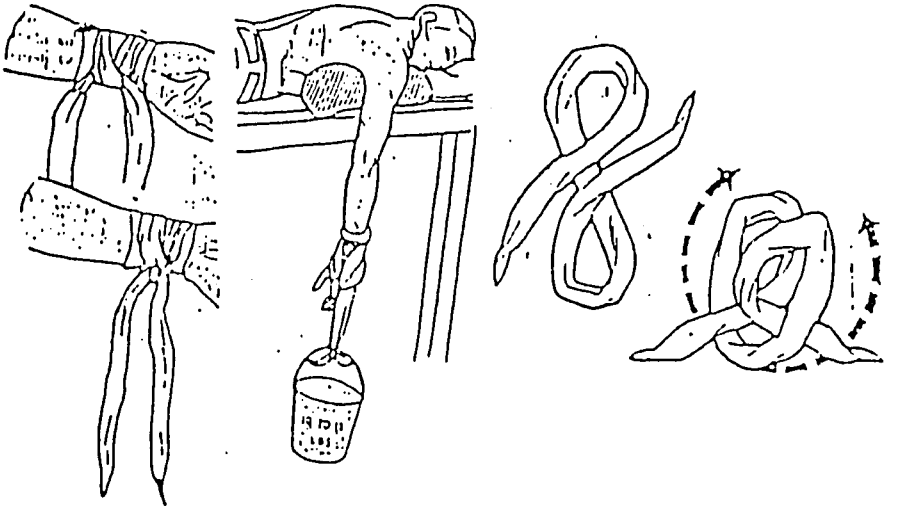
TREATMENT

The adult patient should be given Temgesic, one 0.3 mg (one ml) ampule IM and valium 10mg IM and allowed to rest quietly for 30 minutes before reduction is attempted. (Note: if the patient has had repeated shoulder dislocation, analgesics may not be necessary. In some cases the shoulder joint is loose and gentle traction may be sufficient for reduction).

Method 1:

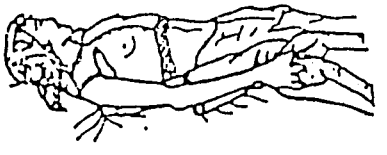
- A clove hitch bandage should be applied to the wrist on the side of the injury. Then the patient should be placed face down on a table down on the table with his shoulder and arm

hanging over the side. A bucket with 10 to 15 pounds of weight in it should be attached to the clove hitch. The weight of his arm and the bucket will gradually stretch the tight muscles about the dislocated joint and pull it back into position. Often the dislocation will reduce in 10 to 15 minutes but may require as long as 30 minutes to one hour.



IF THIS DOES NOT WORK, TRY METHOD 2:

The examiner should place the heel of his foot in the patient's armpit. (Remove shoes first). With constant, gradually increasing force, pull on the arm; you or the patient may feel the bone slip back into place.



FINGER DISLOCATIONS

A finger dislocation means a bone has slipped out of the finger joint. The fingers are injured easily and even a minor injury may cause a dislocation.

 BEST AVAILABLE DOCUMENT

SYMPTOMS/SIGNS

- This injury is recognized by the abnormal position of the two adjoining bones.
- There will be pain, swelling, and distortion of the finger.
- The patient maybe unable to bend the finger in the injured area.

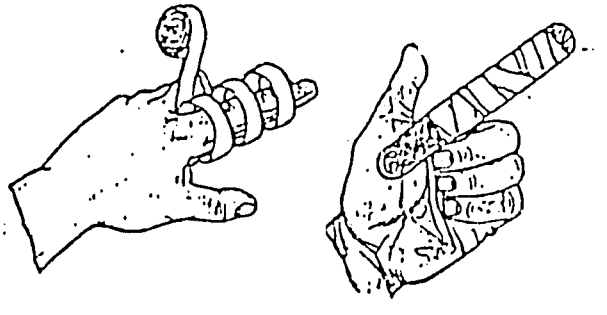
TREATMENT

Place the hand palm down and grasp the finger above and below the injured joint with a small dressing to prevent slipping. Strong, steady traction should be applied, pulling straight out from the hand. The bone usually will slip into position with ease.

Following reduction of the dislocation the injured finger should be immobilized with a splint for 3 weeks. A padded splint should be placed under the finger and secured in place with a roller gauze bandage.

Note: Some dislocations at the base of the finger do not reduce because a band of tissue has slipped into the joint space. In these cases, surgery is required. The finger should be splinted and the patient transferred for surgery.

The drawing shows how to splint a fractured or dislocated finger.



BEST AVAILABLE DOCUMENT

Trauma To The Head

Falls or blows to the head can cause severe trauma. The injuries may include scalp lacerations. Skull fracture, concussion, compression of the brain: face and jaw injuries; ear injuries and nose injuries.

Scalp Lacerations

1. Scalp wounds can bleed profusely due to the rich supply of blood to the scalp and because the skin covering the skull is tightly stretched. When damaged, the skin splits open leaving a gaping wound.
   A severe wound may be concealed by thick hair and therefore be overlooked - Deep scalp wounds may be complicated by fragments from skull fractures, or they may contain hair, glass, or other foreign matter.

Signs and Symptoms

a. Pain tenderness and bleeding of the scalp. Possible lifted flap of scalp.
b. Swelling around the wound.
c. The presence of unequal pupils is easy to observe and is a valuable finding.
d. Possible symptoms and signs of skull fracture.
e. Signs of brain damage may be evident.
f. Unconsciousness may develop.

First Aid Treatment

a. Do not attempt to clean deep scalp wounds of contaminants; to do so may cause serious bleeding and, if the skull is fractured, can lead to contamination of the brain.
b. Control bleeding by raising the victim's head had shoulders, if possible; but do not bend the neck, since a fracture may be present. Apply direct pressure to wound.
c. Place a sterile dressing snugly on the wound. Excessive pressure should not be use, however, because the bone may be fractured.
d. When bleeding is under control, apply a bandage to hold to dressing in place and to provide continuing pressure.
e. If victim becomes unconscious, place in recovery position with injured side uppermost.

f. Maintain airway/breathing and transport to medical facility
g. Check vital signs frequently.

Skull Fracture

1. Falls can cause skull fractures two ways. First, direct blows to the head can push fragments of the skull into the brain, damaging brain tissue. And second, falls in which as person lands on his feet can push the base of the skull up into brain tissue. A blow to the jaw can cause the same kind of injury. Although damage to the bone may not appear to be significant, a "depressed" fracture may exert pressure on the brain.
   a. Obvious signs of head injury
   b. Blood and/or clear, watery cerebro-spinal fluid may issue from the ear or the nose.
   c. There may be a bloodshot and, later, a black eye
   d. Pupils may be unequally dilated.
   e. Brief or partial loss of consciousness.
   f. Battla signs - black and blue marks behind the earns.

First Aid

1. if the victim is conscious, place in a half-sitting position with the head and shoulders supported. Never position victim so that head is lower than rest of body.
2. If any discharge issues from the ear, incline the head towards the injured side, cover the ear with a sterile dressing or similar pad and secure very lightly with bandage. Do not plug the ear.
3. If the victim is unconscious but breathing normally, place in the recovery position with the head lying on the affected side.
4. Check the breathing rate, pulse and level of responsiveness at 10-minute intervals.
5. Maintain airway breathing and transport to medical facility.
6. Do not give any fluids by mouth.

Concussion

1. This is a condition of widespread but temporary disturbance of the brain some times described as "brain-shaking". it can result from a blow to the head, a fall from a height onto the feet or a blow on the point of the jaw.

   This condition can occur without apparent unconsciousness. In some cases unconsciousness may have been so brief that the victim may be unaware of or have forgotten, the initial incident. However, because concussion can precede compression it is important to observe the victim closely after any incident involving injury to the head. If symptoms persist or the victim's condition deteriorates, refer to a doctor without delay.

Signs and Symptoms

1. Brief or partial loss of consciousness

b. While the casualty is unconscious
   - Breathing may be shallow
   - Face may be pale
   - Pulse may be rapid and weak
   - Skin may be cold and clammy

c. During recovery
   - Victim may feel nauseated or already be vomiting

d. On recovering consciousness
   - Victim may not remember any events just before or after the incident.

e. If unconsciousness persists, suspect compression

First Aid

1. In mild cases, place victim in care of a responsible person to observe him.
2. Where relevant, carry out general treatment for unconscious victim.
3. In serious cases, watch breathing, pulse and level of consciousness; watch for signs of compression, even after the victim has apparently recover.

Compression

1. This is a very serious condition in which pressure is exerted on the brain by blood accumulating within the skull or by pressure from bone in a depressed fracture. Compression can follow concussion and it may develop up to 48 hours after the casualty has apparently recovered.

Symptoms and Signs

a. Breathing becomes noisy.
b. Body temperature may rise; face becomes flushed but remains dry
c. Transport to a medical facility - this is a medical emergency.

Face And Jaw Injuries

1. Trauma to the head may also include fractures of bones of the face. The jaw and cheekbone are the most commonly fractured facial bones.

   The fracture cause severe pain, unless a nerve has been damaged. If a nerve is damaged. The person will feel no pain. Swelling will soon begin and a large black-and blue mark will form. You may feel a broken bone if you examine the patient soon after he is injured, before the swelling begins.

   A person who has suffered trauma to the bones of his face may have trouble speaking and swallowing. He will also salivate freely. These conditions can block his airway and cause gagging.

First Aid

The principle immediate problems are obstruction of the air passage by blood, saliva and other secretions; swelling and severe hemorrhage.

a. Continuously maintain an open airway. Remove dentures. broken teeth or other foreign matter.
b. If conscious and not seriously injured. Sit the victim up with the head well forward to allow any secretions to drain out.
c. For lower jaw fracture. support jaw with soft pad and put a bandage around the victim's head.

d. If victim severely injured or unconscious. place in recovery position or elevate his head and to the side to drain out.

e. Control bleeding and treat for shock.

f. Transport to medical facility.

NOTE An internal head injury can be caused by blunt trauma also. the cerebral blood vessels can be sheared off if the brain is violently moved in the cranium.
Also the possibility exists for a "coup" or "contra-coup" head injury. (coup-where there is trauma to one side of the head, causing injury to the brain inside the head on that side: and contra-coup where the brain is slammed into the opposite side of the skull. From trauma to the opposite side of the head).
Therefore, always mention neurological signs, mention with special notes.

a) Unequal pupils - the effected pupil will be on the OPPOSITE side of the injury.
b) Weakness or paralysis on the side of the body OPPOSITE to the injury.

Ear Injuries

1. Cuts and lacerations
   a. Apply dressing with light even pressure
   b. Raise victim's head.
2. Perforated ear drum
   a. caused by a blast or blow to head
   b. First Aid:
      1. Place small piece of gauze loosely in outer ear canal for protection.
      2. Do not insert any instruments or any liquid into the ear canal.
3. For perforation associated with skull fracture:
   a. - do not clean ear
   b. - do not stop flow of fluid from ear
   c. - turn victim on to his injured side so fluid can drain away.

Nose Injuries

1. Injury to soft tissue of nose may or may not include fractures. Nose bleeds can result from injury or disease (like high blood pressure).
2. Treatment.
   a. Keep victim quiet.
   b. Place victim in sitting position. leaning forward if possible. (otherwise place him in an reclining position with head and shoulders raised.
   c. Apply pressure to bleeding site constantly for 5 minutes (continue for 15 minutes if bleeding has not stopped.
   d. Apply cold compresses to victim's nose and face.
   e. If bleeding doesn't stop. apply packing of vaseline gauze or plain gauze into nostril. Apply pressure externally after packing.
      Remove packing in 24 hours.
   f. If bleeding continues transfer to a medical facility.

Trauma to Spinal cord

Trauma to t spinal column can occur with any injury to the neck or back. Such trauma can damage the spinal cord or nerves coming from it. causing paralysis. The spinal cord can be damaged by a fractured vertebra or compression form severe swelling of soft tissue. Improperly moving a person who has injured his spinal column increase the risk of damage.

Suspect an injury to the spinal column and possible damage to the spinal cord or its nerves in any of these kinds of accidents:

- Falls.
- Blows from heavy objects on the back
- Motor vehicle accidents.
- Blows on the head.
- Neck lash caused by a collision.

signs and Symptoms

1. A person with a fractured or otherwise injured spinal column will complain of severe pain.
2. He may feel numb in parts of his body below the fracture. He may not be able to move his toes. his feet. or his leges. If the fracture is high on the spinal column, he may not be able to move his fingers, hands or arms.
3. Priapism - Persistent erection of penis.
4. Loss of bowel and bladder control: usually urinary retention and bladder distention.
5. Loss of sweating below level of fracture.
6. Low blood pressure.

First Aid Treatment

1. Keep the patient flat. Do not move the spine-keep the back straight.
2. Examine and evaluate the patient for level of spinal cord injury:
   a. Ask him to move arms and hands
   b. Have him squeeze your fingers
   c. Ask him to move hip, legs, feet
   d. Observe pattern of respiration
   e. Check for priapism
   f. Prick the skin with a pin to check for numbness
   g. Check vital sighs
3. Start IV Normal Saline.
4. Put in urinary catheter.
5. Transfer immediately to a medical facility - as gently as possible. gentleness is more important than speed .
6. Make sure he is completely immobilized on a hard stretcher or board.
   a. Support victim's neck, the curve of his back and his knees with pads.
   b. Steady the head with pillows or sand bags to prevent movement. Pad along both sides of the body to prevent movement.

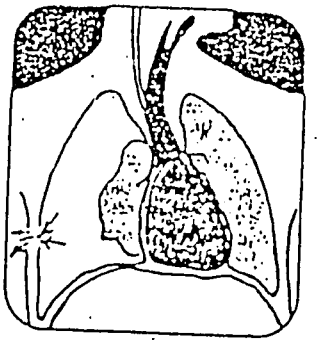
Trauma to the chest

Trauma to the chest occurs when a person is hit. thrown against solid object, stabbed or shot. The kind of trauma depends on the accident.

A blow on the chest can fracture ribs Broken Ribs can pierce a lung or cut blood vessel and cause internal bleeding. A person who is thrown against a solid object may suffer a crushed chest. Many ribs may be broken. This kind of trauma occurs for example, to an automobile driver who is thrown against the steering wheel in an accident. Broken ribs knives. bullets and any other sharp object can puncture the chest. If the person sucks air into his chest cavity. his lung will collapse. Such a wound is called a sucking chest wound.

Sucking Chest Wound

1. In these injuries the lung on the injured side deflates and can not take in air. In addition, air is sucked into the chest through the wound and impairs the function of the good lung.



2. **Signs and Symptoms**
   a. Pain in chest
   b. Difficulty in breathing, breaths are shallow due to air in the chest cavity.
   c. Blueness of the mouth, nailbeds and skin (cyanosis) indicating onset of significant asphyxia.
   d. Coughed-up. bright-red, frothy blood if lung is injured.
   e. The sound of air being sucked into the chest may be heard when the casualty is breathing in.
   f. Blood stained liquid bubbling from the chest wound during breathing out.

BEST AVAILABLE DOCUMENT

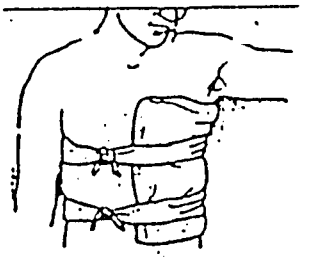
g. Symptoms and signs of shock.

3. <u>Treatment of Sucking Chest Wound</u>

The Primary treatment is sealing the wound so it is airtight (Note: If wound caused by a bullet. Always check for 2 wounds

- Entry and exit -<u>both</u> wounds will have to be sealed tightly.

1. Immediately seal the open wound with the palm of your hand.
2. place the victim in a half-sitting position supporting his head and shoulders. Tilt the body towards the injured side so that the good lung is upper most.
3. Instruct the victim to exhale forcefully.
4. Cover the wound with petroleum (vaseline) gauze (if vaseline not available. Cover with a wet gauze).
5. cover the gauze with plastic or foil and seal the edges tightly with tape.
6. Apply a pressure dressing. held in place by bandages or slings, being careful not to apply the binding so tightly that breathing is restricted.



7. If victim becomes unconscious, but is breathing normally, place him in recovery position with good lung upper most.
8. Maintain open air way and treat for shock if necessary.
9. Start IV of Normal Saline - open full.
10. Give ATS to prevent tetanus.
11. Give Ampicillin IM.
12. Transport immediately to medical facility in recovery position.

BEST AVAILABLE DOCUMENT

13. Not: If sucking wound made by an object (such as a knife which is still in place - Do not remove it, as it may result on fatal bleeding. Seal the wound by squeezing the wound edges around the object and pack gauze around the object and treat as above

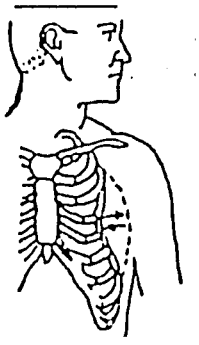
1. For a sucking chest wound, after applying the sealed dressing over the wound, if you see that the person has increased difficulty breathing and is dyspnic and anoxic, there may be build up of blood in the wounded lung. Release on corner of the sealed dressing and allow the blood to come out. then reseal the wound. This procedure may require burping the wound-by inserting your finger into the wound to remove a clot of blood which is blocking the opening.

2. For your information, the special forces Medics use a 3-way flutter valve for sucking chest wounds. They apply petroleum gauze followed by the metal foil or plastic, but only tape down the top and sides, and leaving a 1-11 inch opening on the lower taped edge. This procedure allows the blood to flow out when the victim exhales, but on inspiration the plastic or foil is again sucked flat against the wound, sealing it off, so air cannot enter. The plastic or foil MUST be secured flat enough and tight enough to make this seal when the victim inhales.

<u>Flail Chest</u>

Multiple fracture of the chest wall result in the area losing its rigidity and prevent it following the normal movements of the rib cage during breathing. Instead, the fractured ribs are sucked in during breathing in, and pushed out during breathing out. This is a reversal of the normal movement of the rib cage also inhibit the long action on the uninjured side. In addition to this, the broken bones may damage other internal organs or penetrate the skin causing a "sucking" wound.

Common causes of this type of injury are road traffic accidents in which the driver of a vehicle is thrown against the steering column or the steering column is pushed back in to the driver's chest.

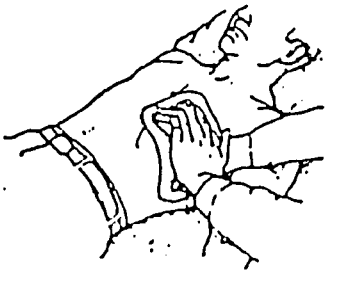


Signs and Symptoms

1. General symptoms and signs of asphyxia.
2. Casualty finds it difficult and painful to breathe.
4. Unusual movement in the rib cage. Injured part of the chest wall will be seen to have lost its rigidity.
5. Possibility of frothy blood stained, spit indicating lung damage.

Treatment of Flail Chest

1. Immobilize the injured part of the chest with your hands and then apply a pressure dressing with tape or triangle bandages.



2. Help the casualty into a half-sitting position inclined towards the injured side. Support head and shoulders.
3. Place the arm on the injured side across the pressure dressing and support in a sling. Apply another broad triangle bandage around the chest.
4. Place the victim on his injured side with compression by padding, lying on a folded blanket under injured part.

BEST AVAILABLE DOCUMENT

5. Loosen any constricting clothing around neck or waist.
6. Transport (in recovery position) immediately.

Trauma To Abdomen

Abdominal injuries can be caused by blows from blunt to sharp objects.

Blunt objects can bruise the abdominal wall, the lever, spleen, kidneys, bladder and intestines. Torn blood vessels may cause severe internal bleeding.

Sharp objects and bullets can cause severe lacerations, of the organs, contents of the intestines may leak into the abdominal cavity. Peritonitis occurs. The patient may go into shock. Abdominal organs may protrude through the wound.

Blunt Trauma Injury (No open Wound)

Signs and Symptoms:

1. Pain
2. Muscular rigidity or tension.
3. Tenderness or rebound tenderness.
4. Hypotension-shock.
5. Nausea and vomiting.
6. With internal bleeding:
   a. Restless and talkative
   b. Complains of thirst
   c. Blood may appear from mouth, anus, in urine
   d. Shallow breathing with yawning (air hunger)
7. always suspect a internal bleeding after a violent injury, if there are symptoms and signs of shock without any visible blood loss or if there is any "patterned" bruising corresponding to the seams and/or texture of the victim's clothing.

Treatment:

1. Lay victim down with head low and to one side to ensure a good blood supply to brain.
2. Advise victim not to move. (Movement may fragment a clot in a large vessel and produce massive hemorrhage.)
3. If the victim injuries allow, raise the legs to aid the return of blood flow to the vital organs.

4. Loosen constricting around neck, chest and waist.
5. Reassure victim and explain necessary to relax.
6. Start IV of Normal Saline.
7. Treat for shock and maintain airway/breathing.
8. If unconscious but breathing normally, put into recovery position.
9. Cover with blanket and place blanket underneath if possible.
10. Do not give victim anything by mouth.
11. Monitor vital signs.
12. Transport to medical facility immediately.

Open Abdominal Wounds.

A deep wound of the abdominal wall is serious not only because it will involve external bleeding but also because the underlying organs may have been punctured or lacerated. Either can result in serve internal bleeding and possible infection. Part of the intestine may also be protruding from the wound.

Sings and symptoms

1. General abdominal pain.
2. Bleeding and associated wounds in the abdominal area.
3. Part of the intestine may be visible in, or protruding from the wound.
4. Casualty may be vomiting.
5. Systems and sings of shock.

First Aid Treatment

1. Place the victim in a half-sitting position with the knees bent up to prevent the wound gaping and reduce strain on the injured area. Support the shoulders and the knees.
2. Control any bleeding by carefully squeezing the edges of the wound together.
3. Apply a dressing to the wound and secure with a bandage or adhesive tape all around the abdomen.
4. Maintain airway/breathing and treat for shock.
5. Start an IV of Normal Saline.
6. If victim is unconscious but breathing normally, put in recovery position.
7. Do not give victim anything by mouth.

8. If part of intestine is protruding from the wound:
   a. Do not try replace the intestines into the abdomen (could produce peritonitis, additional trauma or shock).
   b. Cover intestines with large gauze pad soaked in normal saline, Cover gauze with plastic or metal foil to keep moist.
   c. Hold dressing in place with firm bandage, but do not apply bandage so tight as to cause constriction.
9. Give A.I.S. to prevent tetanus.
10. Give Ampicillin IM to prevent infection.
11. Monitor vital signs.
12. Transport immediately to a medical facility.

TRANSPORTING AN INJURED VICTIM

Transportation involves moving the victim away from a dangerous location and protecting and supporting the body when moving him.

* More harm than good can be done by improper transportation than by any other first aid care you give the victim!

1. Any movement could twist a broken bone and cripple the victim for life.

2. A victim may have back or internal injuries that you cannot see. Moving him could cause paralysis or internal bleeding.

3. Pain can cause shock. This includes the pain caused by actually moving the patient. Sometimes it takes ½ hour to several hours for shock to develop).

4. Moving a patient may make him with the possibility of aspiration.

5. Any form of transportation can hurt the victim, you could make his injuries worse.

6. Haste is bad with all accident victims. Take your time and be gentle! Transport the victim properly and safely to prevent further injury.

7. Know how to use the muscles of your body correctly to prevent injury to yourself. (Lift with your leg and thigh muscles NOT your back. Keep your back straight!) You will be worthless as a first aider if you injure yourself while transporting a victim.

Before transporting a victim (unless in a dangerous area), do the follow:

1. Avoid unnecessary movement of the victim.
2. ABC's
3. Control bleeding - shock.
4. Check body for all possible injuries.
5. Immobilize all injured parts before transporting.

NOTE: If you must move a victim from a dangerous location before you can check for injuries, do the following:

1. Protect all body parts from the tensions of lifting by supporting the head, arms, legs and back.
2. Keep the body in a straight line and keep it from moving.
3. If an injured body part cannot be immobilized before transport, place one hand below and one hand above the injured part to prevent its moving, while another helper keeps the adjacent joint from moving.
4. If you must pull a victim to safety, pull him in the direction of his head or feet - never sideways. Prevent twisting or bending the body. (The danger is less if your pull him on a blanket).
5. Unless you are SURE there is no major fracture or back/neck injury, do NOT lift or carry the victim before a check for all injuries is made. (Pull him along the ground instead).

The TYPE of lift or carry you use to move the victim depends on the type of injury and how far you must move him.

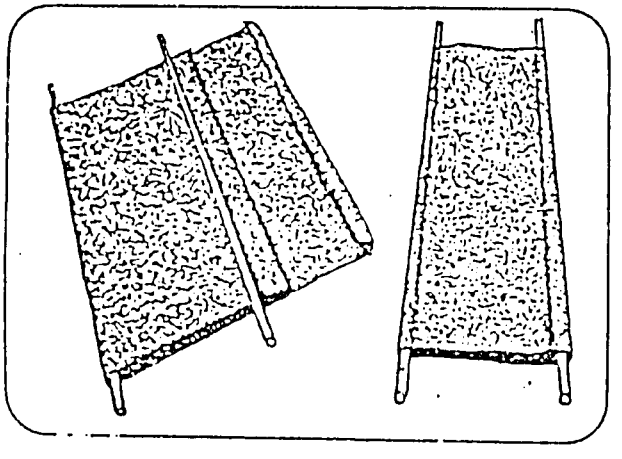
1. For all head injuries, fractures of thigh, leg, pelvis or back/neck injuries:
   - immobilize the injured part
   - must be transported LYING DOWN(never sitting)

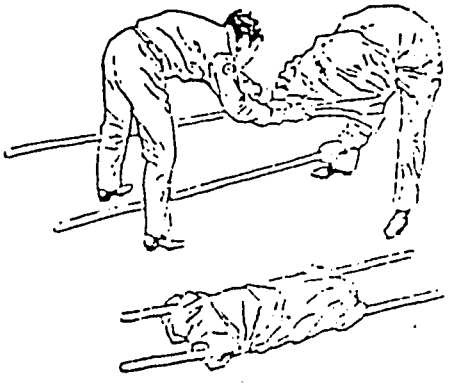
2. Remember, when transporting a neck injury:
   a) Don't allow the victim to move his head
   b) Small pad or towel under the neck
   c) Rolled cloth or blanket sandbags around head, neck and shoulders
   d) Anchor the cloth with rock or bricks.

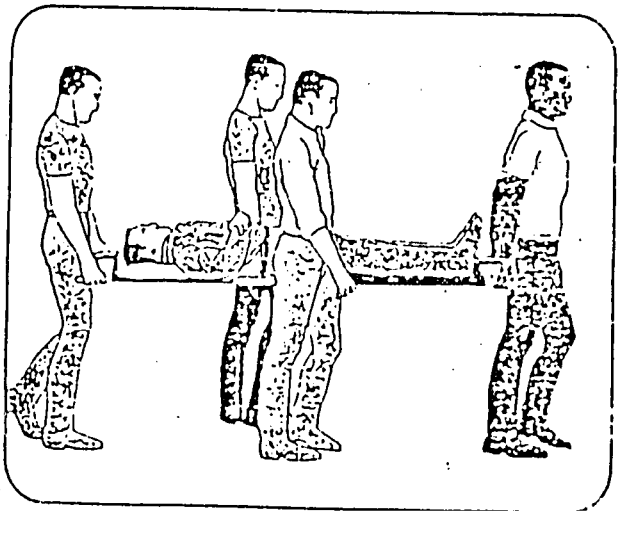
3. Remember, when transporting a back injury:

   a) Whenever possible keep in same position that he is found
   b) Don't twist neck or back
   c) Place rolled cloth or blankets on both sides of head, trunk and neck
   d) If you must change his position to open airway, turn the entire body at one time.

4. The best device for moving a victim is a <u>stretcher.</u> If one is not available , you could use a cot, a door, a padded ladder or make your own with poles and blankets, coats or shirts.

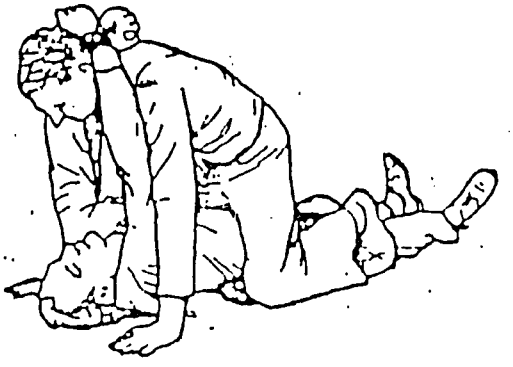




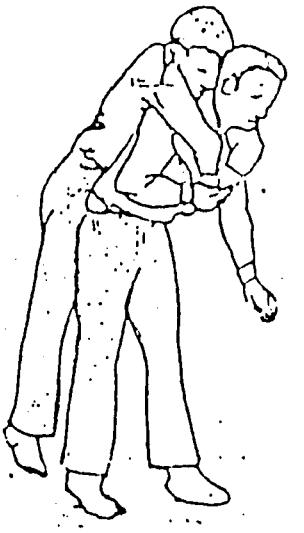


BEST AVAILABLE DOCUMENT

①

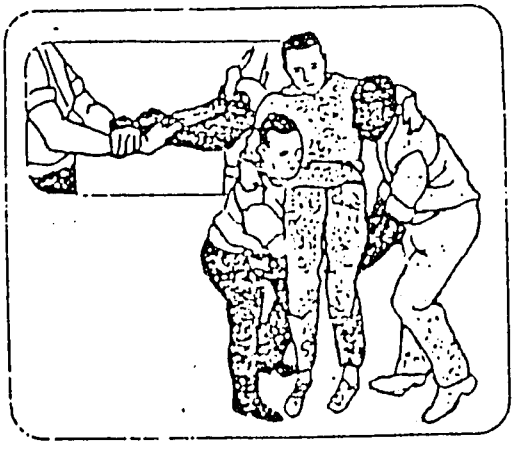


②



③

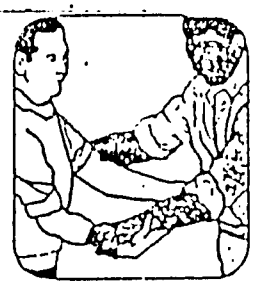
④

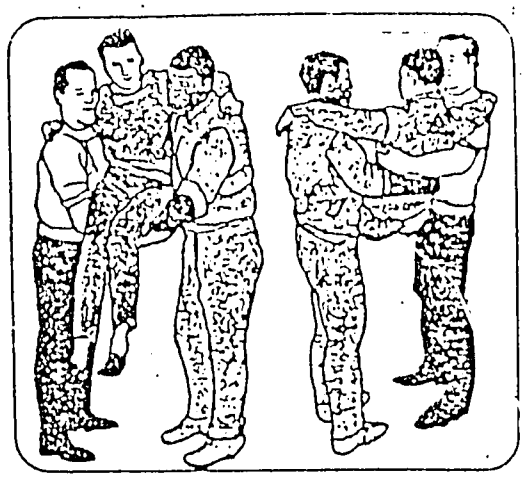


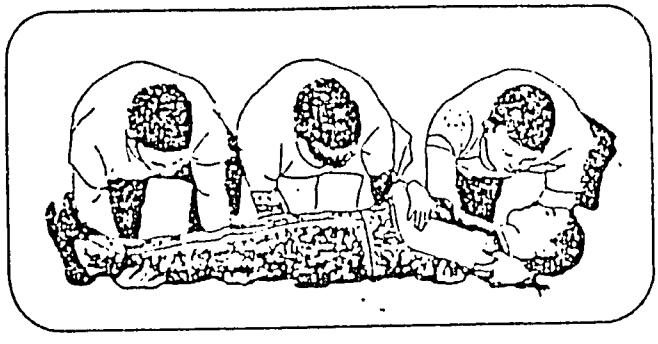
⑤

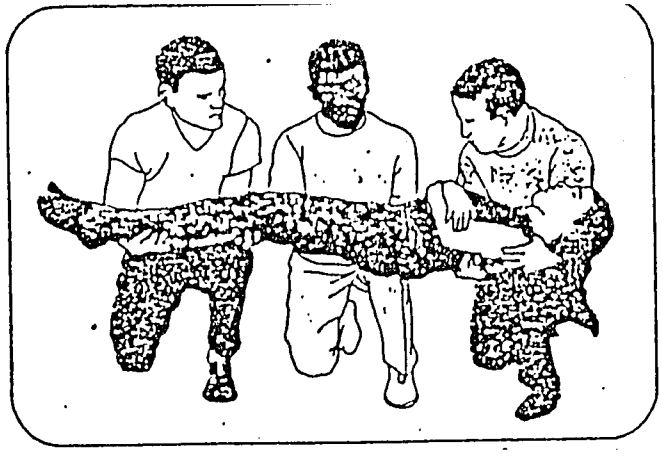
BEST AVAILABLE DOCUMENT

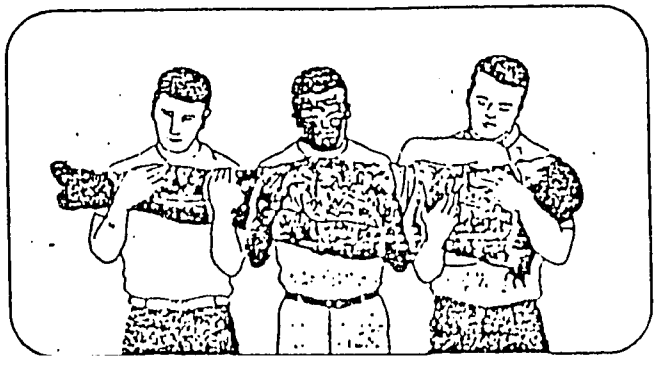
(15)





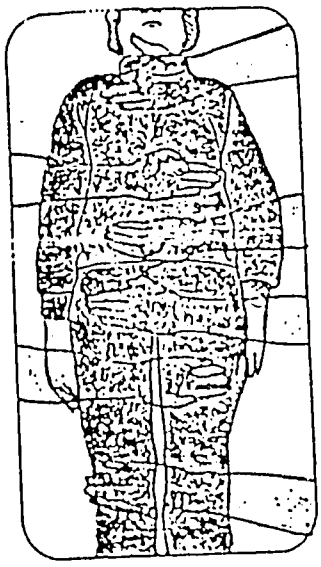


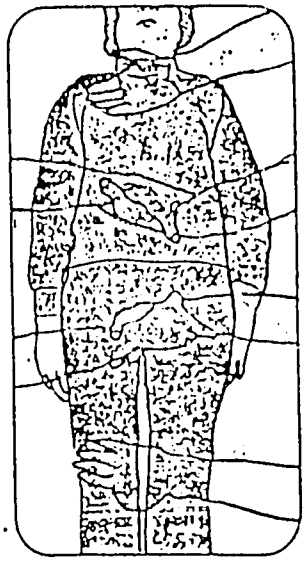




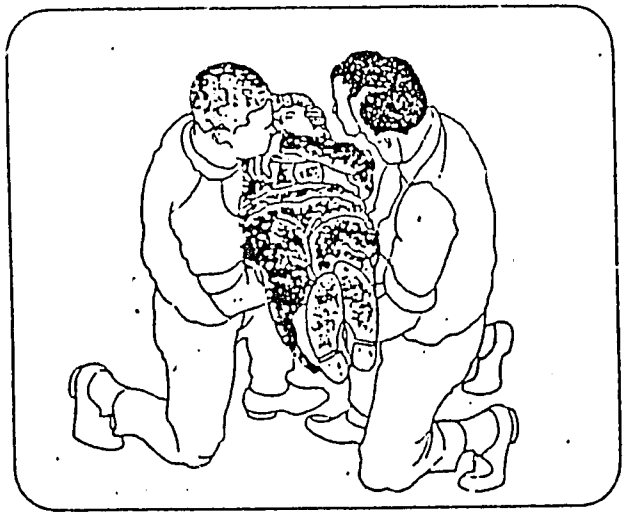
BEST AVAILABLE DOCUMENT

(8)





(49)



(9)

BEST AVAILABLE DOCUMENT

HEAT STROKE - HEAT EXHAUSTION - HEAT CRAMPS

Excessive heat may affect the body by producing conditions such as heat stroke, heat cramps and heat exhaustion. Harmful effects occur when the body becomes overheated and cannot eliminate the excess heat. These reactions occurs usually when large amounts of water and salt are lost through profuse sweating.

HEAT STROKE

Signs and Symptoms

1. Body temperature is very high (may be 41C or higher)
2. Skin is red, hot and DRY (NO SWEATING because sweating mechanism is blocked)
3. Pulse is rapid and strong.
4. Headache, dizzy and nauseous
5. Breathing slow and noisy
6. Severe cases - unconscious

First Aid For Heat Stroke

1. Heat stroke is a serious emergency - you must cool the body quickly.
2. Get the victim to lie in a cool shaded, spot, preferably indoors.
3. Remove his clothing and sponge his whole body, especially his head, with cool water or alcohol, or place him in cold water. Fan him.
4. You are actually trying to reduce his temperature and bring down his pulse.
5. If the victim is conscious, give him a drink of water.
6. Once the victim's head and body feels cool, stop sponging him- BUT if his temperature starts to go up again start the cooling process again.
7. If not improving, give one to two liters of normal saline IV.

HEAT CRAMPS

SYMPTOMS

1. Cramps in the muscles, especially in the legs and abdomen, due to the loss of salt from the body by sweating or the inadequate intake of salt.

First Aid for Heat Cramps.

1. Exert firm pressure with your hands on the cramped muscles, or gently massage them to help relieve the spasm.
2. Give the victim sips of salt water (1 tea spoon of salt per glass of water), half a glass every 15 minutes, over a period of about one hour.

HEAT EXHAUSTION

Signs and Symptoms

1. Approximately normal body temperature
2. Pale or clammy skin
3. Profuse sweating
4. Tiredness and weakness
5. Headache - and perhaps muscle cramps

6. Nausea and fainting (but the victim will probably regain consciousness when his head is lowered).

First Aid for Head Exhaustion

1. Let the victim to lie in a shady spot.
2. Have him lie down with his feet raised above the level of his head.
3. Loosen his clothing.
4. Give him sips of salt water (1 teaspoon to one glass water), half a glass every 15 minutes for about one hour.
5. Apply cool wet cloths to his skin and fan him.
6. If the victim vomits, do not give any more fluids by mouth.
7. If he does not improve, give him an IV of normal saline.

HYPOTHERMIA - FROSTBITE

The extent of injury caused by exposure to abnormally low temperature depends also on such factors as wind, length os exposure and wetness of the body. Humans can survive for many days without food or water, but death can occur within hours if adequate body warmth is not maintained.

Hypothermia:

1. Hypothermia is the lowering of the body's inner temperature which is produced by any combination of cold, wetness, wind and fatigue. The cold itself does not have to be extreme, because the wetness can come from one's own perspiration.

Signs and Symptoms:

1. Because chilling affects the brain, a person may have decreased reasoning power to recognize the effects of hypothermia.
2. Shivering, numbness, low body temperature, drowsiness, marked muscular weakness.
3. Slowing of pace, poor coordination, slurred speech, irrationality, poor judgment forgetfulness.
4. Blueness or puffiness of the skin.
5. Without treatment - stupor, collapse and death.

First aid treatment of Hypothermia:

1. Get the victim inside as quickly as possible.
2. Remove wet or frozen clothing and anything else that is constricting.
3. Only if the victim is conscious and alert offer hot liquids, if they do not cause nausea and vomiting do - NOT give alcohol.
4. Rewarm the victim rapidly by wrapping him in warm blankets, which also helps prevent further heat loss. (If available, he could also be placed in a tub of water that is warm, but NOT hot to the hand or forearm).

5. Gentle mild heat can also be provided by applying hot water bottles to critical areas of the body (groins and chest walls).
6. If victim cannot be immediately transferred to a shelter he can be placed in a sleeping bag rewarmed by another person.
7. The best method of heat transfer is to have skin to skin contact - having the stripped victim lie next to another stripped person. Warming the victim between two warm bodies is even more efficient.

8. Warm rocks are canteens can be used inside the sleeping bag.
9. Build a fire for additional heat.
10 Lacking a fire or sleeping bag, the huddle bodies of companions next to the victim may be the only source of heat.
11. The victim should breathe in warm moist air - a scarf cloth can be placed over the victim's nose and mouth to help rewarm the air. You can also exhale close to his nose/mouth while he is inhaling.
12. Dry the victim thoroughly if water was used to rewarm him.
13. Treat for frostbite if necessary.
14. Avoid unnecessary handling or movement of the victim.

Frostbite.

Frostbite occurs when ice crystals form either in the superficial skin or in the fluids and underlying soft tissues of the skin. The effects are more severe if the injured part is thawed and then refrozen. Usually, frozen area is small. The nose, cheeks, ears, fingers and toes are the most commonly affected.

Signs and Symptoms:

1. Just before frostbite occurs the affected skin may be slightly flushed.
2. As frostbite develops, the skin changes to white or grayish yellow and looks glossy.
3. Early or there may be some pain prickling or itching which disappears with increasing loss of sensation and stiffness.
4. Blisters may appear later.
5. The affected part feels intensely cold and numb.
6. Later, edema, blisters, necrosis, and gangrene may appear.

7. As time passes: confusion, staggering, eyesight fails, unconsciousness, shock, breathing, ceases and then death (usually due to heart failure).

First Aid for Frostbite:

1. The main objective is to protect frozen area from further injury, to warm the affected area rapidly and maintain respiration.

2. For superficial frostbite of the extremities, when you cannot get to a shelter, apply firm steady pressure with the warm hand on the frozen fingers or part, or place the fingers in the armpit. Do NOT RUB the forzen part!
3. For toes or heels, remove footwear, dry the feet and cover with dry warm socks.
4. Bring the victim indoors as soon as possible.
5. Cover the frozen part and provide extra clothing and blankets.
6. Give the victim a warm drink.
7. Rewarm the frozen part QUICKLY by immersing the forzen part in water what is WARM, BUT NOT HOT, for several minutes (not warmer than 40° C. This temperature range is slightly above body heat and the water should feel warm but not hot to the normal hand.
8. Note if the frozen part has been thawed and refrozen, it should be warmed at room temperature, to decrease necrosis.
9. DO NOT rub the part rubbing may cause gangrene.
10. Do not apply heat lamps or hot water bottles and don't put frozen part near a hot stove.
11. Do not break the blisters.
12. If his feet are involved, do not let the victim walk after the feet thaw.
13. Since severe swelling develops rapidly after thawing, discontinue warming the victim when the affected skin becomes flushed.
14. Once the affected part is rewarmed, have the victim exercise.
15. If fingers or toes are involved, place dry sterile gauze between them to keep them separated.
16. Do not apply other dressings unless the victim is to be transported at which time the areas should be covered with sterile or clean cloth and the part should be elevated.
17. Never rewarm the part by rubbing it with snow or ice water.
18. When recirculation returns, give analgesics to relieve the pain.
19. Remember - in treating frostbite, TOO MUCH HEAT does more harm than good.

Poisoning

A poison is any thing that can cause harm when it enters the body. A poison can enter the body through the skin or through the mouth or nose when a person eats, drinking or breathing it. Some poisons are dangerous in small doses. Think of poisons in these four groups:

- Petroleum Poisons
- Chemical poisons such as insecticides
- Acid or caustic poisons
- All other drugs and chemicals

Petroleum poisons include gasoline. kerosene and other petroleum products. They can affect the nervous system, the liver, the kidneys, lungs and the gastrointestinal system.

Insecticides, the chemical poisons used to kill insects, are dangerous because they can enter they body through the skin and because they are harmful in small doses. Adults are poisoned when they work with insect powders and sprays an fail to wash afterward. The poison on their clothes can enter the body through their skin. Poison dust or spray in the air can enter their body through the respiratory tract. Children can be poisoned by playing with carelessly stored insect powders or sprays.

Acid or caustic poisons are often used as cleaning agents. They are found in many homes. Lye, for example, which is used to make soap, can cause severe burns. Many children suffer severe poisoning by playing with or drinking cleaning agents.

All medicines can be poison if taken in larger amounts. Many children are poisoned from overdoses of aspirin, iron or other medicines left within their reach. Overdoses of drugs can be taken either accidentally or with suicidal intent.

Signs and Symptoms.

These vary greatly with the type of poisoning.
Some signs and symptoms may include:

1. Nausea/vomiting/diarrhea.
2. Blurred vision.
3. Weakness.
4. Severe pain in mouth throat, chest or stomach.
5. Burns in mouth, lips and throat.
6. Sweating.
7. Salivation.
8. Shock.
9. Unconsciousness.
10. Convulsions.

General Treatment.

1. First, check vital sings - ABC'S.
2. If victim is conscious, ask him what the poison substance was

For Poisonings by mouth

1. The objective is to dilute the poison as quickly as possible

2. It is very important to know what kind of poison was swallowed to know whether to induce vomiting.

3. If he has swallowed any corrosive material such as..... kerosene, gasoline, paint, turpentine ..... lye bleach cleaning solutions or other strong alkalis. all acids

Signs and Symptoms Poisoning from corrosive material

- Severs pain: burning sensation in mouth and throat
- Vomiting
- Burns on lips, mouth and throat
- Drooling in children; painful swallowing or inability to swallow

a. Do not induce vomiting .....
b. Give milk or Water to dilute the poison. If victim becomes nauseated do not give any more.....
c. Do not induce vomiting on an unconscious victim .....
d. Maintain open airway/breathing (being careful not to contaminate yourself with poison around victim's mouth.

4. If he has swallowed any medicines, pills any other <u>non-corrosive substance:</u>

a. Induce vomiting immediately
b. Give 3-4 glasses milk or water to dilute poison
c. Tickle back of victim's throat with your finger or a spoon to induce vomiting.

5. If the victim becomes unconscious, but is breathing normally place him in the recovery position to prevent aspiration of vomit.

6. Do not try to neutralize the swallowed poison with lemon juice or vinegar you may further harm the patient. Do not give olive oil or other oils if a patient vomits, these will cause harm if inhaled into the lunges.

7. If a poison victim is having convulsions:

a. Put him on the ground so he cannot hurt himself
b. Loosen tight clothing at neck and waist
c. Maintain open airway breathing
d. Do not give any liquid.....
e. Do not induce vomiting. If he is vomiting position him so that material drains from his mouth.
f. After the convulsion, place in the recovery position.

9. If any poison victim is suffering from shock start an IV of Normal Saline.

10. Transport all poison victims to a medical facility, where if necessary, a nasogastric tube can be passed into their stomach and the stomach contents be flushed out with [illegible] liters of water.

For Skin Contamination by a Chemical or Toxic Substance:

1. These may cause chemical burns, allergic reaction or inflammation, and it may be absorbed through the skin.....
2. Immediately flush the area with copies amounts of water Rapidity in washing is most important in reducing the extent of the injury.

3. Apply a stream of water while removing contaminated clothing, being careful not to contaminate yourself.

4. Continue washing area for 5-610 minutes with soap and water
5. Maintain open airway/breathing.

For all Poisoning the best cure is prevention

1. Store all drugs and poisonous materials out of reach of children. Do not store together with food items.
2. Label all poisonous materials.
3. Protect your skin and eyes when using insect poisons and cleaning solutions. Wash your skin well after use.
4. Dispose or destroy all unused medicines.

Insect Bites - Anaphylactic Shock

There are many different insects like spiders, scorpions and mosquitos whose bites produce red itchy lumps on the skin. These are then scratched leading to secondary bacterial infection. The spots are usually close together on the body and are more common on the parts not covered by clothing.

1. Insects, such as bees, wasps and hornets cause stings which are more painful and alarming than they are dangerous. Some people, however, are allergic to the poison. Moreover, multiple stings from a swarm of insects, can have a dangerous cumulative effect. Stings in the mouth and throat may cause swelling leading to Asphyxia. Death from the sting of such insects is almost always due to acute allergic reaction.

2. Bites or stings from fleas, mosquitoes, lice, gnats, chiggers, and other common insects produce local pain and irritation but are not likely to cause severe reactions. Some of these insects may transmit disease to man but are not poisonous in themselves.

3. Ticks can transmit germs of several diseases. Ticks adhere tenaciously to the skin or scalp. there is some evidence that the longer an infected tick remains attached, the greater is the chance that it will transmit disease.

4. Poisonous Spiders.

a. Symptoms resulting from the black widow spider bite

1. Slight local reaction
2. severe pain produced by nerve toxin
3. Profuse sweating
4. Nausea
5. Painful cramps of abdominal muscles
6. Difficulty in breathing and speaking (Victims in almost all cases recover, but an occasional death is reported.)

b. Symptoms resulting from the brown recluse spider bite

1. Severe local reaction produced by venom, which forms an open ulcer with in 1 to 2 weeks.
2. Destruction of red cells and other blood changes.
3. Development of chills, fever, joint pains, nausea, and vomiting.
4. Possible development of generalized rash within 24 to 48 hours.
5. Scorpions
   Scorpions inject venom through a stinger in the tail

a. <u>Effects.</u> In bites from the more dangerous species. there are marked systemic effects within 1 to 2 hours Fatalities have been recorded.

b. Symptoms

1. Excruciating pain at the site of the sting
2. Nausea and vomiting
3. Abdominal pain
4. Shock
5. Possible development of convulsions and coma

Treatment:

1. cold compresses will reduce the swelling. Lotion or alcohol with help relieve pain and itching.
2. Apply gentian violet if the skin is broken.
3. Give chorpheneramine tablets for swelling.
4. Give promethazine tablets for 3 days if there is much itching and swelling.
5. For ticks, kill them with kerosene/petrol and remove them with a needle, taking the head completely out of this skin. Wash area well with soap and water.
6. For stingers left in the skin, (from a bee or wasp) hold tweezers of forceps as near to the skin as possible, grasp the stinger and remove it.

a. Do not squeeze the poison sac because this will force the remaining poison into the skin.

Severe Allergic Reaction (Anaphylactic Shock)

Causes: Bee and wasp stings; penicillin and other antibiotics and other sera such as A.T.S.

Signs and Symptoms

1. Apprehension and flushing
2. Itching or burning (Generalized itching over entire body indicates a general systemic reaction is developing)
3. Sneezing or coughing
4. Hives on face and upper chest-appear within first few seconds after injection swollen face
5. Respiratory difficulty-tightness or pain in chest
6. Wheezing and shortness of breath, hoarseness respiratory stridor.
7. Cyanosis.
8. Pallor, imperceptible pulse-circulatory failure leading to coma and death.

Treatment;

a. Give Adrenalin injection subcutaneously dosage may be repeated in 5-10 minutes if patient doesn't respond. Give Promethazine injection IM.
b. Give artificial respiration if indicated.
c Apply a constricting band above the injection site or sting site on the victim's arm or leg (between the site and the heart). Do not apply tightly. You should be able to slip your index finger under the band when it is in place.
d. Keep the affected part down, below the level of the victim's hear.
e. If medical care is readily available. leave the band in place; otherwise, remove it after 30 minutes.
f. Apply ice contained in a towel or plastic bag, or cold cloths,to the site of the sting or bite.
g. give home medicine, such as aspirin, for pain.
h. Take immediately to OPD or medical facility.

Animal and Human Bites

Germs are harbored in the mouths of both domestic and wild animals and humans. Animals have sharp pointed teeth. Because of this their bites often leave deep puncture wounds and germs may be injected deep into the tissues.

Any bite causing a break in the skin needs prompt attention to prevent infection. It may be complicated by tetanus and in some countries rabies. Savaging by a dog may also result in multiple lacerations.

Signs and Symptoms:

1. One or more small puncture wounds in the pattern of the teeth.
2. A number of lacerations indicating a tearing bite.
3. Bleeding can be severe or may be slight, depending on the extent of injury.

Treatment:

1. PHENERGAN if the patient is very upset.
2. PARACETAMOL for pain.
3. Cut away all dead or loose skin.
4. Scrub the wound with a soft brush and soap/savlon for at least 5 minutes.
5. Flush out tooth marks with a syringe full of SAVLON.
6. Flood the area with ALCOHOL.
7. Put on a clean dry dressing.
8. If possible send to hospital for rabies vaccine if there is a suspicion of rabies.
9. Redress daily with alcohol until healed.
10. Give ATS to prevent tetanus.
11. Do not close the wound - leave it open.

Rabies

Rabies comes from the bite of a rabid or 'mad' animal usually a rabid dog, cat, fox wolf and other animals may also spread rabies.

Presenting Feature

A. In the Animal

1. Acts strangely sometimes, sad , restless or irrational
2. Foaming at the mouth, cannot eat or drink.
3. Sometime the animal goes wild (mad) and may bite anyone or anything nearby.
4. The animal dies within 10 days.

B. In people

1. Pain and tingling in the area of the bite.
2. Pain difficulty swallowing. A lot of thick, sticky saliva.
3. Fits of anger between periods of calm.
4. As death nears, fits (convulsions) and paralysis.
5. The first symptoms of rabies appear from 10 days up to 2 years after the bite (usually within 3 to 7 weeks) treatment must begin before the first signs of the sickness appear.

Once the sickness begins, no treatment knows to medical science can save the person's life.

If you have any reason to believe any animal that has bitten has rabies.

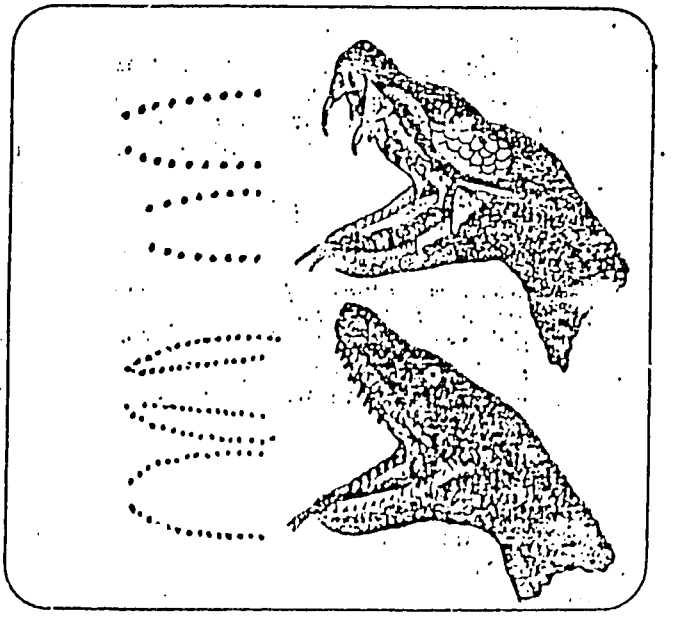
1. Tie or cage the animal for 10 days.
2. If the animal dies before the week is up (or it was killed or cannot be caught), take the bitten person at once to a health center where he can be given a series of anti-rabies injections.
3. Take great care in handling any animal that seems sick or acts strangely. Even if it does not bite anyone, its saliva can cause rabies if it gets into a cut or scratch.

SNAKE BITES.

Not all snakes are poisonous. Color and certain markings are the best guide, but generally:

1. Nonpoisonous snakes have:
   a. Round pupils or eyes.
   b. No fangs or pits on their head
   c. A double row of plates beneath their tail

2. Poisonous snakes have:
   a. Slit eyes
   b. Two large fangs
   c. A pit between each eye and nostril
   d. One row of plates beneath their tail.



BEST AVAILABLE DOCUMENT

Signs and Symptoms:

1. May appear with 15 to 30 minutes of bite
2. One or 2 small puncture wounds
3. Pain - may be quite severe and may last for several days
4. Swelling - depends on amount of poison that has entered the blood.
5. Bleeding form bite, may be discoloration of skin around bite
6. Nausea, vomiting
7. Difficulty breathing
8. Salivation and sweating
9. General weakness, dim vision, rapid pulse, shock
10. Fright may cause severe shock

Objectives of first aid

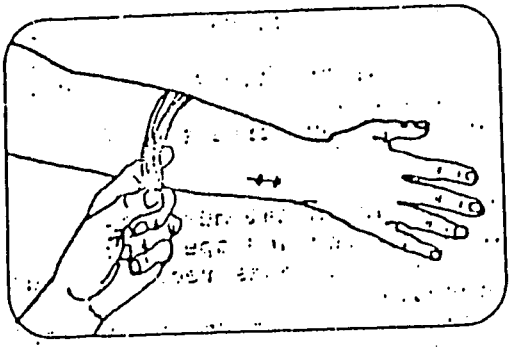
1. To reduce the circulation of blood through the bite area
2. To delay absorption of venom
3. To prevent aggravation of the local wound and to sustain respiration.

First aid Procedure:

The most important step is to get the snake bite victim to the hospital quickly. Meanwhile, take the following first aid measures:

1. Keep the victim from moving around. Do not let him walk.
2. Keep the victim as calm as possible and preferably in a lying position.
3. Immobilize the bitten extremity and keep it at or below heart level.
4. Wash the wound thoroughly with soap and water, if available. If the victim can reach hospital within 4-5 hours and if no symptoms develop, no further first aid measures need be applied.

5. If mild-to-moderate symptoms develop, apply a constricting band 2 to 4 inches above the bite, but not around a joint- the elbow, knee, wrist, or ankle and not around the head, neck or trunk. The band should be 3/4 to 1 1/2 inches wide, not thin like a rubber band. The band should be shug but loose enough for a finger to be slipped underneath.



Watch out for swelling. Loosen the band if it becomes too tight, but do not remove it. Periodically check the pulse in the extremity beyond the bite to insure that the blood flow has not stopped.

6. If severe symptoms appear, make one incisions on each fang mark (about 1cm long and 1/2 cm deep) with a sterile knife. Do NOT suck the venom from the wound because it can be absorbed through your mouth and throat tissues, and you may be poisoned as well.
7. Give the victim paracetamol, (Not aspirin) for pain. Give promethazine for severe fright Reassure the victim frequently.
8. If possible bring the snake to the hospital for identification.
9. Give A.T.S. to prevent tetanus.

BEST AVAILABLE DOCUMENT

INTRODUCTION TO ANATOMY, PHYSIOLOGY AND PATHOLOGY OF BODY SYSTEMS

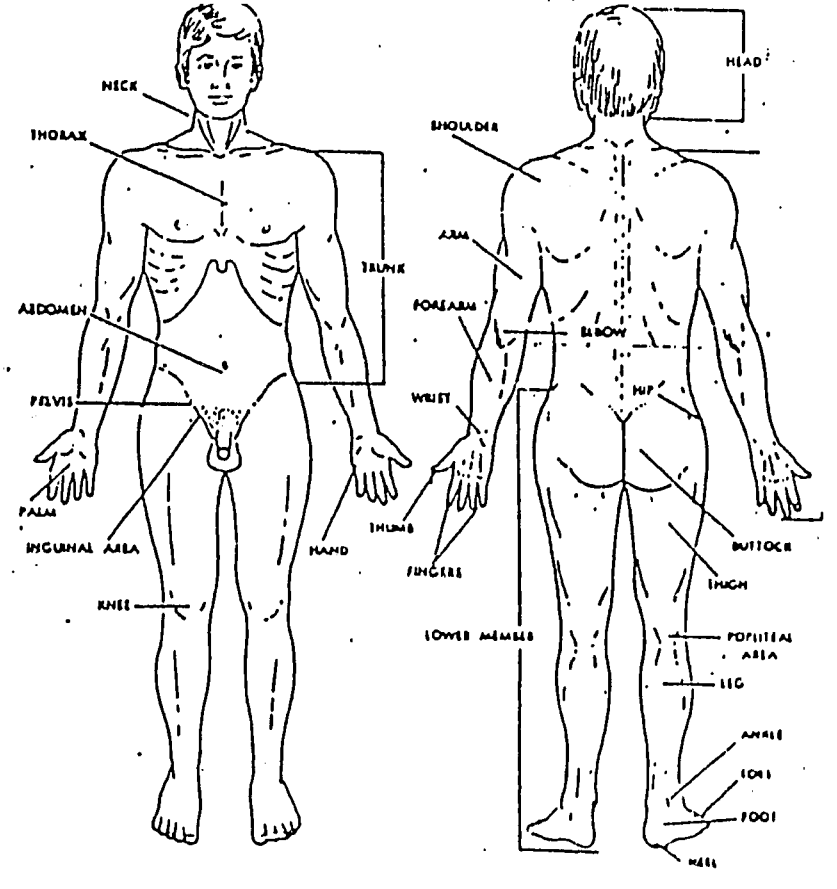
BASIC DEFINITIONS

1. STUDY OF THE STRUCTURE OF THE BODY; HOW THE BODY IS PUT TOGETHER.

ANATOMICAL REGIONS (SURFACE ANATOMY)

- Head and Neck
- Chest
- Back
- Abdomen
- Pelvis
- Perineum (underside to trunk between beginnings of things)
- Extremities
  - a. Upper extremity - shoulder, arm, and hand
  - b. Lower extremity - hip, leg, and foot

It is important to know parts of the body in this picture.



BEST AVAILABLE DOCUMENT

When describing regions of the body, certain words are used as shown in this diagram:

PROXIMAL - Next to or nearest the center of the body(trunk)
DISTAL - Far from the center of the body (trunk)

Example: The elbow is proximal to the hand (the elbow is closed to the center of the body than the hand). The hand is distal to the elbow. (The hand is farther from the center of the body than the elbow).

INTERNAL ANATOMY -Internal structure of body.

PHYSIOLOGY -Study of functions within the body, how it works.

THE CELL -Basic structure and functional unit of all living things. The body is made of cells like a building made of bricks.

TISSUE -A group of similar cells. For example, muscle cells are connected to form muscle tissue. fat cells form fat tissue. Each tissue does a special job for example. fat tissue stores energy.

ORGAN — A specialised structure of cell/tissues together performing a specific function for the body. For example the kidney is an organ which filters waste material and water from the blood to make urine.

The body is an extremely complicated network of interacting body system. The proper function and interaction of each system is crucial. If one system malfunctions the whole body may work poorly ("become sick")

In this course we will study the body by system:

1. Respiratory.
2. Cardiovascular
3. Gastrointestinal
4. Ear, Nose, and throat
5. Eye
6. Genitourinary
7. Skin
8. Nervous
9. Musculoskeletal
10. Lymphatic
11. Endocrine

Each system will be discussed in detail later, but an overview will be given here.

RESPIRATORY SYSTEM -Consists of nose, pharynx, trachea, lungs, and diaphragm. The function of the respiratory system is to breathe in oxygen necessary for function of body cells and breathe out carbon dioxide, a waste material of body cells.

CARDIOVASCULAR SYSTEM -Consists of heart, arteries, and veins. The function of the cardiovascular system is to pump blood to and from cells. The heart is muscular pump. Blood leaving the heart is rich in oxygen and is carried in arteries; blood returning to the heart is poor in oxygen and carried in veins. Blood contains red cells which carry oxygen to body cells. Blood also contains white blood cells which fight infection. Platelets, that help clotting, and a liquid called plasma which carries nutrients and other substances and water to body cells and waste products away from body cells.

GASTROINTESTINAL SYSTEM - Consists of mouth, esophagus, stomach, small intestine, large intestine, rectum, and organs that aid in digestion (liver, gallbladder, pancreas). The function of the gastrointestinal system is to digest and absorb food (and water) for nourishment of body cells.

EAR, NOSE, AND THROAT SYSTEM - Consists of ear, nose and throat,. The function of the ear is to provide hearing.The inner ear is also important in sense of balance. The eustachian tube runs from middle ear to throat. The nose is part of the respiratory system but also provides sense of smell. The nose opens into the pharynx or throat which functions as passage way for breathing and swallowing. Ear , nose and throat are studied together as a system because they are close together. If there is disease in one, the others are often affected.

EYE SYSTEM - Consists of the external and internal part of the eye. The function of the eye is to provide vision. Visual images are based from the eye through the retina and optic nerve to the brain.

GENITOURINARY SYSTEM -Consists of two systems: The genital and urinary system. The genital system consist of male or female sexual organs, and allows procreation. The urinary system consists of kidneys. ureters, bladder, and urethra. Kidneys filters the blood and excrete cell waste products and water as urine. In the male the urethra functions at different times as passage way for either sperm or urine. In the female, there is no connection between genital and urinary system although they open close together in the vulva (outside surface of the body).

SKIN - Covers the body and consists of two cell layers, sweet and sebacious glands, and hair follicles. Skin protects the body by sensing pain, heat and cold, and acting as a mechanical barrier to infection and injury. It helps regulate body temperature by variation in blood flow and sweating.

NERVOUS SYSTEM - Consists of brain, spinal cord, and nerves. The brain is an immensely complex organ which allows conscious thinking but also directs movement and internal body functions through messages received and sent through spinal cord and

nerves, often without the person being aware. Nerves carry messages to the brain from the skin and other organs and in turn the brain sends messages by nerves which may cause the body to move or react in some way.

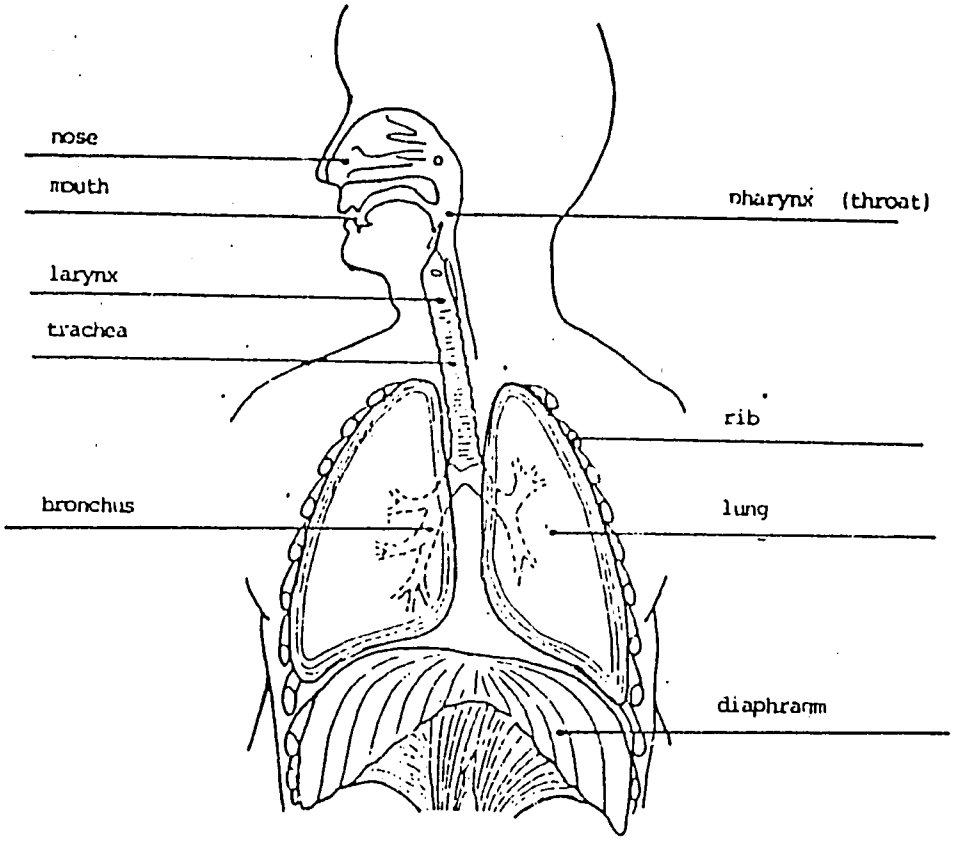
MUSCULOSKELETAL SYSTEM - Consists of muscles and bones, muscles function by contracting and relaxing and thereby enable boners, the framework of the body, to move.

LYMPHATIC SYSTEM - Consists of lymph nodes and lymph channels which carry tissue fluid of the blood stream. When tissue fluid passes through lymph nodes white blood cells attack any organisms(like bacteria) and thereby may prevent them form entering the blood stream and spreading disease throughout the body.

ENDOCRINE SYSTEM - Consists of organs called glands: pituitary, thyroid, parathyroid, adrenal, pancreas, testes (male) and ovaries (female). These organs secrete specific chemicals called hormones which travel in the blood to specific parts of the body where they cause chemical changes.

THE RESPIRATORY SYSTEM

The respiratory system consists of the
- nose
- mouth
- throat(pharynx)
- voicebox (larynx)
- windpipe (trachea)
- bronchi
- lungs



Function of the respiratory system: to breath in oxygen necessary for function of body cells and breath out carbon dioxide as a waste product.

1. Every cell in the body changes oxygen into energy carbon dioxide as a waste product.

BEST AVAILABLE DOCUMENT

2. Air is breathed into the nose or mouth, travels through the throat and passes into the windpipe(trachea)> The trachea is divided into smaller tubes called bronchi which carry air to still smaller tubes called bronchioles and then to the alveoli(small air sacs) in all parts of the lungs.

3. Oxygen in air passes into blood vessels in the lungs and is carried by red blood cells to tissues. In the meantime, carbon dioxide made in cells and carried by venous blood to the lungs comes into the alveoli and is breathed out when the person exhales. In this way, breathing in provides oxygen, and breathing out removes the waste products, carbon dioxide.

OSE:

. Functions:

a) Warms, moistens and filters (cleans) the air.
b) Helps in the production of voice.
c) Organ of smell.

RONCHI:

. The trachea divides into two tubes called bronchi - one for each lung - which divide and subdivide into smaller tubes, finally ending in the alveoli of the lungs.

a) The smallest bronchial tubes are made of muscle. These muscles go into spasm during an asthma attack, closing off the air passage, making breathing difficult and producing a wheezing sound.

UNGS:

. There are two lungs in the chest cavity, separated by the heart.

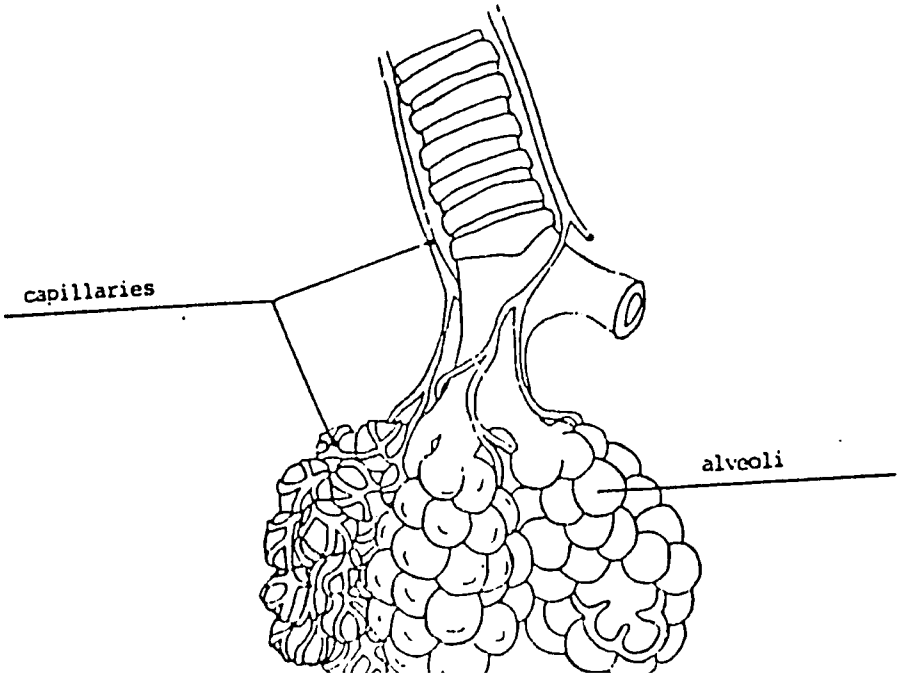
. They are spongey and elastic organs that float in water because they are always filled with air.

3. The lungs are made of small air sacs called <u>alveoli</u>, which are like tiny air-filled baloons.

4. The air sacs are each surrounded by capillaries, and it is here that the actual exchange of oxygen and carbon dioxide takes place.

   a) Oxygen from the air sac passes into the blood, and carbon dioxide from the cells passes into the air sacs of the lung.

   b) The lungs then breath out carbon dioxide, and the blood vessels take the oxygen to the heart which then pumps it around the body.



5. The lungs are protected by a strong rib cage, and also underneath, by the diaphragm.

6. The lungs are covered by a slippery membrane called the pleura. The inside of the chest cavity is also lined with pleura. In between these two pleura is a thin fluid which acts as a lubricant so the lungs can move easily.

BEST AVAILABLE DOCUMENT

as) Pleurisy is a condition where the pleura become inflammed, causing painful difficult breathing due to friction between the pleura.

MECHANISM OF BREATHING:

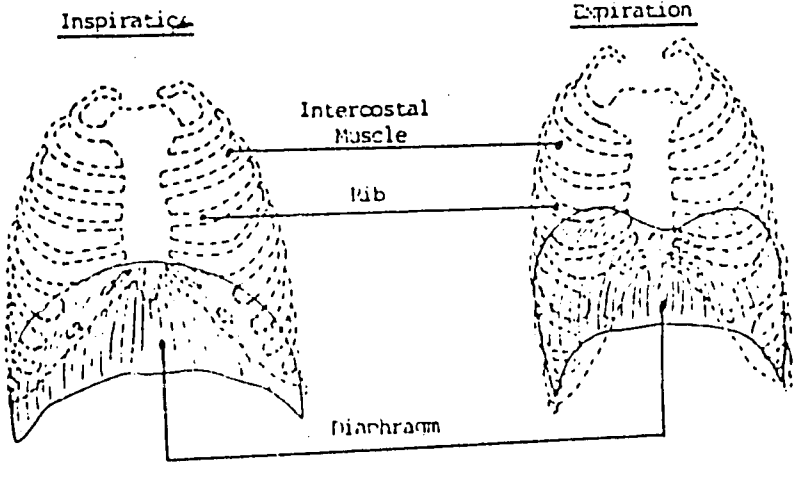
1. Breathing movement is NOT brought about by the lungs, as the lungs are elastic tissue and not muscle.

2. Respiration is brought about by the diaphragm, the strong muscle below the lungs, and the intercostal muscles, the muscles between the ribs.

3. On inspiration, the diaphragm contracts, pulling the lungs down with it. The intercostal muscles pull the ribs upward, making the rib cage expand. These actions actually pull air into the lungs.

   a) This is similar to having your hands glued to a baloon and pulling it wider.

4. During inspiration, the diaphragm and intercostal muscles relax, and the elastic lung s spring back to the smaller size they were before inspiration - this forces the air out of the lungs.



BEST AVAILABLE DOCUMENT

CIRCULATORY SYSTEM

The circulatory system is divided into two systems:

I. Blood circulatory system
II. Lymph circulatory system

1. Blood circulatory system

It is the transport system of the body, by which food, oxygen and other useful, essential materials are taken to the tissues and then waste products from the tissues are carried away for elimination.

Three essential parts:

A. Heart
B. Blood vessels
   1. Arteries
   2. Veins
   3. Capillaries
C. Blood

A. The heart

1. A hollow muscular pump, roughly cone-shaped, about the size of your fist.

2. It lies between the lungs in the chest cavity.

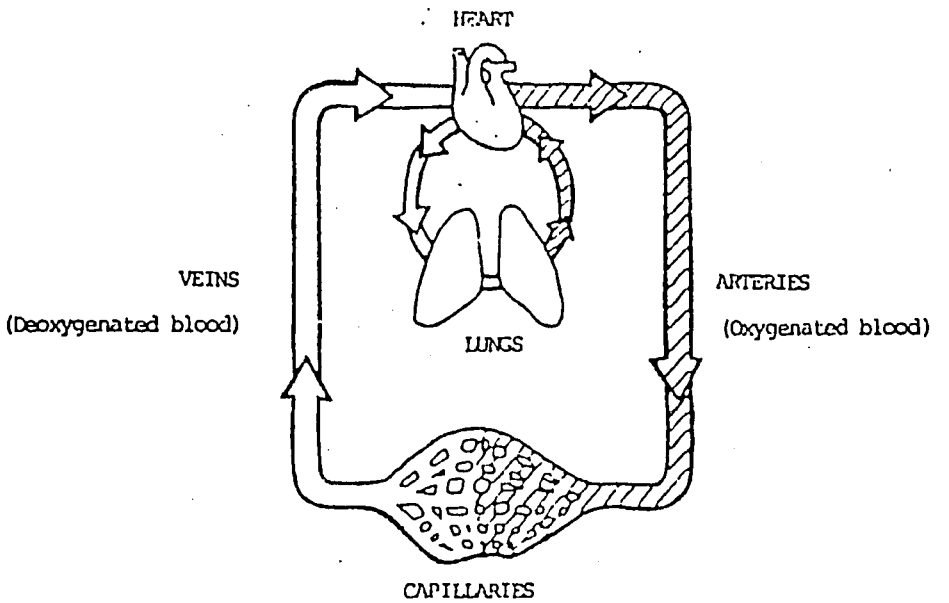
3. It is divided into 3 halves:

   a. Right half - receives deoxygenated blood from body and forces it through the lungs for exchange of gases (CO_2 & O_2).
      (1) Right auricle - receives blood from body
      (2) Right ventricle - pumps blood to lungs.

b. Left half - pumps oxygenated blood to the tissues in the rest of the body to bring O2 and pick up CO2 and other wastes.

(1) Left auricle - receives blood from lungs.

(2) Left ventricle - pumps blood through rest of body.



B. Blood vessels arteries

1. Carry blood from the heart to the body tissues.

a. Artery blood always contains oxygen (except for arteries leading to lunges).

b. Blood is pumped through arteries by the heart.

2. Arterial blood:

a. Bright red colour (from oxygen)

b. Comes cut fast, in spurts

3. Main arteries (Pressures points)

a. Temporal (side of head)

b. Carotid (neck)

BEST AVAILABLE DOCUMENT

c. Brachial (upper arm)

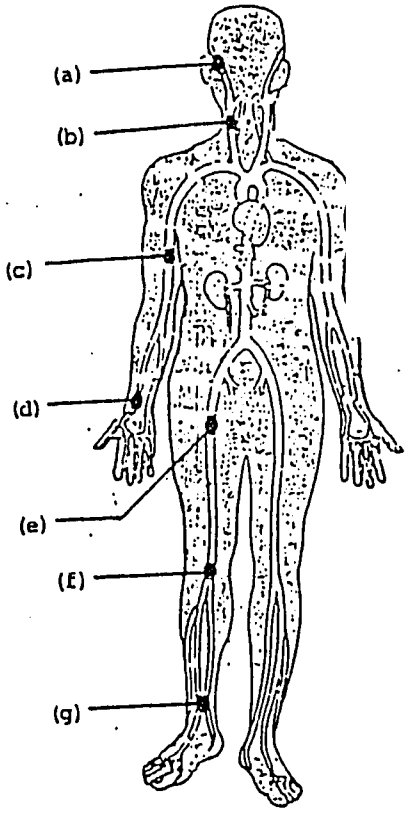
d. Radial (wrist)

e. Femoral (groin)

f. Popliteal (back of knee)

g. Tibial (above ankle)

For <u>sever bleeding</u>, it may be necessary to apply pressure to some of these main arteries to stop the blood.



<u>Veins</u>

1. Carry blood towards the heart from the body

   a. Venous blood does NOT contain oxygen (except for veins from lungs to heart).

BEST AVAILABLE DOCUMENT

2. Blood in veins is able to move against gravity because of:

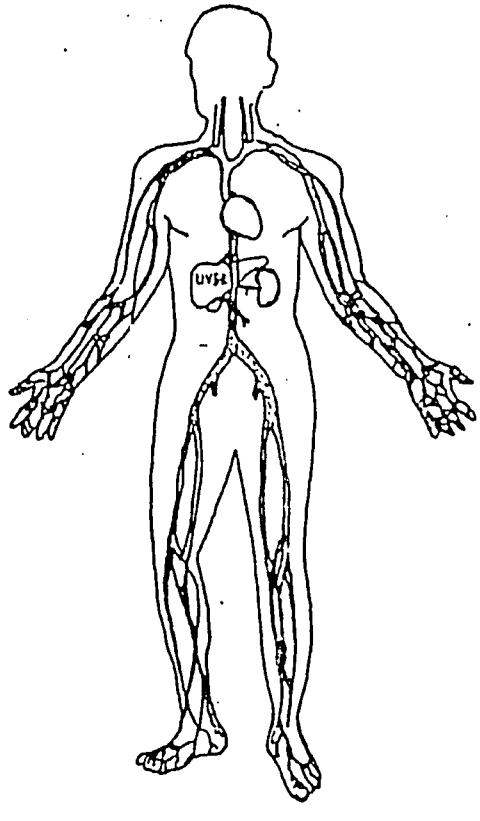
   a. Value in veins
   b. Suction of the heart when it expands
   c. Pressure on the veins by contraction of muscles

3. Venous blood:

   a. Purplish-red color (NO oxygen)
   b. Does NOT spurt - comes out in a steady stream

4. Intravenous injections are given in veins only - NOT arteries

5. Superficial veins appear as blue lines under the skin



Capillaries.

1. Very small blood vessels in which the artery ends and the vein begins.
2. Capillary walls are composed of a single layer of cells through which the exchange of gases(CO_2 & O_2) take place between the blood vessel and tissues.

BEST AVAILABLE DOCUMENT

3. Capillary blood
   a. Red color
   b. Comes out slowly (oozing(, does not spurt.

Pulse and Blood Pressure

When the heart pumps the blood through arteries the beat can be felt by touching the skin over an artery. Each time the heart pumps there is a beat. This is called the pulse.

The number of beats per minute tells how often the heart is pumping. The strength of the beat may also be important. If the pulse ius weak (difficult to feel) the patient may be dehydrated or in shock from blood loss. (Sometimes it may be difficult to feel a pulse in the arm of a healthy person however.) It is important to practice feeling a pulse.

Blood in arteries is under pressure because it is pumped through blood vessels similar to water being pumped through pipes.

Pulse and Blood Pressure

When the heart pumps the blood through arteries the beat can be felt by touching the skin over an artery. Each time the heart pumps there is a beat. This is called the pulse.

The number of beats per minute tells how often the heart is pumping. The strength of the beat may also be important. If the pulse is weak (difficult to feel) the patient may be dehydrated or in shock from blood loss. (Sometimes it may be difficult to feel a pulse in the arm of a healthy person however.) It is important to practice feeling a pulse.

Blood in arteries is under pressure because it is pumped through blood vessels similar to water being pumped through pipes.

Pressure in the arteries can be measured with a blood pressure cuff. The blood pressure will be different each time it is taken even in the same person. Sometimes blood pressure is difficult to hear even in a healthy persons.

An average normal blood pressure in an adult is about 120/80 but may be higher or lower and still be normal for the person. Some healthy people run a low blood pressure. For example, 90/60 in an adult is low but normal for some people. If a pressure is very low a patient may be in shock. If a pressure is high (over 150/90) the patient may have disease called high blood pressure. It is important to take blood pressure in many people to understand the variation.

C: Blood

Blood contains red blood cells, white blood cells, platelets and plasma which are described below. Blood does the following:

1. Blood carries oxygen from the lungs to cells.
   Oxygen in the blood is carried by the hemoglobin of red blood cells. If there are too few red blood cells it is called anemia (which means that hemoglobin is low). This can happen by not eating right or from bleeding of malaria.

2. Blood carries waste materials away from cells.
   When cells use oxygen and food they make waste products just as when wood is burned there are waste products like smoke and ashes. Cells make a gas called carbon dioxide(CO_2) which is carried by blood back to the lungs and breathed out. Breathing in supplies the body with oxygen (O_2), breathing out removes carbon dioxide.

3. Blood helps control body temperature.
   On a hot day blood vessels get bigger to help cool the body. When it is cold they get smaller to help keep the body warm.

4. Blood protects against infection
   With special cells called white blood cells that kill bacteria.

5. Blood clots to stop bleeding.
   With the help of special cells called platelets, a clot will form in 3 to 5 minutes after injury. A clot may form more easily if pressure is put over a wound.

6. Blood also contains plasma.
This is an important kind of salt water that carries red blood cells, white blood cells, platelets, nutrients, waste products and other chemicals. With diarrhea much body water is lost and the plasma may be depleted. It is important to take ORS (Oral Rehydration Solution) to replace lost salt water.

II. The Lymphatic Circulatory System

When the blood passes into the tissues by means of capillaries it flows very slowly. At that time some plasma oozes out through the walls of the capillaries. This plasma outside the capillary walls is called lymph. It washes every single living cell. This lymph cannot go back into the capillaries because of the constant pressure of the blood flowing through the capillaries. It is then collected and sent back into circulation by a separate system called the Lymphatic System. The Lymphatic System consists of:

A. Lymphatic glands
B. Lymphatic vessels
C. Lymphatic ducts
D. Lymphatic capillaries

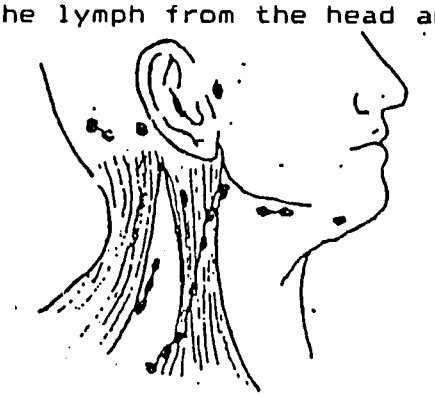
Lymphatic glands are small bodies of pea size. They are placed along the course of lymphatic vessels.

Function of the lymph glands:

1. To filter out solid particles including germs
2. To provide fresh white blood cells (lymphocytes).

The main grounds of lymph glands lie in the following places:

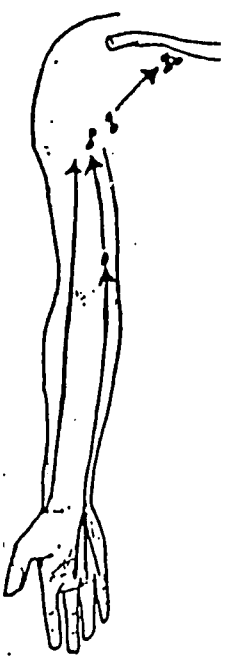
1. Neck and under the chin
   They filter the lymph from the head and mouth.



LYMPH NODES OF THE HEAD AND NECK

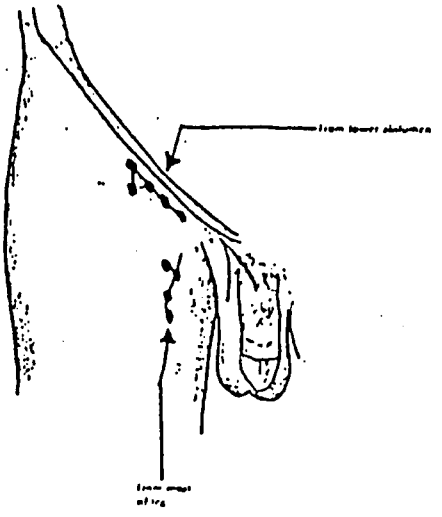
LYMPH NODES OF THE HEAD AND NECK

2. Axilla
   They filter the lymph from the upper limbs and the chest wall.



BEST AVAILABLE DOCUMENT

3. Groin
   Filter lymph from the internal organs.



4. Throat and abdomen
   They filter lymph from the internal organs.

The <u>lymphatic vessels</u> finally give their lymph into two big ducts:

1. Right lymphatic duct
2. Thoracic duct

These two ducts open into subclavian veins which open into the superior vena cava which opens into the heart.

SKELETAL SYSTEM

1. The skeletal system consists of all the bones in the body.

2. Functions of the skeletal system:

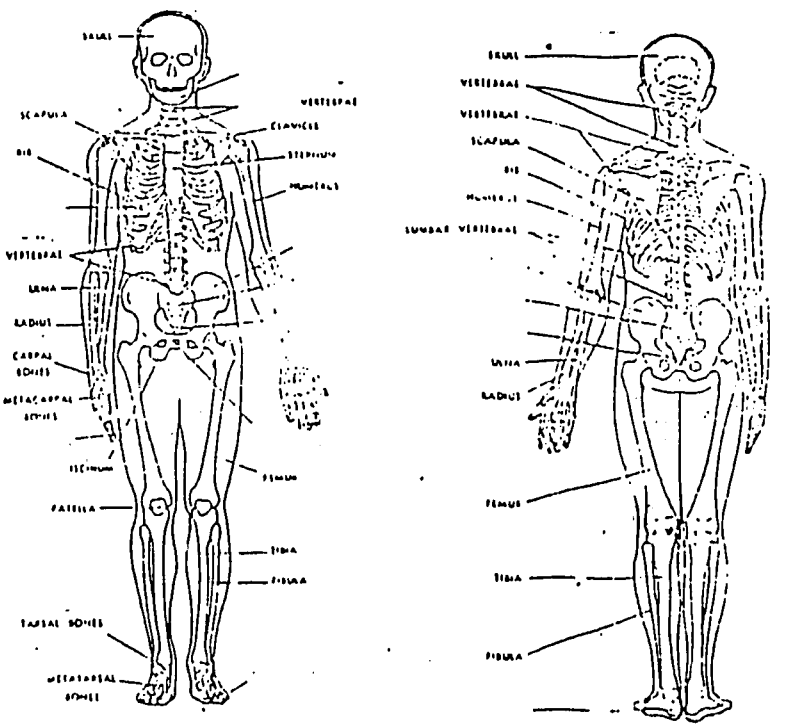
   a. Provides a strong framework for the body
   b. Gives a basic shape to the body
   c. Permits us to stand upright
   d. Supports, restrains and protects soft internal organs
   e. Produces RBCs in the long and flat bones

BEST AVAILABLE DOCUMENT

3. Characteristics of bones:

a. Made of living cells
b. Very hard because they contain calcium]
c. Living bone contains lots of nerves, so a broken bone is painful
d. Bones have many blood vessels, so a broken bone will bleed a lot

4. Bone classification:
a. Long bones
b. Short bones
c. Flat bones
d. Irregular bones



DIVISION OF THE SKELETON

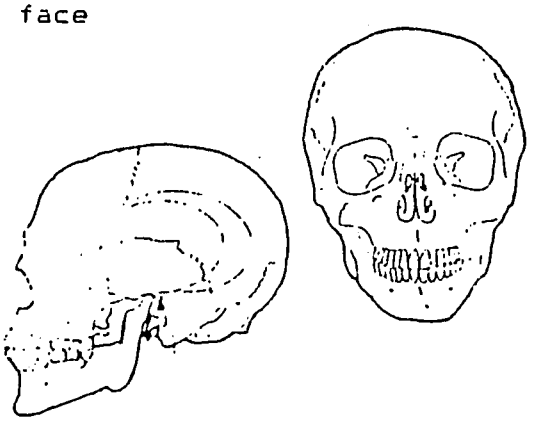
AXIAL SKELETON: bones of the skull and face

1.Cranium

a box-like cavity which protects the brains

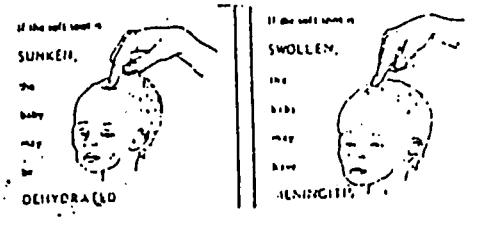
BEST AVAILABLE DOCUMENT

2.Bones of the face - consists of 14 bones which give a basic shape of the face



In babies the skull bones are not jointed tightly together.

- there is a soft spot on the top of the head towards the front.
- this soft spot should be checked during the exam of all babies
- dehydrated babies will have a sunken soft spot.
- in case of increased pressure, as in inflammation of the brain lining(meningitis), the soft spot will be swollen.

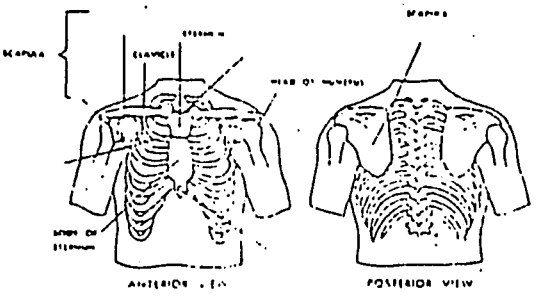


BEST AVAILABLE DOCUMENT

ONES OF THE TRUNK: sternum, ribs, vertebral column

The sternum:

a. it is a flat bone.
b. it can be felt under the skin in the middle of the chest.
c. it joins the clavicle with first seven pairs of ribs.



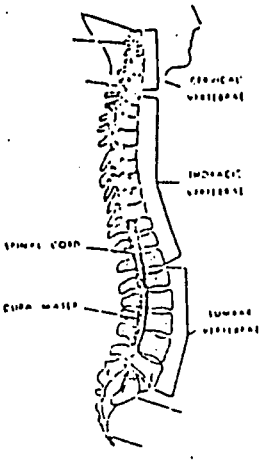
The ribs:

a. form the greater part of thorax (chest).

b. there are 12 pairs of ribs, which connect the back with the spine.
c. the first 7 pairs are directly attached to the sternum and are called the ribs.

The vertebral column:

a. Different section of the vertebral column:
   - cervical vertebrae
   - thoracic vertebrae
   - lumbar vertebrae
   - sacral vertebrae
   - coccygeal vertebrae



b. Functions of the vertebral column:
   - supports the head
   - gives base to the ribs
   - gives protection to the spinal cord is flexible and gives free movement to the trunk
   - gives attachments to various muscles

BEST AVAILABLE DOCUMENT

BONES OF THE SHOULDER AND UPPER EXTREMITY: clavicle, scapula, humerus, radius, ulnar, hand bones

1. The clavicle:

   a. A long curved bone at the base of the neck which forms the front part of the shoulder.

2. a. a flat triangular bone
   b. it lies behind and over the top eight ribs
   c. it forms a joint with the humerus and clavicle

3. The humerus:

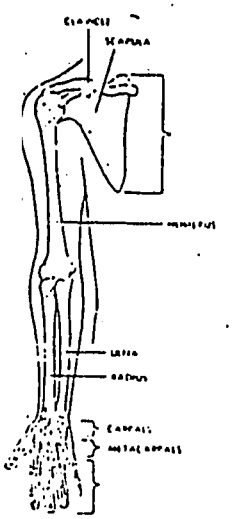
   a. the largest and longest bone of the upper limb(arm).
   b. the top joins with the clavicle and the bottom joins with the radius and ulna.
   c. Red blood cells are formed in the humerus.

4. The radius:

   a. the outer bone of the forearm (on the thumb side).
   b. lies parallel to the ulna
   c. top joins the humerus and the bottom joins the wrist bones

5. The ulna:

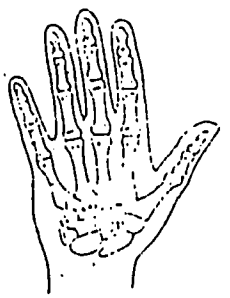
   a. Lies on the little finger side of the forearm
   b. upper end joins with the humerus and lower end joins with the wrist bones.



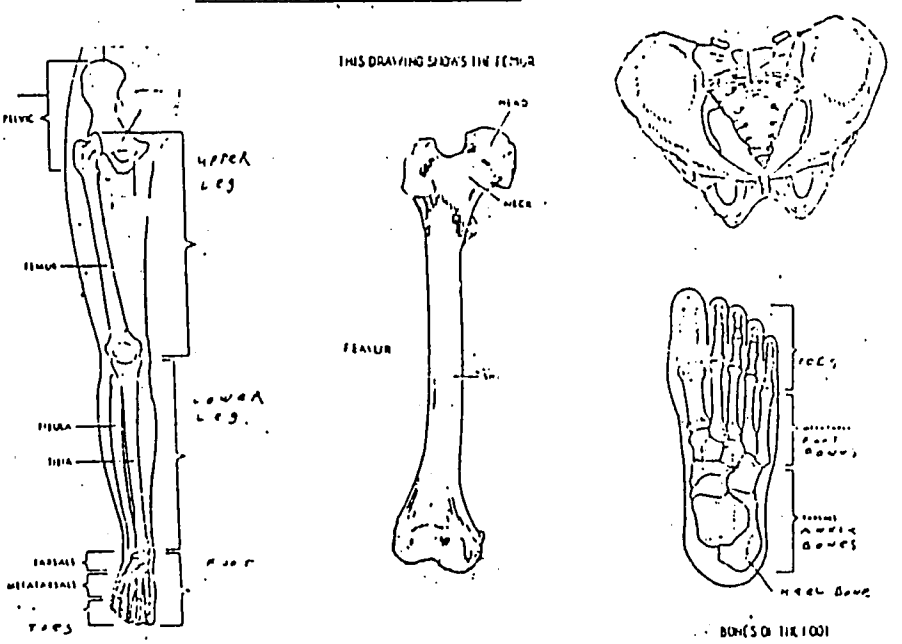
BEST AVAILABLE DOCUMENT

6. The bones of the hands:

a. The small bones of the wrist palm and fingers



BONES OF THE LOWER EXTREMITY: pelvis, femur, patella, tibia, fibula, foot bones



1. The pelvis:

a. made of 4 bones which is shaped like a basin
b. it is a flat irregular shaped bone which joins itself in the front.
c. it forms the hip joint along with the femur.

2. The femur:

a. the largest and strongest bone of the body

 BEST AVAILABLE DOCUMENT

b. the top joins the pelvis to make the hip joint and the bottom joins the tibia to form the knee joint.
c. blood cells are formed in the femur

3. The patella:

a. it protects the knee joint
b. the back surface joins with the femur
c. it gives great leverage for muscle action

4. The tibia:

a. it lies at the front and inner side of the lower leg
b. the upper end joins the femur making the knee joint
c. the lower ends join the foot bones making the ankle joint

5. The fibula:

a. lies parallel to the tibia and joins with it at both ends

6. The foot bones:
a. consist of the ankle, heel, foot and toe bones

JOINTS

1. Joints: a junction between two or more bones

2. Kinds of joints:

a. Fibrous joints - non-moveable joints (bones of the skull)
b. Cartilaginous joints - slightly moveable joints (vertebrae)
c. Synovial joints - moveable joints (hip, knee, elbow, etc.)

3. Classification of joints (according to movements):

a. Ball and socket joint - movements in all directions (shoulder, hip)
b. Hinge joint - has to and for movement (ankle, knee, elbow)
c. Pivot joint - only rotation movement (radius and ulna)
d. Gliding joint - small amount of movement (vertebrae bodies, wrist, ankle)

1. Movement of joints:

a. Flexion - bending
b. Extension - straightening
c. Adduction - movement towards the midline
d. Abduction - movement away from the midline
e. Rotation - combination of all the movements

5. Arthritis is the inflammation of a joint.

6. Every joint cavity is lined with a synovial membrane which secretes a thick sticky fluid.

a) This fluid serves to lubricate and nourish the structures forming the joint, and prevents friction between the adjoining bones.

7. Ligaments are strong cords of white tissue which connect bone to bone. There are strong ligaments at the ankle and wrist joints.

a. When an ankle or wrist is twisted, these ligaments may become torn. This is very painful and takes a long time to heal.

CARTILAGE

1. Cartilage is a firm tough, slightly elastic tissue.

2. Cartilage is found in several parts of the body:

a) It covers the surface of bones within joints.
b) It forms the bridge of the nose, and the external ear.
c) There are pieces of cartilage in the larynx, trachea and bronchi.
d) Costal cartilage connect to ribs and the sternum.
e) It forms the discs or pads between the vertebrae.

3. Intervertebral are the cartilage pads between each vertebrae.

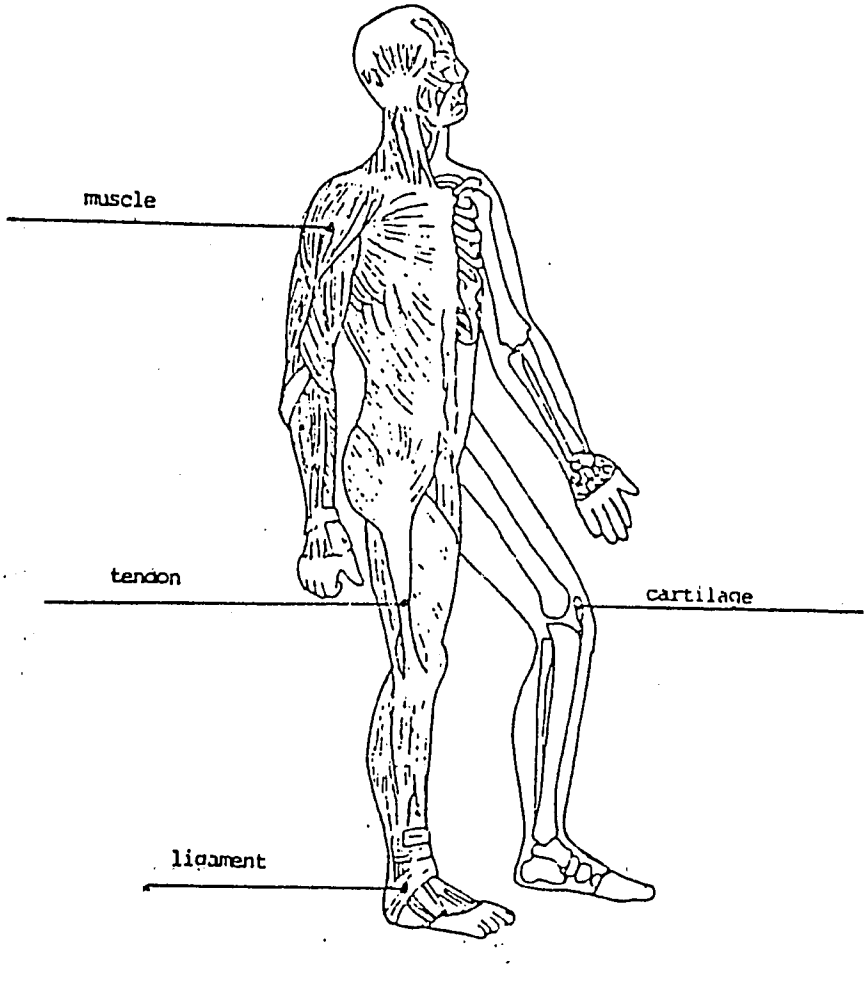
a) The protect the vertebral column by absorbing sock and concussion.

b) When a disc or crushed or ruptured (flattened) in an accident or from lifting a heavy object, it presses against or "pinches" the nerves of the spinal cord inside the vertebrae.

c) This produces pain or numbness to the body part where the nerve travels. This condition usually occurs in the lower back(sciatica), causing pain down the back of a leg. It also occasionally occurs in the neck.

MUSCULAR SYSTEM

The muscular system includes all the muscles of the body (about 700 of them). Wherever there is movement in the body, there must be a muscle to produce it.



BEST AVAILABLE COPY

Functions of the muscular system:

1. Produce movement of the body by contracting and relaxing.
2. Forms the flesh of the body and gives it much of its shape.
3. Helps hold bones together.

Muscles are divided into three types:

1. Skeletal muscles - responsible for voluntary movement of bones

   a. They are called voluntary because you can consciously control them.
   b. The term "muscular system" is used only for skeletal muscles.
   c. They provide movement for the skeleton and for the flesh of the body.

2. Involuntary (smooth) muscles - form the walls of some internal organs such as the stomach, intestines, bladder, uterus, blood vessels and respiratory tract.

   a. They function without conscious effort or knowledge - you cannot control their movement.

3. Cardiac muscle - found only in the heart.

   a. It cannot b e controlled by conscious will.
   b. All the separate cardiac muscles join as one muscle which is the heart.

Attachment of muscles:

1. Tendons - are strong bands or cords of fibrous tissue which connect muscles to bones.

2. Muscles are attached either directly or indirectly by tendons to:

   a. bones

b. cartilage - firm, strong, slightly elastic tissue (found in nose, ear, trachea, vertebral discs)

c. ligaments - a strong cord of fibrous tissue which connects bone to bone and helps hold them together.

d. skin

Actions of muscles:

1. Muscles produce movement by contracting. Muscles never push - movement is only produced by contracting and pulling.

2. The end of skeletal muscles are attached to two different bones, only one of which moves when the muscle contracts.

   a. When a muscle contracts, one end stays stationary and the other end is drawn towards it, thus moving the bone the second end is attached to.

3. Different sets of muscles work together to produce movement, by producing opposite actions.

   a. When one set contracts, the other set relaxes, which permits movement to take place.

4. When contraction occurs, the muscle becomes shorter, thicker and harder.

5. Normally, 'the muscles of the body are never completely relaxed. They are always in a state of slight contraction which is known as muscle tone.

BEST AVAILABLE COPY

6. Nerves go to muscles and tell them when to relax or contract. If the nerve to a muscle is injured, the muscle cannot move.

   a) If a patient cannot move part of the body because of nerve injury, it is called paralysis.

7. Because muscle is very active tissue, it is richly supplied with blood vessels which bring it nutrients to produce energy.

   a) Because of this rich bloods supply, injections given into the blood stream quicker than if given by mouth.

      1/ the muscles of the buttock, upper arm and outer thigh are the best muscles for intramuscular injections.

EYE * EAR

THE EYE

The eye is a very delicate and complicated organ that allows vision. It consists of the eyeball itself, plus external parts.

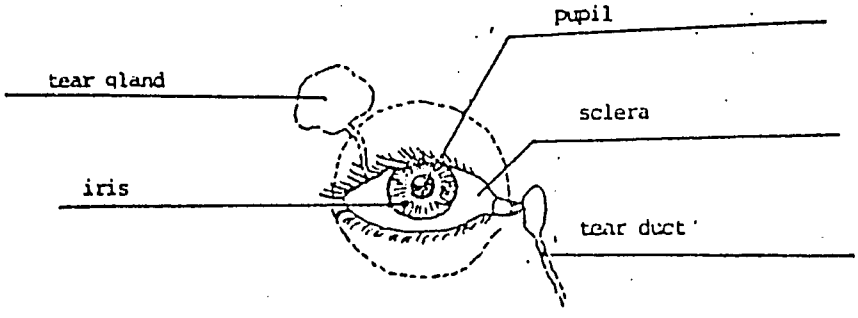
Function of the eye:

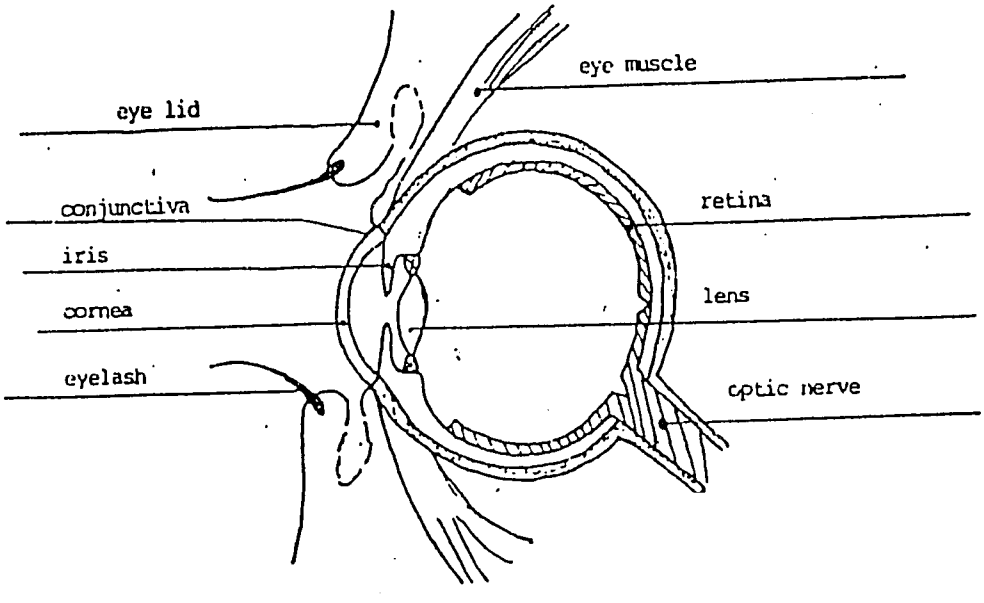
The eye receives light and passes special messages through the optic nerve to the brain which allows us to see.

1. The eye is like a camera. The light from an image goes through the lens of the camera and is focused on the back of the camera on the film.

2. When light goes through the eye, it passes through the cornea, pupil, lens and finally to the retina at the back of the eye. The image of the object is made on the retina and is passed through the optic nerve to the brain. The retina is like the film at the back of the camera.

Part of the eye





CONJUNCTIVA

1. Thin clear tissue which covers the white front part of the eye and the inside of the eyelids.

2. Conjunctivitis - information or infection of the conjunctiva. Eyes have mild pain, are very red and have pus.

SCLERA

1. THE WHITE FIRM OUTER COAT OF THE EYEBALL.

BEST AVAILABLE COPY

ɔrnea

1. Transparent layer of the eye that only covers the iris and the pupil. It acts as a window, letting light into the eye.

IPIL

1. Black hole in the center of the iris,.

2. In bright sunlight, the pupil gets smaller to decrease the amount of light that enters the eye. Too much light can be blinding.

3. When it is dark, the pupil gets bigger, to increase the amount of light entering the eye.

4. The size of the pupil is controlled by nerves from the brain acting on the iris. In a patient with a brain injury therefore, the pupils may not be equal in size or react normally to light.

IS

1. The colored part of the eye. It is a circular muscle with an opening in the centre called the pupil.

2. In actuality, the size of the pupil, which is only a hole and not solid material, depends on the contraction and relaxation of the iris muscle. When the iris contracts, the pupil gets bigger, and when the iris relaxes, the pupil get smaller.

ENS

1. The lens is made of clear elastic tissue and lies behind the iris.

2. It focuses light on the retina. It also alters the focus of the eye for near and far vision.

3. In old age, the lens becomes gray, cloudy and hard, causing blindness because light can no longer pass through to the retina. This is called a cataract. In a patient with a cataract, the pupil no longer appears black - it looks gray or opaque.

Retina

1. Inner layer of the eye. It is special tissue made of the endings of the optic nerve.

2. Images made on the retina are passed through the optic nerve to the brain, enabling us to see.

EYE FLUIDS

1. The eye contains watery fluid in the space in front of the lens, and a' Gelly-like material in the space behind the lens. These give shape to the eyeball.

2. Glaucoma The buildup of fluids of the eye causing increased pressure. Untreated, it can cause blindness.

Protection of the eye:

1. The delicate eye is protected by the eyebrows, eyelids, eyelashes, the conjunctiva and the tear apparatus.

2. The tear apparatus consists of tear glands and tear ducts which function to keep the eye moist, clean and free of germs.

   a. tears are made in the tear glands and constantly flow across the eyes to keep them clean. The tears collect dust and microbes and drain them towards the tear duct which leads to the nose and then to the outside.

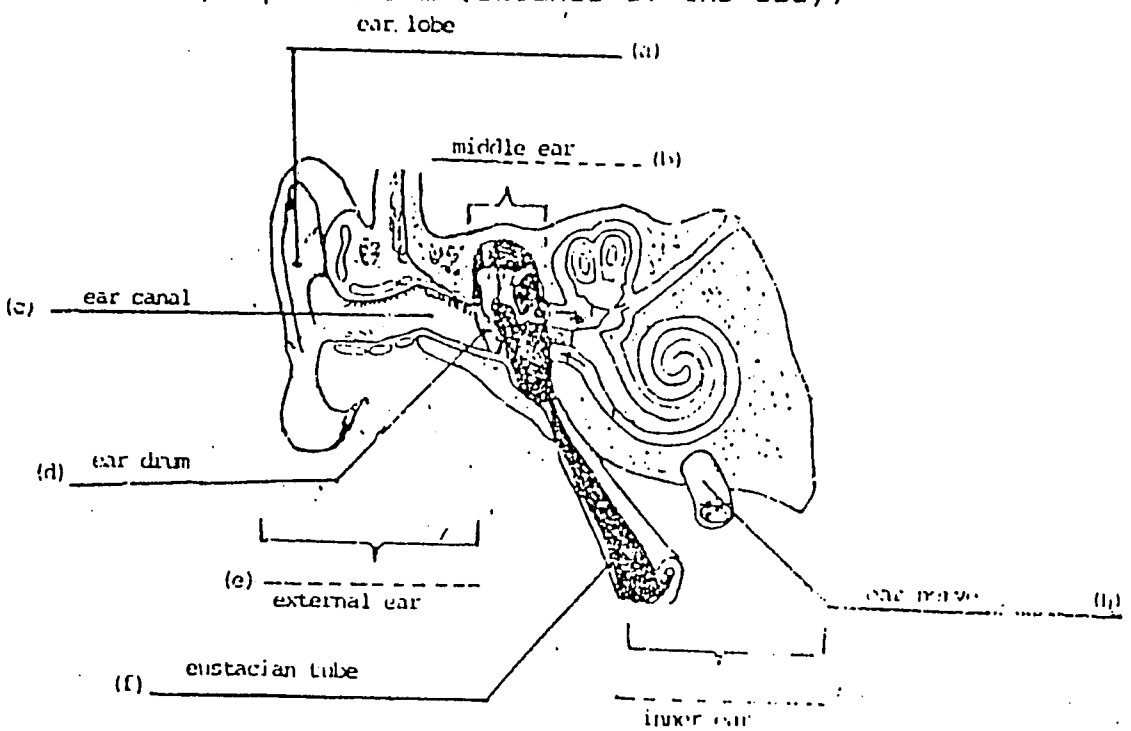
   b. Blinking also washes the eye with tears which helps the dirty tears flow towards the tear ducts.

THE EAR

1. The ear consists of three parts:
   - external ear
   - middle ear
   - inner ear

2. <u>Functions of the ear:</u> a) Hearing

b) equilibrium (balance of the body)



EXTERNAL EAR

1. Includes the earlobe and the ear canal which collect sounds and direct them to the eardrum.

2. The ear canal is lined with skin containing wax glands. This wax collects dust and dirt and may block the ear canal at times.

MIDDLE EAR

1. The middle ear is a cavity of air in the skull bone.
2. It starts with the eardrum a thin piece of tissue at the end of the ear canal.

3. When sound comes through the external ear, it strikes the eardrum and makes it vibrate.

4. This vibration is felt by three bones in the middle ear and is passed on to nerve endings in the inner ear that send a message to the brain to allow hearing.

a. If the eardrum is broken, these vibrations will not be able to occur, so hearing cannot take place.

5. At the top of middle ear cavity is an opening which leads to the mastoid air spaces - cavities in the bone around the ear.

6. At the bottom of the middle ear cavity is the eustacian tube which connects to the throat.

a. This tube allows air to pass from the middle ear to the outside via the throat, so there is equal pressure on both sides of the eardrum.

b. It there is a change in air pressure, it causes your eardrum to buldge. You can feel your ears "popping" when this occurs.

7. Microbes can spread from the throat to the ear through the eustacian tube and make the middle ear infected. This is called otitis media.

8. Microbes can also travel through the eustacian tube from the throat and go into the mastoid air spaces. This infection is called mastoiditis.

INNER EAR

1. The inner ear contains fluid and is lined with nerve endings.

a) The vibrations from the middle ear move through the liquid to the nerve endings which send messages to the brain via the hearing nerve, enabling us to hear sound

2. The inner ear also helps us maintain our sense of balance.

a) Because of this, if someone has a problem with their inner ear, dizziness and unsteadyness can occur.

DIGESTIVE SYSTEM

Digestive system:

1. A tube over 30 feet long, beginning with the mouth and ending with anus.

2. It is lined with a mucous membrane which secretes mucous which lubricates the passage.

3. Formed by: -month
   - pharynx
   - esophagus
   - stomach
   - small intestine
   - large intestine (ending with rectum and anus)

4. Also includes the following organs that aid in digestion:-
   - Liver
   - Gallbladder
   - pancreas
   - (spleen)

5. Function of the digestive system: to break down foods into simple sugars, proteins and fats that car be used by cells for energy, growth and repair.

6. Process of digestion (breakdown of food):

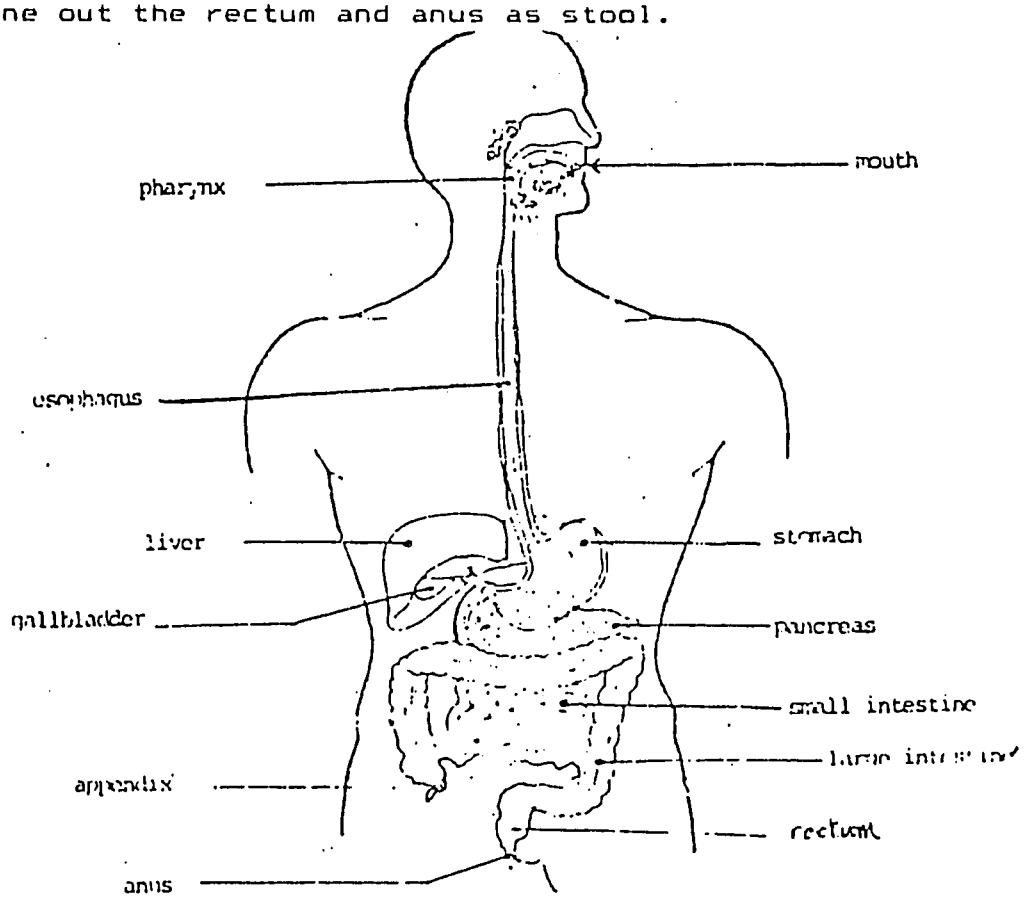
   a. Food is chewed into small pieces in the mouth, swallowed and carried down the esophagus to the stomach.

   b. The stomach contains acid and other chemicals which break the food into smaller pieces before it moves to the small intestine.

   c. There, the pancreas secretes enzymes and the liver and gallbladder also secrete chemicals to prepare food particles for absorption through the small intestine wall into the bloodstream. The sugars, proteins and fats are

then carried to the cells for use.

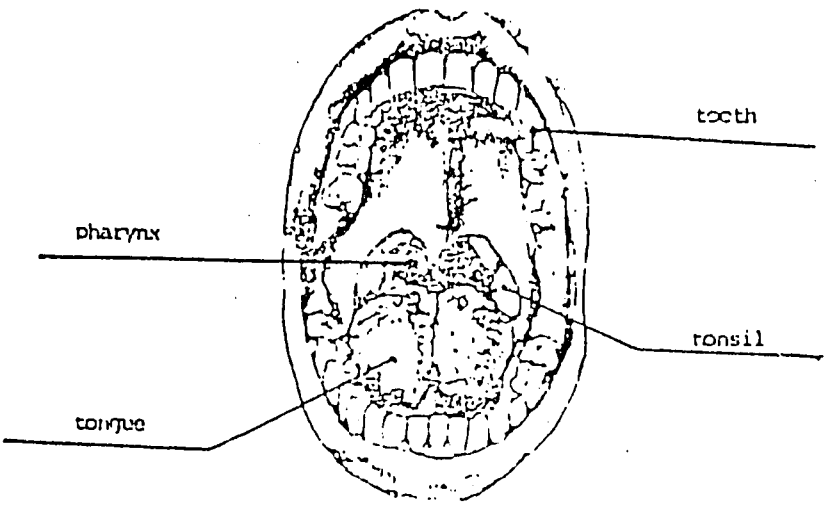
d. Food that cannot be digested passes through the small intestine into the large intestine where water is absorbed. Undigested food particles eventually pass from the large intestine out the rectum and anus as stool.



The mouth

An oval cavity at beginning of digestive tract which contains:

- teeth
- tongue
- salivary glands



 BEST AVAILABLE COPY

Teeth

1. there are 2 sets of teeth:

a. Temporary or "milk teeth"
- 20 in number (10 in each jaw)
- begin in 6 th or 7th month and end between 2-24 years

b. Permanent Teeth

- 32 in number (16 in each jaw)
- Begin about 6 years old and end at 14 years old
- "wisdom teeth" come between 18-25 years old

2. Function of teeth biting and grinding of Food to break it down

Tongue:

1. Muscular organ of floor of mouth which contains the taste buds.

2. Functions of the tongue:

a. helps in grinding up of food
b. helps in swallowing food
c. helps in speaking
d. is the organ of taste.

Salivary glands:

1. They give their secretion saliva into the mouth

2. Functions of saliva:

a. moistens food making it easy to swallow
b. dissolves particles of food
c. contains an enzyme which changes some starches into sugar.

THE PHARYNX

1. A large tube of muscle and membranes which lies behind the nose, mouth and larynx.

2. On each side are tonsils, which are lymph tissues which contain lymphocytes. They help fight off infection

3. The eustacian tubes are located on the sides of the pharynx and extend to the middle ear. These tubes open when swallowing.

THE ESOPHAGUS

1. A muscular tube 9-10 inches long from the pharynx to the stomach.

2. It lies behind the trachea and heart, and in front of the vertebrae.

3. It goes through an opening in the diaphragm muscle to open into the stomach.

THE STOMACH

1. A muscular bag lying in the upper abdomen under the diaphragm on the left.
2. Food remains in the stomach from hour to several hours.

3. Function of the stomach:

   a. Chums up food to further break down and soften it.
   b. Secretes a chemical (intrinsic factor) which joins with the extrinsic factor (from food we eat) to produce a substance which prevents anemia (this is stored in the liver).

   c. Secretes gastric juice, water, hydrochloric acid, renin and pepsin. They break down food further.

THE SMALL INTESTINE

1. A thin-walled muscular tube about 20 feet long, connecting the stomach to the large intestine. It has three parts:

   a. Duodenum (bile duct from liver and pancreatic duct open into it)
   b. Jejunum
   c. Ileum

2. It contains glands which secrete intestinal enzymes which break food.
3. Functions of the small intestine:

   a. Digestion
   b. Absorption

   - amino acids, glucose, fatty acids are absorbed into the capillaries and go to the liver.
   - from the liver they travel to the heart and rest of the body.

THE LARGE INTESTINE

1. Large muscular tube about 5-6 feet long with 3 parts:
   - cecum
   - colon
   - rectum

2. The appendix is a small thin tube about 4 inches long attached to the cecum.
   - it contains lympn tissue which often becomes inflammed.

3. The rectum is the lowest 5 inches of the large intestine which ends in the anus, the opening to the outside of the body.

4. Functions of the large intestine:

   a. Absorption.

- after digestion and absorption of food in the small intestine, the rest of the food which is not digested goes into the large intestine (water, salt, glucose, bacteria and cellulose).

- The water, salt and glucose are absorbed through the walls of the large intestine.

- The remainder is turned into a paste made of cellulose and bacteria which forms the feces.

b. Defecation.

- When the feces enters the rectum, a sensation is produced which notifies the person to move his bowels.

- if a person does not move his bowels regularly, constipation occurs, because the longer the feces stays in the rectum, more water is absorbed and the feces become very hard.

ORGANS THAT AID DIGESTION

THE LIVER

1. It is largest gland in the body, weighing about 3 pounds.
2. It is a soft solid organ, chocolate color, which is richly supplied with blood.
3. Located in the upper abdominal cavity on the right, directly under the diaphragm.
4. A large vein enters the liver carrying food collected from the stomach, pancreas, intestines and spleen.
5. The bile duct (a small tube) from the liver joins with another tube from the gall bladder to form the common bile duct, which carries bile to the small intestine.
6. Functions of the liver:

   a. Stores glucose as glycogen. The liver changes extra glucose which is not needed by the body tissues, into glycogen. When the body needs this sugar again, the liver changes it back into glucose.

- This process is controlled by a hormone called insulin, which is produced by the pancreas.

b. Secretion of bile.
   - bile is secreted by the liver cells and sent to the gallbladder to be stored and sent to the small intestine.

c. Formation of urea.

   - amino acids are brought to the liver, where some parts are changed to urea and uric acid.
   - The uric acid and urea are filtered out by the kidneys and sent out in the urine.

d. Prepares fats for combustion or use in the body.
e. Stores and distributes the substance which prevents anemia.
f. Produces beat.
g. Forms antibodies which protect body against disease.

HE GALLBLADDER

1. A pear-shaped ...Tissue bag, about 3-4 inches long, lying next to the liver.

2. It can hold 1-2 ounces of bile.

3. It's walls can absorb water, so bile becomes concentrated.
4. Functions of the gallbladder:

   a. Stores bile
   b. Absorbs water so bile becomes more concentrated
   c. Adds mucous to the bile from its mucous membrane lining
   d. Passes the mucous to the small intestine to help digestion of bile
5. Bile
   a. Thick green fluid secreted by liver and stored in gallbladder.

b. The liver secretes about 40 ounces of bile a day.

c. Bile contains water, salts and pigment.

- bile pigment comes from the hemoglobin of old RBCs
- bile pigments give color to the feces and urine

d. Function of the bile:

- breaks down fats
- stimulates peristalsis (movement in digestive tract acts as a decderant for the feces.

THE PANCREAS

1. A gland about 7 inches long above the small intestine.

2. Function of the pancreas:

a. Secretes a hormone (insulin) which controls the breakdown of carbohydrates.

- insulin is essential to allow the liver and muscles to use and store glucose.

HE SPLEEN

. A dark purple gland lying in the upper left side of the abdomen.

It is thought to help fight germ infections and becomes enlarged in certain diseases like malaria and typhoid.

It is not essential to life and can be removed by operation if necessary.

Function of the spleen:

a. Forms red blood cells and stores them

b. Produces fresh white Blood cells

c. It is graveyard for old red blood cells, which are destroyed and the hemoglobin is sent to the liver.

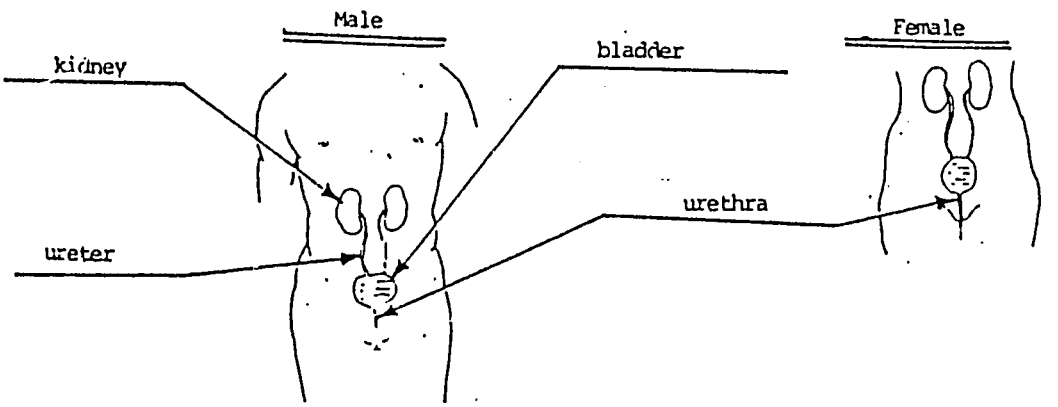
 BEST AVAILABLE COPY

THE URINARY SYSTEM

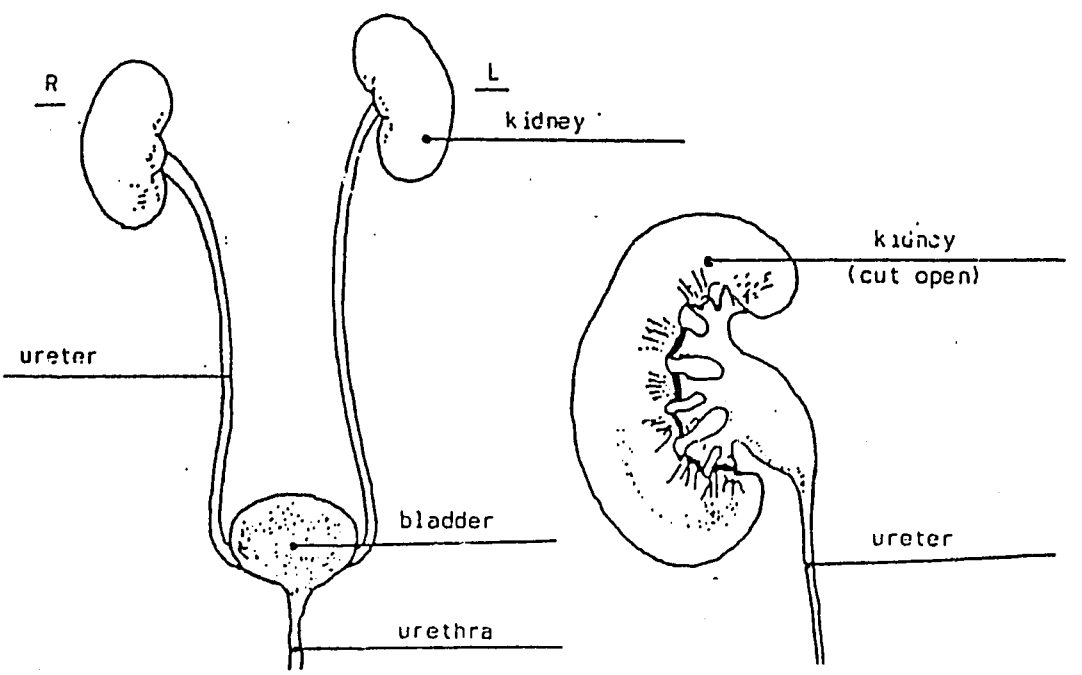
The Urinary System includes:

- kidney
- ureter
- bladder
- urethra

Function of the Urinary System: to remove waste products and extra water from the body as urine



Urinary System



BEST AVAILABLE DOCUMENT

THE KIDNEYS

1. Kidneys are 2 bean shaped organs in the back of the abdomen.

2. They are surrounded by a thick pad of fat to protect them from cold and injury.

3. The right kidney is a little smaller and lower than the left kidney.

4. Functions of the kidney
   a) Filters the blood and forms the urine
   b) Removes excess salts. urea, excess water and other harmful things like bacteria, toxins and drugs.
   c) maintains the proper reaction of the blood

      1/ blood reaction is alkaline
      2/ urine reaction is acid

5. Normal urine consists of :

   - water 96%
   - Salts 2%
   - Sugar none
   - Urea 2%
   - protein none

   Specific gravity 1.015 - 1.025 color - pale yellow (depends on concentration) reaction - slightly acid.

URETERS

1. The ureters are 2 fine tubes which carry the urine from the kidneys to the bladder.

2. If there is solid material in the urine. such as a blood clot or a kidney stone the muscles of the ureters go into spasm and cause violent pain called renal colic.

HE BLADDER

1. The bladder is a muscular bag which stores the urine for a short time.

2. It lies in front in the pelvic cavity,but when it is full, it rises into the abdomen.
   a) It is important before an abdominal operation that the bladder should be emptied so the surgeon's knife will not cut it.
3. The bladder normally holds 20 ounces (600cc) of urine without difficulty.

4. The bladder has three openings - 2 for the ureters and 1 for the urethra.

HE URETHRA

1. The urethra is the tube connecting the bladder to the outside of the body.

2. It is about 2 inches long in the female and 7-9 inches long in the male.

3. It goes straight downward in the female, and takes a curved course through the prostate gland in the male.

4. The male urethra is the common passage tube for both urine and semen.

IE PASSAGE OF URINE:

1. The urine dribbles continuously into the bladder through the ureters from the kidneys.

2. When the bladder is full, it contracts and the stored urine is passed through the urethra.

3. The desire to urinate is due to increased pressure in the bladder from the stored urine.

4. The urethra has two sphincters or muscles at either end which are normally closed, making it possible to hold urine for a long period.

5. The pressure in the bladder from a large amount of urine sends a message along the nerves to the brain which relaxes the sphincter muscles so urination occurs.

SKIN

The skin is the largest organ of the body. It completely ncloses the other organs and tissues. It is waterproof and irtight.

Functions of the skin:

1. Protects the body.

   a) forms a protective barrier so bacteria cannot enter the body.
   b) protects from harmful sun rays.
   c) protects from minor injury.

2. Regulates body temperature.

   a) when body is hot, it sweats.
   b) The evaporation of sweat cools the body, because as the water turns to vapor, extra heat goes out with it.

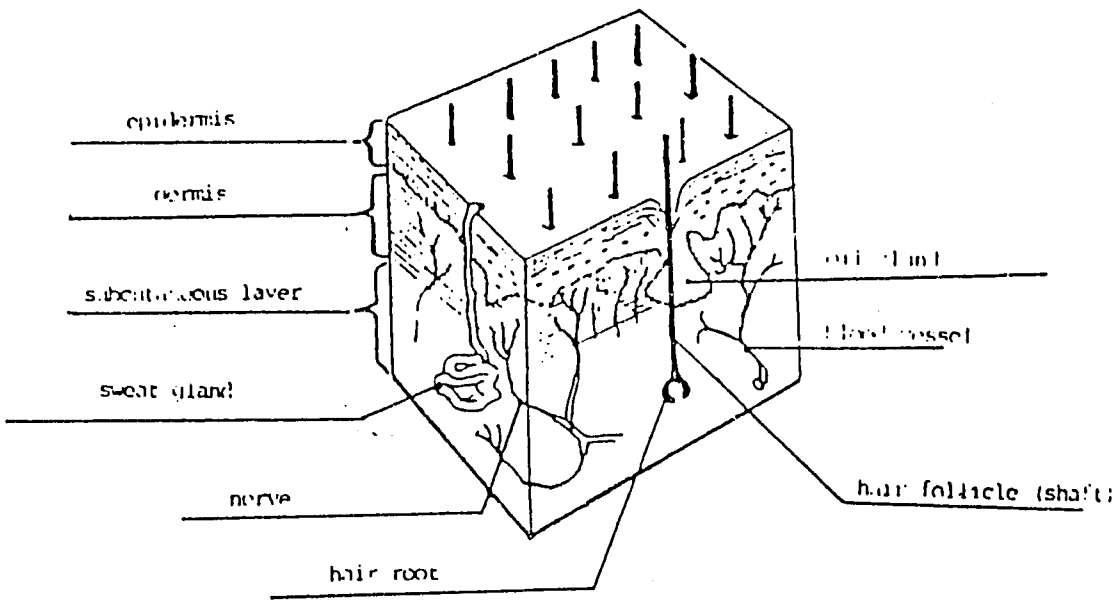
3. Feels sensation

   a) different nerves in the skin let us feel the following sensations, and therefore help prevent injury:

   - touch (closest to skin in fingertips and near hairs)
   - pressure (deeper in the skin)
   - pain
   - heat and cold (appear all over the body)

4. Eliminates certain waste products (water, salts, acids)

5. Changes sunlight to Vitamin D.



The skin consists of two layer:

1. Epidermis - outer layer of skin
2. Dermis - thicker inner layer of skin.

Epidermis:

a) made up of sublayers.

b) skin cells are formed in the bottom sublayer
- as they multiply, they push up towards the top layer
- as they move upwards, they dry and then flake off

2. Dermis:

a) Contains blood vessels, nerves, sweatglands, oil glands and hair follicles.

b) There are fibers in the dermis which extend into the subcutaneous layer to anchor the skin to the body.

Sweat gland:

1. Found over entire skin, but most numerous in palms, soles, forehead and armpits.

BEST AVAILABLE DOCUMENT

2. The seat glands begin in the subcutaneous layer and open onto the skin.

3. The sweat glands extract salts, water and acids from the blood in the many capillaries that surround them. These wastes are excreted by the sweat glands as perspiration.

Oil glands

1. Located all over body except for the soles and palms.

2. They connect to the hair follicles and secrete oil that keeps the skin soft and keep the hair from drying and becoming brittle.

3. When you are cold or frightened, the hairs are pulled straight by a muscle, and oil is ejected onto the skin to prevent heat loss.

   a) When pushed up, the oil glands form "goosebumps"

EFINITIONS

Melanin - cells in the skin that give the skin its color.

Scar - tissue that grows back when a wound heals

a) not normal skin tissue, but hard connective tissue

b) scars appear white because there is no blood supply there.

Macule - a flat colored or discolored area of skin (example: freckle)

Papule - small, well defined, slightly raised area of skin (goosebump)

Vesicle - a small,raised, well defined area that contains clear fluid (blister)

Pustule - superficial elevated area of skin containing pus

Ulcer - hole in the skin

Fissure - crack in the skin

Erythema - reddening of the skin

Pruritis - itching

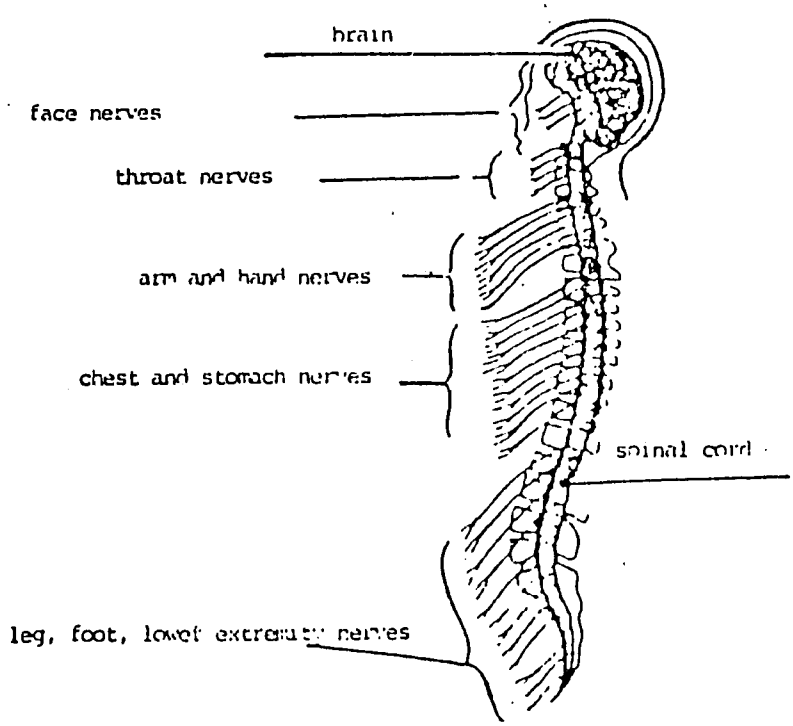
Note: 1. Some skin problems are caused by diseases or irritations that affect the skin only (ringworm, diaper rash, warts)

2. Other skin problems are signs of diseases that affect the whole body (rash of measles or sore dry skin patches from malnutrition).

3. Certain kinds of sores or skin conditions may be signs of serious diseases (tuberculosis, syphilis or leprosy).

THE NERVOUS SYSTEM

The nervous system as the control and communication system of the body. It consists of the brain, spinal cord and the nerves.



Functions of the nervous system:

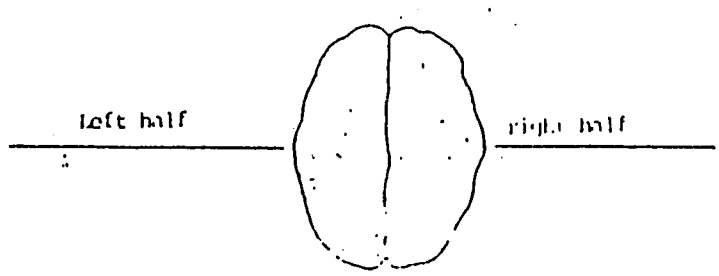
1. Controls movements and actions of the entire body.
2. Starts and coordinates physical reactions to the environment.
3. Controls involuntary muscles and organs like the heart and lungs.

4. Maintains a balance of the body (having it work smoothly as a whole unit).

The Brain

1. The brain is the center of control for the whole body. It is like a switchboard sending and receiving messages (along the spinal cord and nerves) to and from all parts of the body.

Top view of brain

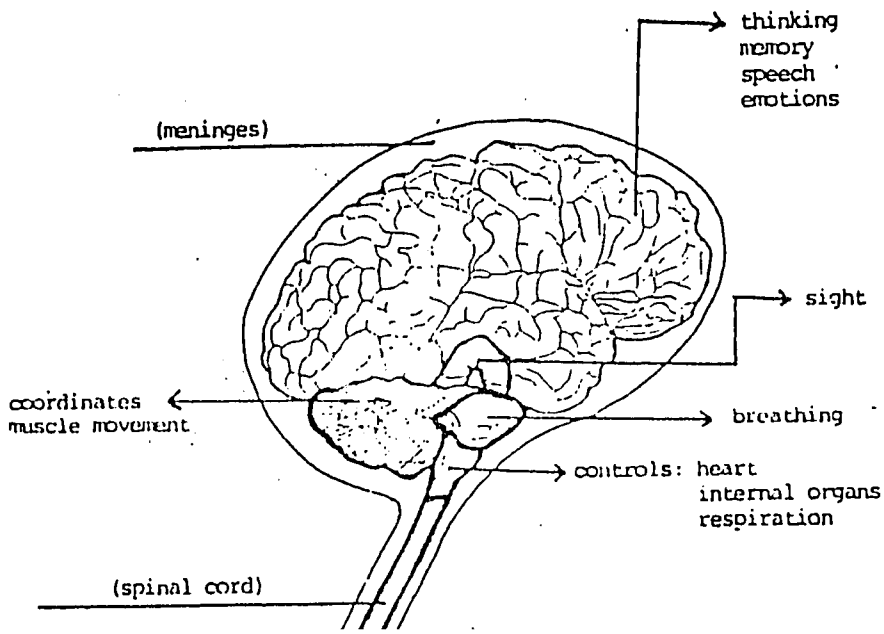


2. The brain is divided as half, with a right and left side. The right side controls activity and movement of the left side of the body, and the left side of the brain controls the right side of the body.

a)Therefore, if a person has an injury to the left side of his brain (from stroke or gunshot), the actions of right side of his body would be affected (paralysis, weakness, etc.)

3. The brain is divided into several areas which control different functions of the body.

Functions of different brain areas:



a) with medical problems of the brain or with traumatic injury to part of the brain, the functions of that part will be affected.

- Injury to the front part of the brain will affect the memory, speech, thinking and emotions.

- Injury to the area at the base of the neck is very serious and may lead to death because it will affect breathing and the heart.

- With fits or seizures, there is an electrical problem in a certain brain area which causes the specific signs/symptoms.

4. The brain and spinal cord are both covered with a continuous membrane called the meninges. Fluid circulates between the meninges and the brain/spinal cord. Meningitis, a serious disease is the inflammation of the meninges.

The Spinal cord

1. The spinal cord is the nerve center in the body which

carries messages to and from the brain and nerves. All nerves from different body areas lead to the spinal cord.

2. The spinal cord is protected by the vertebrae of the spine. It travels through the middle of the vertebrae.

a) If the spine is broken, the person may not be able to feel or move parts of his body because the nerves coming from the spinal cord to that body part may have been damaged.

b) It is very important to carefully move a patient with a neck or back paralyzing the patient.

c) Sometimes part of the spine presses against the root of the sciatic nerve in the spinal cord. This nerve comes from the lower spine and goes down the leg. The may cause symptoms such as severe leg pain,weakness or numbness.

The nerves

1. Nerves carry messages from the brain to parts of the body and from the body back to the brain.

a) For example, the brain may send a message down a nerve to the leg telling it to move. Also if the foot is injured, a message that there is pain goes up the nerves from the foot to the brain.

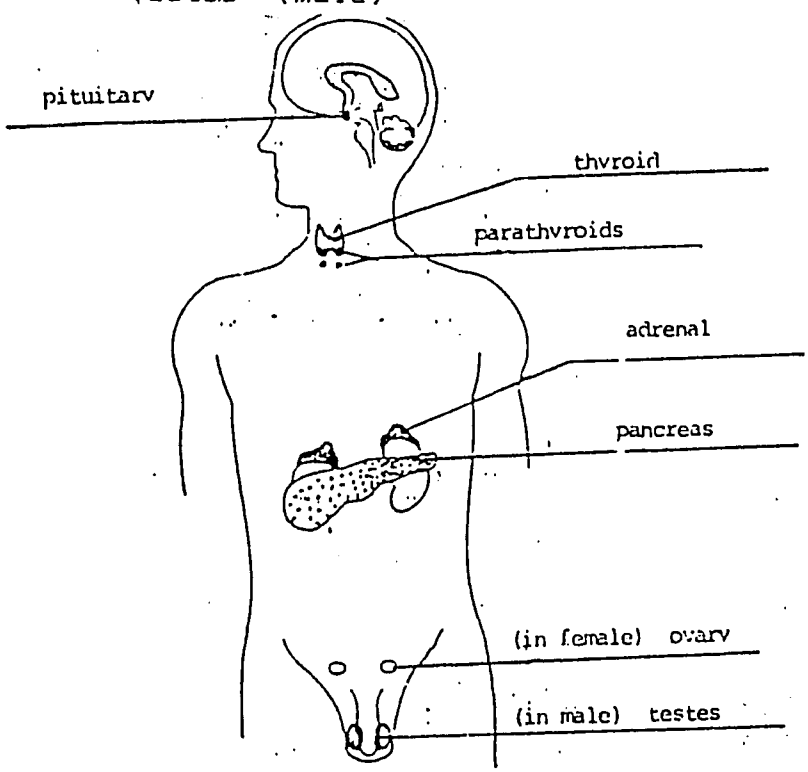
b) Nerves go to muscles and tell them when to relax and when to contract. If the nerve to a muscle is injured, the muscle cannot move. If a patient cannot move part of the body because of nerve injury, it is called paralysis.

2. If a nerve has been completely cut in half (from a broken spine or a bullet), the nerve does not grow back together again, and the person will be paralyzed for life.

THE ENDOCRINE SYSTEM

The endocrine system consists of organs called glands which secrete chemicals called homones through the bloodstream to all parts of the body.

<u>endocrine glands:</u> - thyroid - Adrenal
- Parathyroid - Pancreas
- Pituitary - Ovaries (Female)
- Testes (male)



<u>Hormones</u> Chemicals which assist the movement of various other substances through the cell walls so that the body will function normally.

a) Endocrine glands secrete hormones directly into the bloodstream (not just to a special organ), so the hormones reach every part of the body.

b) Hormones often work together, so if one endocrine gland is not working properly, another endocrine gland may not work properly either, causing interference with normal body functions.

<u>THYROID</u>

BEST AVAILABLE DOCUMENT

1. Located in the neck in front of the trachea.
2. Secretes hormones containing iodine which regulate:

- physical and mental growth
- heart rate
- Blood pressure
- oxidation
- temperature
- glucose absorption
- use of glucose in the body.

Parathyroid

1. Four glands which are all located next to the thyroid.
2. Parathyroid secretions control:
- use of calcium in bone growth, muscle tone and nervous activity.

Pituitary

1. Located at the base of the brain
2. Secretes hormones which influence other glands.
3. The pituitary gland regulates:

a) skeletal growth
b) development of reproductive organs
c) secretions from the ovaries and testes
d) stimulation of mammary glands and testes
e) blood pressure
f) the performance of smooth muscle
g) the reabsorption of water by the kidneys
h) the functioning of the adrenal cortex (which becomes more active during stressful times).

4. Pituitary disorders may result in two diseases: gigantism or dwarfism (person grows very large or very small).

Adrenal

1. Located on top of the kidneys.
2. Secrete a hormone called cortisol, which regulates the metabolism and balance between salt and water levels.

Pancreas

1. Located in the abdomen near the stomach.
2. Secretes insulin which controls the level of sugar in the blood.
3. When the insulin level in the blood is low, a person will have a disease called sugar diabetes.

Ovaries

1. Found only in women - part of the reproductive system.
2. They secrete two hormones:
   a) Estrogen - which produces female characteristics and starts female body functions
   b) Progesterone - which affects the lining of the uterus.

Testes

1. Found only in men in the scrotum - part of male reproductive system.
2. They secrete the male hormone called testosterone, which controls:

   a) The growth of body hair and beard
   b) Body size
   c) The deepening of the voice.

ineal

1. Very small gland located at base of brain
2. Function is not known, but it is very active in the metabolism in the body.

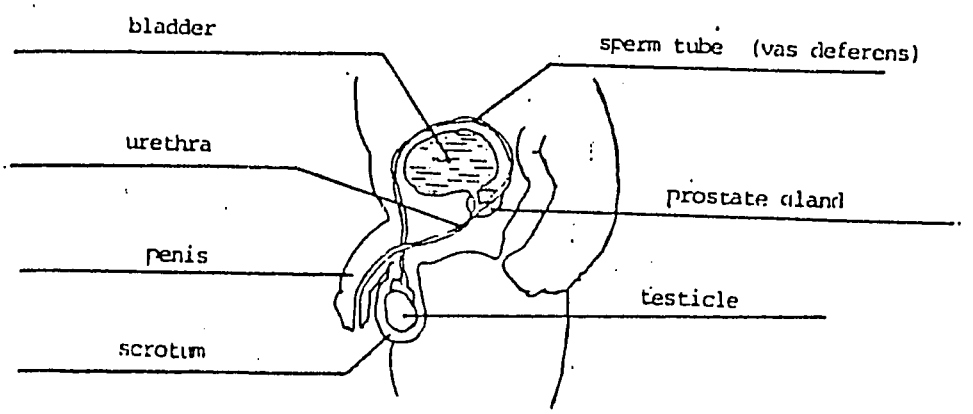
hymus

1. Not always classed as an endocrine gland.
2. The gland develops mostly during early childhood.
3. Apparent purpose is to start antibody formation in the blood.

THE REPRODUCTIVE SYSTEM

Male and female reproductive systems consist of special organs necessary for the creation of a baby. These organs also help the baby develop and grow inside the mother.

Parts of the Male reproductive system:

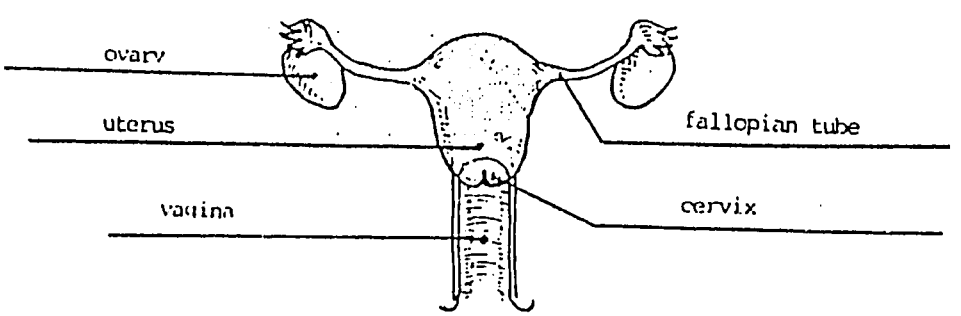


1. The testicles produce sperm, microscopic cells with tails, which join with the egg of a woman and make her pregnant.

   a) Millions of sperm are produced each time, but only one sperm is needed to fertilize an egg.

2. The scrotum is the sac that holds the testicle.
3. The prostate gland helps make a liquid called semen which carries the sperm.
4. The vas deferens is a tube leading from the testicles to the urethra through which the sperm pass.
5. the penis is the male sex organ through which the sperm pass, via the urethra, to the outside of the body.

Parts of the FEMALE reproductive system:



. The ovaries are two almond shaped glands, one on either side

BEST AVAILABLE DOCUMENT

of the lower abdomen. The ovaries produce eggs which are fertilized by sperm.

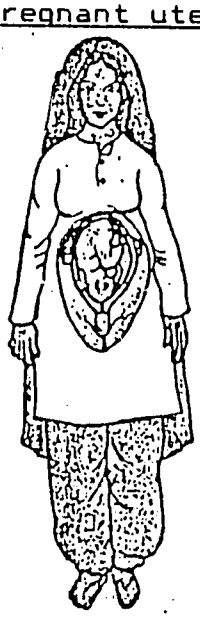
a) fertilization takes place in the fallopian tubes which carry the egg from the ovary to the uterus. The fertilized egg attaches to the wall of the uterus and grows into a baby in about nine months.

2. If there is no fertilized egg in a woman of child-bearing age, the uterus sheds its internal lining every month with a small to moderate amount of blood. This is called a menstrual period.

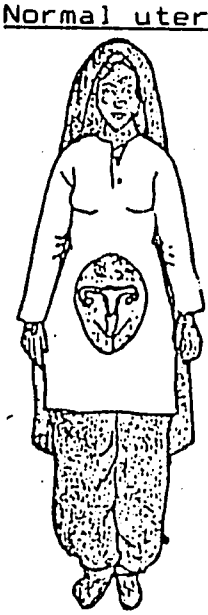
3. The uterus is shaped somewhat like a pear. It is in the middle of the lower abdominal cavity. It is separated from the vagina by a muscular structure called the cervix. When a baby is being born, the cervix opens to allow the baby to leave the uterus.

a) The uterus is made of muscle which stretches during pregnancy.

Pregnant uterus



Normal uterus



BEST AVAILABLE DOCUMENT

4. The vagina is the canal running from the uterus to the outside of the body.

   The place where the vagina opens on the outside of the body is called the vulva. The vulva also has an opening in it for the urethra.

Menstrual period:

1. Each month or so, a woman who is old enough to have a baby who is not pregnant, will pass blood from the vagina for several days. This is called the monthly period or menstruation, and occurs because of hormone changes in the body that cause the uterine lining to shed.

2. Menstruation usually begins at the age of 11-13 years, but sometimes as early 10 or as late as 16 years of age. During the first monthly periods, ovulation does not occur (no egg is passed into the fallopian tube).Ovulation may not begin for 1-2 years after menstruation starts. As a result, during this time, a young woman may not be able to get pregnant.

3. The length of bleeding each month and the time between the monthly periods depends on the age, health and environment of the woman. The interval between periods is usually 28 days, but may be 25 to 30 days. The number of days she bleeds is usually 3-7 and the amount of blood passed about 75 milliliters. This amount may increase till age 35, then decrease.

4. In girls age 11-18 years, menstruation may be painful (cramps in the abdomen and back pain). Discomfort may be helped by increased physical exercise, warm liquids, aspirin and sitting in a basin of warm water.

5. Irregular monthly periods (long or short intervals between periods or irregular amounts of bleeding) may be normal variations, or may be caused by malnutrition or chronic sicknesses like tuberculosis, infection or tumors.

6. Menstruation usually stops between ages 45 and 55. This is called menopause. During those years the woman may have an irregular monthly period with partial bleeding occurring several times a month. She may have not flashes (suddenly feeling very hot), feel very nervous or depressed.This is caused by the changes in the female hormones. If her periods stop for six months and start again, she should see a doctor, since bleeding after menopause may be due to cancer or other disease.

OTHER MIDLEVEL HEALTH WORKER SKILLS/KNOWLEDGE

A. Volume of blood in human body

An adult weighing 60-kg has about 4 1/2 liters of blood. There is, therefore, no danger involved in taking 1/2 litre of blood for transfusion, and no risk in taking to 10 ml tubes are more for analysis. Make this clear to anxious patients when you take their blood.

B. Clotting of blood

When blood is collected in a glass tube it solidifies within 5-10 minutes, forming a clot-it has coagulated.

If a special anticoagulant is added to the blood as soon as it is collected, clotting is prevented and the blood remains fluid. Examples of anticoagulants:

Fluoride oxalate
Trisodium citrate
EDTA dipotassium salt solution
Wintrobe mixture.

C. What happens to clotted blood:

After several hours, clotted blood separated into two components:

1. the serum, a yellow liquid
2. The clot, a solid red mass.

D. What happens to unclotted blood

blood treated with an anticoagulant separates into two liquid components:

1. the plasma, a yellow liquid
2. the blood cells, which do not clot but form a thin layer of white cells and a deposit of red cells.

E. What is the difference between plasma and serum?

- Plasma contains a soluble protein called fibrinogen.
- Serum does not contain this protein. the fibrinogen is changed into insoluble fibrin, which together with the red cells forms the clot.

COLLECTION OF VENOUS BLOOD

A. Principle: Venous blood is collected from a vein in the arm with a needle and syringe.

B. Materials:

1. For disinfecting the skin:
   - 70% ethanol, or tincture of iodine
   - Cotton wool

2. For the venipuncture:
   - A tourniquet of soft rubber tubing, 2-5 mm bore.
   - Needles

     length: 30-40 mm

     diameter or gauge:

     0.9 mm (20 gauge)

     1.0 mm (19 gauge)

     1.1 mm (19 gauge)

     1.2 mm (18 gauge)

     bevel: medium

Needle's sizes are usually indicated by length and diameter. or taking blood for children under five, 23 gauge (0.6 mm) or 25 gauge (0.5 mm) needless can be used.

Deep a stock of sterile needles in small glass tubes: the point should rest on a pad of non-absorbent cotton wool and the tube be plugged with the same material.

3. <u>For collection of blood</u>

- Syringes (of 2,5,10 or 20 ml capacity)
- Check that the end of each syringe fits into the needle.

P = Pravaz-Record syringe
L = Luer syringe (American)
LL= Luer-Lok syringe.

4. <u>Bottles or tubes</u>

These should either be empty or contain an anticoagulant and should bear a mark corresponding to the required amount of blood (e.g. at the 5 ml level).

C. Method:

1. <u>Read the request form carefully</u>.

- Decide how much blood is needed.
- Prepare the correct bottle or tube to be used for each test.

Before taking the blood, wash your hands with soap and water.

2. Patient in the laboratory

Ask the patient to sit alongside the table used for taking blood.

Lay his arm on the table, palm upwards, and support it by placing a small cushion under the elbow.

3. Patient in bed

Lay the patient's arm in an outstretched position.

4. Where to take the blood

The correct site is the vein in the bend of the elbow, at its thickest and most easily visible point, preferably one of the branches forming a Y just above their junction (1).

if necessary, points 2,3 and 4 can be used as alternatives.

5. Using a syringe

a. Fix the needle on to the syringe, touching only the top of the needle. Test the needle and syringe to make sure that the needle is not blocked and the syringe is airtight. Pump plunger a few times.

b. Place the end of the needle in the sterile tube until ready for use.

6. <u>Apply the tourniquet above the elbow</u>

a. With the right hand, wrap the tourniquet firmly around the arm and hold the ends.

b. With the left hand, pull one of the ends across.

c. Loop it under the main part of the tourniquet. The tourniquet should be just tight enough to slow down the blood flow in and distend the veins, but it <u>must not</u> be so tight that the blood flow in the arteries is diminished.

d. Ask the patient to open and close his hand several times, to swell the veins. Keep a closed fist.

e. Using the index finger of your left hand, <u>feel</u> for the vein where you will introduce the needle. Never rely solely on sight, always feel for a vein.

f. Disinfect the skin with a swab dipped in tincture of iodine or ethanol.

g. Take the syringe in the right hand, holding your index finger against the top of the needle.

h. Position the needle with the bevel uppermost. Make the venipuncture entering the center of the vein without hesitation.

i. Important:

Never approach a vein from the side. Never introduce a needle with the bevel downwards.

j. You will feel the needle going through:

(1) The layer of skin, which is resistant;
(2) Then the wall of the vein, which is less resistant (more flexible).

k. Push the needle along the line of the vein to a depth of 1-1.5 cm

l. With your left hand pull back the piston (or plunger) of the syringe slowly. Blood should appear in the syringe.

Continue to withdraw the piston to fill the syringe with the amount of blood required.

m. Remove the tourniquet by pulling on the looped end.

n. Apply a dry swab over the hidden point of the needle. Withdraw the needle in one rapid movement from under the swab.

o. Ask the patient to press firmly on the cotton wool swab for 3 minutes, keeping his arm outstretched.

* Bending the arm back over the swab is no longer recommended (because of the risk of a hematoma).

p. Remove the needle from the syringe. Fill the specimen tubes of bottles with the blood up to the mark. Invert the bottles that contain anticoagulant several times.

q. Label the bottles clearly with:

- the patient's name
- the date
- the patient's outpatient or hospital number, if this is available.

Rinse the needle and syringe at once with cold water.

r. Always re-check the patient's arm to be sure clotting process is complete.

URINALYSIS
(Examination of Urine)

I. Collection of Urine Specimens and Appearance

A. Collection:

urine specimens must be collected:

- the correct way
- in suitable containers.

If the specimen is not collected properly, the laboratory will be unreliable.

1. Time of collection:

In hospital: where only one specimen is needed, the best time to collect is first thing in the morning (the urine is most concentrated)

At the dispensary: have the patient pass the specimen in the dispensary if possible.

2. Specimen containers:

- any clean glass container or bottle.

3. Quantity of Urine to collect:

Collet <u>at least</u> 50 ml in suitable bottle.

4. Personal hygiene before collection of Urine:

<u>Women</u>: Patients should wash the genital area in all cases. <u>Avoid</u> Collecting urine specimens during the menstrual period, since blood will be present giving an incorrect result.

<u>Men</u>: Washing is necessary <u>only</u> for bacteriological (hematuria) examinations.

B. Appearance of the Urine:

Describe the appearance of the urine

THE COLOR:

A normal urine is pale yellow and clear.

<u>colorless</u> = may be with diabetes mellitus.
<u>pale yellow or yellow</u> = normal.
<u>dark yellow</u> = with jaundice, urine may contain brown, bilirubin, & increased urobilinogen.
<u>brown</u> = may contain hemoglobin (blood) as in anemias due to chemicals or malarial parasites (usually urine is acidic).

pink to red or cloudy red = hematuria (may be obvious blood). (Urine usually is alkaline)
green = from some medications
white = probably contains chyle or pus cells (WBC's)

II. Biochemical Testing of Urine Using a Dipstick

A. The reagent dipstick (test-strip) is a narrow strip of plastic, with small pads attached to it. Each pad contains reagents for a different reaction. The reactions must be read at the prescribed time after dipping into the urine, and then closely compared with the color chart given on bottle.

The strips must not be exposed to moisture direct sunlight, heat, or flammable substances. Keep in a very dry place, and replace the stopper (lid) of the bottle immediately after use.

B. Value:

* Advantages: The method is quick and easy and does not need glassware, balances, or chemicals.
* Disadvantages: The reagents are often expensive. Some results are difficult to interpret. Some of the strips and tablets are not stable and may fail to react.

Collection of Stools:

The reliability of the results obtained will depend largely on the care taken in collecting the stools. The following precautions should be taken in collecting stools for parasitological examination.

1. Collection of a sufficient quantity

This is necessary in order:

- to permit detection of parasites, if in low concentration

- to prevent rapid drying of stools.

The specimen should contain at least 4 ml (4 cm cube)

2. <u>Provision of a container for the patient's use</u>

Every effort should be made to give the patient one of the following types of container for collection of the specimen:

1) a waxed cardboard box
2) an empty tin with a lid

III. Slide Preparation

A. Materials:

- Microscope slides
- Coverslips, 20 mm x 20 mm
- Wooden applications
- Sodium chloride solution
- Lugol's iodine solution

B. Method:

1) Take a slide and put:
   - 1 drop of sodium chloride solution <u>in the middle of the left half</u>
   - 1 drop of the iodine solution <u>in the middle of the right half</u>.

2) Using an applicator or take a small portion (about this size: O) of the stool. If the stools:

- are formed, take the portion from well inside the sample (parasite eggs?) and from the surface

- contain mucus or are liqui, take the portion from the bloodstained mucus on the ourface or from the surface of the liquid (amoebae?)

3) **Examination of stools while fresh**

a) Stools must be examined within one hour of collection.

b) If a number of specimens are received at the same time, pick out liquid stools and those containing mucus or blood and <u>examine these first</u>, for they may contain motile amoebae that die quickly.

4) Mix the sample with the drop of sodium chloride solution on the slide.

5) Using the applicator take a second portion of stool from the specimen and mix it with the drop of the iodine solution.

6) Place a coverslip over each drop (apply coverslips as shown to avoid the formation or air bubbles).

7) Mark the number of the specimen on the slide with a grease pencil

8) Examine the preparations under the microscope. For the saline prepation use x 10 and 40

10.1 SAFE HANDLING OF SPUTUM SPECIMENS

As the laboratory worker, you must protect yourself from infection. When dealing with sputum specimens,

Always wear

1. A laboratory coat

2. A face mask

- a thick piece of gauze placed across the mouth the nose which can be discarded

R - squares of cotton sewn together with string ilos. These can be made by a tailor.

DISINFECT AND WASH THESE REGULARLY.

0.2 COLLECTION OF SPUTUM SPECIMENS

0.2.1 Containers for Collection

Each patient must be given:

- specimen containers
- clear instructions for proper sputum collection.

a. In the home

- a strong plastic or glass container with a tight fitting lid.

b. In the clinic

- a strong plastic or glass container with tight fitting lid (the container)

OR - a waxed card cup with covering lid.

0.2.2 When to Collect the Specimen

3 specimens are needed from each patient. These must be taken

- on two different days
- In the open or a well ventilated area

First Day

1. At the CLINIC:
   a. collect the first sputum specimen
   b. give the patient a second container (with a well fitting lid)
   c. tell the patient how to collect a specimen in the home

Second Day

2. At the HOME of the patient;
   - an early morning specimen (before any food is eaten)

3. At the CLINIC:
   (when the patient brings the early morning specimen.)
   - collect a third sputum specimen.

10.2.3 How to Collect Sputum Specimens

1. Explain to the patient
   - the reason for the examination
   - how to produce the specimen

   Stand behind the patient

2. The patient must:

a. take a very deep breath, filling his lungs.

b. empty his lungs in one breath, coughing as hard and deeply as he can.

c. spit what he brings up into the sputum cup.

3. Check the quantity of the sputum specimen.
It should be 3-5 ml

The sputum of an infected person usually contains:
- thick mucus with air bubbles

- threads of fibrin
- patches of pus
- occasional brownish stroaks of blood.

Do not examine saliva of secretions from the nose. Request another spacemen.

- encourage the patient to produce another specimen. (It may help to gargle salty water or to Inhale steam)

- <u>If no specimen is produced</u>, discard the container. (It may be contaminated with tubercle bacilli)

4. label the container with the
   a. TB serial number
   b. date

   Place the specimen on the smear preparation tray.

5. Wash your hands thoroughly with soap and water.

10.2.4 Important Messages for the Patient.

Tuberculosis kills many people in Afghanistan every year. The disease can be spread through the community by people who do not know the important rules of hygiene which help to prevent TB.

Part of your responsibility is to remember these important rules, and to tell them to patients and other members of your community.

1. Tuberculosis is spread by air when a person with pulmonary tuberculosis coughs or spits.

2. Persons with a severe of chronic cough, chest pain or blood in the sputum should go the health centre for a check-up.

3. TB is only cured by complete daily treatment of the TB patients. This is the only way to stop the infection from spreading through the community.

4. People should <u>always</u> cover their mouth when they cough.

BASIC PATIENT CARE

A PARAMEDIC PROVIDES BASIC PATIENT CARE AND TEACHES COMMUNITY MEMBERS TO PREVENT DISEASE, CARE FOR THEMSELVES, AND HELP OTHERS.

THE PARAMEDIC MUST:

- **DO NO HARM.** IF THEE IS DOUBT ABOUT PROPER TREATMENT, THE PATIENT SHOULD BE REFERRED TO SOMEONE WHO KNOWS. IF THERE IS NO ONE TO WHOM TO REFER OR ASK, THE PARAMEDIC MUST DO THE BEST HE CAN. HE SHOULD GIVE MEDICINES AND TREATMENTS ONLY IF HE THINKS THEY WILL HELP, NOT JUST BECAUSE THE PATIENT OR FAMILY MAY WANT THEM.

- TREAT ALL PATIENTS WITH RESPECT.

    1. LISTEN TO WHAT THE PATIENT SAYS. CONSIDER HIS FEELINGS AND RESPECT PRIVACY.
    2. DETERMINE FROM HISTORY AND PHYSICAL WHAT HIS NEEDS MAYBE.
    3. EXPLAIN DIAGNOSES AND TREATMENTS. REASSURE IF POSSIBLE.
    4. RESPECT BELIEFS, SUGGEST ANY NECESSARY CHANGES DELICATELY.

-IF PATIENT IS VERY YOUNG OR VERY SICK, INCLUDE FAMILY IN HISTORY, PHYSICAL, AND EXPLANATIONS.

GETTING WELL REQUIRES MORE THAN CORRECT MEDICAL TREATMENT, IT REQUIRES THE PATIENT HAVE CONFIDENCE IN THE TREATMENT AND FOLLOW MEDICAL INSTRUCTIONS PROPERLY. THIS HAPPENS BEST IF THE PARAMEDIC REPECTS THE PATIENT AND COMMUNICATES CLEARLY AND WITH CARING.

BASIC PRINCIPLES OF PATIENT CARE

PERSONAL CARE IS FREQUENTLY THE MOST IMPORTANT PART OF RECOVERY FROM ILLNESS.

DO THE FOLLOWING FOR THE PATIENT:

1. PROVIDE COMFORT

- ENCOURAGE REST IN A QUIET, COMFORTABLE PLACE WITH PLENTY OF FRESH AIR AND LIGHT.
- MAINTAIN COMFORTABLE TEMPERATURE, NOT TOO COLD OR HOT. IF COLD, COVER WITH SHEET OR BLANKET. IF HOT OR FEVERISH, DO NOT COVER, AND SPONGE OR GIVE MEDICATION FOR FEVER IF INDICATED.

-TREAT PAIN IF APPROPRIATE
-REASSURE IF ANXIOUS (AND APPROPRIATE)

NOTE: IT THOUGHT THAT SOME PATIENT'S IN A COMA HEAR WHAT IS BEING SAID. DO NOT SPEAK CARELESSLY OVER A PATIENT.

2. MAINTAIN HYDRATION

-IN NEARLY EVERY SICKNESS, ESPECIALLY DURING FEVER OR DIARRHEA, PLENTY OF LIQUIDS ARE NEEDED (WATER, TEA, JUICES, SOUP BROTHERS, ORS)
- THE SICK PERSON MUST DRINK ENOUGH LIQUID. IF HE CAN ONLY DRINK A LITTLE AT A TIME, GIVE SMALL AMOUNTS OFTEN. IF HE CAN BARELY SWALLOW, GIVE SIPS EVERY 5 OR 10 MINUTES.
- MEASURE THE AMOUNT OF LIQUIDS THE PATIENT DRINKS EACH DAY. AN ADULT NEEDS AT LEAST 2 LITERS AND SHOULD URINATE 3 OR 4 TIMES DAILY. IF THE PATIENT IS NOT DRINKING OR URINATING ENOUGH, OR SHOWING SIGNS OF DEHYDRATION, ENCOURAGE MORE FLUIDS.

-DEHYDRATION CAN BE PREVENTED BY DRINKING LIQUIDS <u>EARLY</u> IN A DISEASE. IF THE PATIENT CANNOT DRINK SOUPS OR JUICES, GIVE ORS.

-IF PATIENT IS ALREADY DEHYDRATED AND CANNOT DRINK ENOUGH, HE MAY NEED INTRAVENOUS SOLUTION. (HOWEVER, IT IS MUCH BETTER TO PREVENT DEHYDRATION BY GIVING LIQUIDS OR ORS EARLY IN A DISEASE. IV'S SHOULD BE AVOIDED IF POSSIBLE BECAUSE THEY TAKE TIME AND CARE TO MANAGE PROPERLY AND SOMETIMES CAUSE INFECTIONS. THEY SHOULD ALSO BE SAVED WHENEVER POSSIBLE FOR SOMEONE IN SHOCK OR SERIOUSLY INJURED AND/OR TOTALLY UNABLE TO TAKE FLUIDS.)
PREVENT DEHYDRATION BY ENCOURAGING LIQUIDS IN BOTH THE SICK AND THE WELL, ESPECIALLY WHEN THE WEATHER IS HOT.

3. MAINTAIN NUTRITION

-FEED THE PATIENT, DO NOT WITHHOLD FOOD. MOST SICKNESSES DO NOT REQUIRE SPECIAL DIETS AND FOOD IS AL MOST ALWAYS REQUIRED TO GET WELL.
-ENCOURAGE BODY-BUILDING AND PROTECTIVE FOODS LIKE MILK, CHEESE, CHICKEN, EGGS, MEAT, FISH BEANS, GREEN VEGETABLES, AND FRUIT. PERSON IS VERY WEAK, MAKE THESE FOODS INTO SOUPS OR JUICES. SOUPS CAN BE MADE WITH EGG, BEANS, OR WELL CHOPPED MEAT, FISH OR CHICKEN. FRUIT JUICES ARE OFTEN TAKEN WELL.
-ENERGY FOODS ARE ALSO IMPORTANT-FOR EXAMPLE,PORRIDGES OF RICE, WHEAT, OUTMEAL, OR POTATO. ADDING A LITTLE SUGAR AND VEGETABLE OIL WILL INCREASE ENERGY.
-IF THE PERSON CAN EAT ONLY A LITTLE, OFFER SEVERAL SMALL MEALS EACH DAY.

A FEW PROBLEMS REQUIRE SPECIAL DIETS. THESE INCLUDE:

PEPTIC ULCERS-AVOID SPICES, TEA, COFFEE, COLAS ALCOHOL; TRY MILK PRODUCTS AND OILS FOR COMFORT

DIABETES - LOW SUGAR DIET
CONGESTIVE HEART FAILURE - LOW SALT DIET

FOR AN OCCASIONAL DISEASE THE PATIENT SHOULD EAT NO FOOD AT ALL TILL IMPROVED (SEE GASTROINTESTINAL SYSTEM):

APPENDICITIS
INTESTINAL OBSTRUCTION.
OTHER TYPES OF ACUTE ABDOMEN

4. MAINTAIN CLEANLINESS

-BATCH PATIENT EVERY DAY. IF HE IS TOO SICK TO GET OUT OF BED, WASHING HIM WITH A CLOTH, MILK SOAP, AND LUKEWARM WATER.
-CHANGE CLOTHES, SHEETS, AND COVERS DAILY AND WHEN DIRTY, CLOTHES SHOULD BE WASHED WITH SOAP AND HOT WATER OR BOILED IN WATER.
-KEEP CRUMBS AND BITS OF FOOD OUT OF THE BED.

NOTE: ILLNESS CAN BE PREVENTED BY PERSONAL CLEANLINESS.
HANDS SHOULD BE WASHED WITH SOAP AND CLEAN WATER AFTER URINATING OR DEFECATING, BEFORE HANDLING FOOD OR FEEDING INFANTS, AND BEFORE, AND AFTER HANDLING PATIENT. IF A BRUSH IS USED TO SCRUB SKIN AND NAILS, IT SHOULD BE SOAKED IN DISINFECTANT WHEN NOT IN USE.

5. MOVE THE PATIENT FREQUENTLY

-CHANGE PATIENTS POSITION IN BED EVERY TWO HOURS TO PREVENT BEDSORES (ALSO RUB BONY PROMINENCES WITH LOTION FREQUENTLY AND CUSHION THE PATIENT WITH PILLOWS SO BONY AREAS DON'T PRESS AGAINST HARD SURFACES.) A VERY WEAK PATIENT MAY NOT BE ABLE TO TURN OVER ALONE.
- FREQUENT CHANGING OF POSITION ALSO HELPS PREVENT PNEUMONIA AND BLOOD CLOTS IN LEG VEINS. THE PATIENTS SHOULD TAKE DEEP BREATHS EVERY HOUR. HE SHOULD ALSO FLEX HIS HIPS, KNEES AND ANKLES HOURLY (OR SOMEONE SHOULD DO THIS FOR HIM) TO HELP CIRCULATION IN THE LEGS.
- A SICK CHILD SHOULD BE HELD FREQUENTLY ON HIS MOTHER'S LAP.

6. WATCH FOR CHANGES.

-WATCH FOR CHANGES IN THE PATIENT'S CONDITION.
-RECORD TEMPERATURE, PULSE, BLOOD PRESSURE, AND RESPIRATION EVERY FOUR TO SIX HOURS IF EXTREMELY ILL.
-ALSO RECORD AMOUNT OF FLUID INTAKE AND HOW MUCH URINE AND STOOL.

THESE FACTS WILL HELP PLAN TREATMENT.

Personal Hygiene:

Purpose:
1. To remove bacteria causing agents from oral cavity
2. To prevent or decrease possibility of infection
3. To remove unpleasment tastes and odors from oral cavity
4. Removes plague and calculus deposits from the teeth
5. Enhances appreciation of food, contributes to good nutrition

I. <u>patients needing Special Mouth Care</u>:

1. Unconscious patients
2. Post operative patients
3. patients with diseases of mouth
4. Patients who have mouth infections
5. Patients on liquid diets, especially those on milk.
6. Patients with fever
7. helpless patients
8. Elderly
9. Children

II. <u>Procedure</u>:

1. Gather needed supplies
2. Wash you hands
3. Ask patient about usual oral care or lack of oral care
4. Help patient into comfortable sitting position
5. If dentures are present remove and store in and cover with warm water.
6. Check mouth for color, lesions, tenderness, inflammation of teeth, degree of moisture or dryness
7. observe lips
8. Check floor and roof of mouth by using a tongue blade
9. Check entire mucosa of mouth
10. Observe tongue
11. Evaluate condition of gums and teeth
12. <u>Do not</u> put fingers in patients mouth

<u>See oral care under</u>
<u>unconscious patient</u>

After completing oral care, examine mouth for cleanliness, tooth and tissue condition.

<u>[illegible]sideration</u>

[illegible]without teeth, wrap gauze aroun[illegible] forefinger, moisten with equal mixture of hydrogen peroxide and water, and gently swab oral tissues.

ed Bath

rpose:

to decrease possibility of infection by removing excessive debris, secretion and perspiration from skin
promote circulation
Maintain muscle tone through active and passive range of motion during bathing
To prevent stasis of fluid in the lungs and to alternate points of pressure on the body by changing patients position during the bath.

tion

Assess patients need for bathing and other personal hygiene activities. it may not be culturally acceptable to bath daily.
Check patient activity order - how much can he do for himself - how much assistance does he need
Ask patient when he likes to bath - what is his procedure.

Put light blanket or sheet over patient
Loosen all linen on bed
Remove patients hospital gown
Keep patient covered
Wrap bath cloth (or wash cloth) around hand like a mit to avoid dragging loose ends over patients skin
Begin with face and work downward.
Use clear water washing around patients eyes, wipe from inner canthus to outer canthus
use different section of cloth for each eye
Wash. rinse and dry face
Start with upper extremities
Place towel under arm to avoid getting bed wet
elevate arm while holding wrist - go from wrist to shoulder
Then wash - rinse - dry axilla
Wash hands - soak them in a small basin
Wash - rinse - dry - chest area
Abdomen - continue with bathing and keeping patient covered with an extra towel or clean sheet

7. Finish anterior part of patients body by bathing legs, place towel under leg if available - drape legs hips and genital area with sheet, light blanket if available
8. Place foot in basin,. wash dry
9. Bathe leg moving towards hip
10. Move to other side of bed and repeat procedure
11. Change water
12. Help patient to semi-prove position - place towel under area to be bathed cover patient's exposed areas.
13. Bathe from shoulder to buttocks
14. Provide back massage
15. Bathe genital area's last. Place towel under hips and cover all body parts except for areas to be bathed
16. Dress patients in clean hospital gown
17. Clean and store bath equipment
18. Wash your hands

roviding Back Care:

urpose:

- Helps to prevent bedsores, decubiti:
- Allows assessment of skin condition
- Massage causes cutaneous vasodilation
- provides relaxation for the patients

ack care can be done at any time of the day or evening. The best ime to provide back care is after the patient's bath.

pecial Consideration:

- May be contraindicated in patients with rib fractures, surgical incision or recent back trauma.
  Before giving back care, note the patients body structure and skin condition. The duration and strength of the massage should be tailored accordingly.
  Give special attention to bony prominences.
  Don't massage patients legs.
  Reddened legs may means clot formation; massage can dislodge clots causing an emboli: develop a turning schedule and give back care at each position change.
  Do not use oil or powder together.

Technique:

1. Tell patient what you are doing.
2. Wash your hands
3. If you have a container of oil or lotion warm it by placing container in a basin of warm water. Lotion reduces friction.
4. Drape bed clothes for patients warmth and privacy
5. Put oil or lotion on your hands
6. Apply firm even pressure along the spine to shoulders
7. Maintain constant skin contact during massage.
8. Repeatedly move your hands up on either side of the patients spine across shoulders and down the lateral aspects of the patient's back. use the palms of your hands. Use less pressure on the downward strokes keep your hands parallel to the spine to avoid tickling the patient.
9. Maintain regular rythm to help patient relax.
10. Ado lotion or oil need, keeping one hand on the patients back to avoid interrupting the massage
11. Assess skin for color, turgor, skin breakdown or erythema while massaging
12. Massage reddened areas for an extra amount of time.
13. Wash hands after procedure

IMPORTANCE OF NUTRITION IN THE HOSPITALIZED PATIENT

Purpose:

1. To provide the patient with an adequate dietary intake of proteins, fats, minerals and vitamins to meet cellular nutritional needs.

Providing Nutrition:

1. Know eating nabits and food likes or dislikes of patients
2. Respect cultural preferences

I. **Overview:**

An Adequate Diet Contains:

a. Carbonydrates
b. Fats
c. Proteins
d. Vitamins
e. Minerals

CHO - Chief source of energy

Fats - Provide most concentrated source of energy and are carriers of fat soluble vitamins

Proteins - Build and repair body tissue

Vitamins - For growth - maintenance and functioning of the body process

Minerals - Essential for metabolic processes

II. <u>Post-Op Considerations</u>:

A. A high - protein preoperative diet is needed for normal serum-protein levels during and following surgery to promote wound healing

B. Adequate carbohydrates are needed to maintain liver function

Adequate proteins and carbohydrates are needed for burn victims, the elderly and severely debilitated patients.

<u>Purpose of adequate protein and CHO</u>:

2. Special post-op diet is needed to:
   A. Promote wound healing
   B. Prevent edema
   C. Promote bone healing

3. <u>Proteins and Carbohydrates Help Prevent Shock</u>:
   A. From decreased plasma proteins and circulating red blood cells.

III. <u>Post-Op diet Regime: Depending on Type of Surgery</u>:

1. Nothing by mouth day of surgery
2. Clear liquids - water, tea, broth, juice
3. Full liquids - milk, milk products creamed soups
4. Soft diet - egg/milk/potatoes/well cooked beef/fish/fowl
5. General diet - nan - rice - beef - beans - vegetables - fruit

Special Note:

Observe patients cultural preferences and restrictions

IV Weight Loss of Hospitalized Patient:

Nursing Action:

1. Weigh patient daily in early A.N. before break fast
2. Evaluate oral intake
3. Assess if patient is septic
4. Assess patient for medically related nutritional problems - ex: diabetes
5. Assess status of gastrointestinal tract
   1. is there a fistula or ostomy present?
   2. Is there an obstruction?
6. Can patient chew and swallow?
7. Check for vomiting, diarrhea
8. Check for gag reflex
9. Does patient have ability to feed himself?

   EX: too weak

   Loss of interest in food, depression

   Some medications affect taste

V. Feeding the Debilitated Patient:

often health care workers are extremely busy on the ward attending to needs of patients who require procedures such as wound care, intravenous therapy and administration of medications. Routine care is often rushed due to more patients to take care of than nurses to look after them.

It is easy to slap a tray down in front of a patient at meal time hoping he will feed himself.:

For those patients whose condition necesitates feeding, there are a few simple guideline to follow: Because most adults consider being fed demeaning, be sure to let the patient have some control over mealtime, for example:

1. Let the patient set the pace of the meal don't shovel food down him in order to get through in as little time possible.
2. Let him determine the order in which he eats the food. Don't try to give him all the rice, then all the nan, then all the beans. Consider how you eat your food. Each person is an individual.

3. Make sure the patient is in an upright position to avoid aspiration.

4. Make sure he is comfortable.

Its difficult to eat or enjoy a meal if you are hurting or in any discomfort. For example: Don't feed your patient if he is lying in a wet bed. Some nurses do this thinking the patient, whose mental functions are decreased, won't know the difference. Treat your patient as how <u>you</u> would want to be treated.

5. If possible position a chair next to the patients bed or wheelchair, so you can sit comfortably while feeding him.
6. Cut the meat up into small <u>bite</u> sized pieces. Don't cream a big hunk of meat into the patients mouth. A weak patient could easily choke or aspirate.
7. Ask the patient which food he prefers to eat first, some patient's want to eat one food' others prefer to alternate foods.
8. if the patient has differently swallowing offer liquids carefully with a spoon or plastic syringe to help prevent aspiration.
9. Ask patient to indicate when he is ready for another mouthful. don't keep piling food road into his mouth
10. pause between mouth full to let the patient rest.
11. If possible, and a clean cloth is available wipe, the patients mouth and chin as necessary. No one likes food all over their face.
12. When the meal is over, remove the tray. Don't leave it at the patients bedside. if necessary, clean up spills and change the bed clothes.
13. Provide mouth care.

<u>Bed Making Lecture</u>

<u>Goal</u>: Rational (reasons for linen change)

1. To provide a clean comfortable sleeping or recovery environment
2. to promote or enhance a patient s well being (self-image) if patient condition permits, let him help.

- To prevent skin breakdown.
- To prevent nosocomial infections (hospital - acquired)

bjective:

y the end of this lecture and practical the students will learn o make an occupied and unoccupied bed

ssessment

- Assess patients need to have line changed ex: wrinkledsheets diaphoresis, wound drainage - incontinence - patient request for what ever reason.
- Determine if patients condition will permit a linen change be objective - realistic ex: is the patient in extreme pain multiple trauma or new post-op who cannot be turned or moved as - moribund
- Determine how many and what kind of linens will be required are they available - are there facilities for cleaning linen do you have only a specific amount. - set priorities for which patients may need them the most.
- Know and assess patients level of activity and any special precautions in movement. ie:
  1. Does he have fractures? orthopedics injuries
  2. post - op case
  3. Elderly debilitated
  4. Use of crutches
  5. How many people does it take to get the patient out of bed to a wheel chair or chair.
  6. Burns, skin injuries

- Determine patients ability to get out of bed during linen change:
  1. Is he short of breath
  2. Weak
  3. Does he have pain - medical problems-surgical problems
  4. Neuro - problems - equilibrium - CVA - head trauma
  5. multiple invasive lines
  6. Level of consciousness - is it decreased?

Materials needed: If Available:

1. Chair or table
2. Linen bag (or use pillow case check your hospital policy on linen disposal
3. Bottom sheet
4. Top sheet
5. Draw sheet (if needed)
6. Pillow case (if available)
7. Blanket

b. Then lift side edge of sheet about 12" (30cm) form the mattress corner, and hold at right angle to mattress.
c. Next tuck in bottom edge of sheet hanging below mattress.
d. Finally, drop top edge and tuck under mattress.

19. Then pull drawsheet tightly and tuck tightly under mattress.
20. Put on clean pillow case
21. top sheet - place clean top sheet on patient over light blanket - remove oiled sheet or blanket from top to bottom while clean sheet remains on patient to ensure warmth and privacy.
22. Make cuff (fold top sheet) at the top of the bed - enough to cover the blanket.
23. Tuck top sheet and blanket under foot of the bed and miter the bottom corners.
24. Wash your hands to prevent the spread of microorganisms from patient to patient.

If patient does not want to have bed made determine reason for refusal:

a. he may be in pain or not want to be disturbed
b. offer to make bed at a later time
c. Make bed while he is having a procedure done ex: x-rays or any other procedure that requires being away from the bedside.
d. Beds do not need to be changed unless soiled or damp.

Goal:

The student will maintain the orthopedic patient in correct body alignment while making the bed for the patient in traction.

1. Wash your hands
2. Bring clean linen to the bedside
3. Explain procedure to patient and how he can help the process of linen change go quickly and smoothly with minimal discomfort.
4. Remove unnecessary furniture or equipment from the area.
5. Enlist help of assistant.
6. Stand at the top of the bed with your assistant on the opposite side of the bed facing you.
7. Gently pull mattress to head of bed.
8. Avoid sudden movement which can misalign traction
9. Remove pillow - loosen linen on both sides and roll from headboard towards patients head.
10. Take a clean sheet and fold crosswise
11. Place clean sheet across head of bed
12. Ask patient to raise head to shoulders by grasping overhead trapeze
13. Working with assistant quickly fanfold clean sheet from h.o.b. (head of bed) under the patients shoulder so that it meets the soiled linen.
14. Tuck clean sheet under top to mattress
15. Miter corners and tuck in the sides.
16. Ask patient to pull higher on trapeze and raise buttocks Working together, move toward foot of bed and in one movement quickly and carefully roll soiled linens and clean linens under patients buttocks

Prepa. ation

1. Talk - (communicate with your patient tell him what you're going to do and why provide privacy is possible.
2. Explain the sequence of the procedure to tell know what to expect.
3. If necessary or possible move furniture away from the bed to provide amply working space.
4. If there is a siderail on the bed pull it up on the opposite side from which you will be working to prevent falls
5. If possible adjust the bed to a comfortable working position to prevent back strain

- Wash your hands and collect bed clothes
- If the patients condition permits, lower head of bed to ensure tight filling wrinkle free line.
- Cover the patient with a sheet or light blanket to avoid exposure. Provide warmth and privacy

<u>rocedure</u>: Occupied bed.

- loosen top linens on your side of the bed. If to be re-used fold and place on chair.
- Remove blanket
- May place light blanket or loose top sheet on patient during procedure
- Push mattress to head of bed
- help patient move to the side of the bed place in semi prone position away from you
- Loosen bottom linens on your side of the bed
- Push dirty lines under or as close to patient as possible
- With patient on opposite side of the bed, place clean bottom sheet on mattress.
- Fold clean bottom sheet length wise and place center fold on middle of the mattress with the end of the sheet even with the mattress.
- Unfold bottom sheet and cover mattress making sure clean bottom sheet is underneath used linen
- Make sure the patients pillow is lengh wise under the patients head to support the neck.
- Tuck top of sheet under bed
- Miter corner of bottom sheet at top of head of bed
- Drawsheet if needed or linen available, fold a sheet in half and fan fold 1/2 of the sheet under patient tuck sheet under patient and smooth out wrinkles.
- Help patient roll over to other side of bed tell patient why there is a lump of linen in the middle of the bed.
- move to the unfinished side of the bed (and lower side rail) then loosen and remove soiled linen separately and place in used pillow case or laundry bag it available.
- Pull clean bottom sheet tightly (and drawsheet) miter top corner. <u>(To miter corner)</u>:

a. 1st tuck top end of sheet evenly under mattress at head of bed.

.7. Complete bed making

.8. Check patient and traction alignment

1. Make sure that weights hang freely
2. Make sure patients extremity is free of pressure from knots or tape
3. To help maintain alignment: place pillow between foot of mattress and f.o.b. to prevent mattress slippage
4. place pillow or bedroll at f.o.b. (foot of bed) on the unaffected side to prevent patient from sliding downward.

IEDSORES

EDSORES ARE ULCERS IN THE SKIN CAUSED BY PRESSURE OF BONE AND KIN AGAINST A BED OR HARD OR WRINKLED SURFACE IN A PATIENT NABLE TO MOVE HIMSELF FREQUENTLY.

YMPTOMS/SIGNS

LCERS INT THE SKIN AFPEAR OVER BONY, PROMINENCES AND JOINTS OF EN TAILBONE, HIPS, ANKLES, KNEES, ELBOWS OR BACK - USUALLY IN A HIN PERSON WHO CANNOT MOVE HIMSELF WELL IN BED. HE ALSO MAY BE NABLE TO EAT VERY WELL. HE MAY BE SICK OR OLD AND WEAK.

OMETIMES BEDSORES BECOME INFECTED. CRUSTS MAY FORM ON THEM UNDER HICH PUS MAY ACCUMULATE. IF THIS OCCURS, THE PATIENT MAY HAVE A EVER.

REATMENT

HALLOW BEDSORES:

. KEEP THE SORE CLEAN (WASH WITH HALF STRENGTH HYDROGEN EROXIDE DAILY IF AVAILABLE; OTHERWISE USE AN ANTISEPTIC OR SOAP ND BOILED WATER). PAT THE SORE DRY.

. PREVENT PATIENT PROM LYING ON THE SORE.

. MAKE A PASTE WITH TRISH TABLETS AND SMALL AMOUNT OF BOILED ATER AND LET THE PASTE DRY ON THE BEDSORE. WASH SORE AND REAPPLY ASTE EVERY DAY. IF TRISIL UNAVAILABLE, ALLOW A LITTLE YOGURT TO

DRY OR THE SURFACE OF THE BEDSORE EACH DAY. NO DRESSING IS NECESSARY IF THE BEDSORE IS COVERED WITH A PASTE OR YOGURT. IF FLIES ARE PRESENT OR IF NO TRISIL PASTE OR YOGURT AVAILABLE, COVER LIGHTLY WITH STERILE GAUZE.

4. FEED THE PATIENT AS WELL AS POSSIBLE. GIVE MULTIVITAMIN DAILY IF AVAILABLE.

DEEP BEDSORES.

1. IF THERE IS A DARK TOUGH SCAB, (DEAD SKIN) DEBRIDE THE SCAB CAREFULLY AND WASH OUT ANY PUS UNDERNEATH WITH HALF-STRENGTH PEROXIDE OR ANTISEPTIC SOLUTION.

2. IRRIGATE DAILY WITH HALF-STRENGTH PEROXIDE OR OTHER ANTISEPTIC SOLUTION BEDRIDE AS NECESSARY. THEN LET THE SORE STAY OPEN TO THE AIR OR COVER LIGHTLY WITH STERILE GAUZE.

3. IF PATIENT HAS A FEVER FROM AN INFECTED BEDSORE, GIVE PENICILLIN EVERY SIX HOURS BY MOUTH IF ABLE TO SWALLOW.

4. FEED THE PATIENTS AS WELL AS POSSIBLE GIVE MULTIVITAMIN DAILY IF AVAILABLE.

PREVENTION

1. KEEP PATIENT CLEAN AND DRY. CHANGE WET SHEETS IMMEDIATELY.

2. TURN PATIENT EVERY TWO HOURS. DO NOT LET PATIENT LIE ON A ROUGH OR WRINKLED SURFACE.

3. PROP SOFT PILLOWS OR BLANKETS BETWEEN KNEES OR UNDER ANY JOINTS OR BONY SURFACES THAT MIGHT PRESS AGAINST SOMETHING HARD.

4. FEED THE PATIENT WELL

5. BATHE THE PATIENT EVERY DAY AND RUB HIS SKIN WITH OIL OR LOTION TO HELP THE CIRCULATION TO THE SKIN AND PREVENT SORES FROM STARTING.

Guidelines: Teaching the Patient Breathing Exercises:

Breathing exercises are techniques utilized to compensate for respiratory deficits by increasing efficiency of breathing. They are aimed at conserving energy through controlled breathing.

Purpose
1. To relax muscles and relieve anxiety.
2. To eliminate useless uncoordinated patterns of respiratory muscle activity.
3. To slow the respiratory rate.
4. To decrease the work of breathing.

General Instructions
1. Clear the nasal passages before beginning breathing exercises.
2. Always inhale through the nose-permits filtration, humidification, and warming of air.
3. Breathe slowly in a rhythmic and relaxed manner-permits more complete exhalation and emptying of lungs; helps overcome anxiety associated with dyspnea and decreases oxygen requirement.
4. Avoid sudden exertion.
5. Practice breathing exercises in several position, since air distribution and pulmonary circulation vary according to position of the chest.

Diaphragmatic Breathing

Purposes:
1. To strengthen the diaphragm-the main respiratory muscle
2. to decrease the use of the accessory muscles of respiration

Teaching Procedure

Instruct the patient as follows:
1. Place one hand on stomach just below the ribs and the other hand on the middle of the chest.

2. Breathe in slowly and deeply through the nose, letting the abdomen protrude as far as it well (Fig. 7.8A) The abdomen enlarges during inspiration and decreases in size during expiration.

3. Breathe out through pursed lips while contracting (tightening) the abdominal muscles. Press firmly inward and upward on the abdomen while breathing out (Fig. 7.8B).

4. The chest should not move; attention is directed at the abdomen, not the chest.

5. Repeat for approximately 1 minute (followed by a rest period of 2 minutes). Work up to 10 minutes, 4 times daily.

6. Learn to do diaphragmatic breathing while lying, then sitting, and ultimately standing and walking.

   a. Coordinate diaphragmatic breathing with stair climbing, lifting, etc.

   b. Carry out activity (lifting) during the prolonged expiration phase.

Rationale/Amplification

This helps the patient to become aware of the diaphragm and is its function in breathing.

Slow inhalation provides ventilation and hyperinflation of the lungs.

3. Contracting the abdominal muscles assists the diaphragm in rising to empty the lungs.

4. Contraction of the abdominal muscles should take place during expiration.

6. Diaphragmatic breathing helps the patient breathe in a controlled manner during activities that produce dyspnea. If the patient becomes short of breath, have him stop the exercises until his breathing pattern comes under control.

Pursed-Lip Breathing

Purposes

1. To slow the respiratory rate
2. To assist in emptying the lungs
3. to combat dyspnea due to exertion

Instruct the patient as follows:

1. Inhale through the nose.

2. Exhale slowly and evenly against pursed lips while contracting (tightening) the abdominal muscles. Count to 7 while prolonging expiration through pursed lips.

3. Sit in a chair. Fold the arms across the abdomen.
   a. Inhale through the nose.
   b. Bend over and exhale slowly through pursed lips while counting to 7.

4. While walking:
   a. Inhale while walking 2 steps.
   b. Exhale through pursed lips while walking 4 steps.

2. Pursing the lips increases intrabronchial pressure (helps maintain the bronchi in an open position) as well s intro-alveolar pressure. The pursed-lip maneuver also prolongs the expiratory phase of breathing, makes it easier to empty the air in the lungs and promotes carbon dioxide elimination.

   b. Learning forward pushes the abdominal organs upward.

4. Try any similar combinations according to breathing tolerance of patient.

Other Exercises

Lower Side Rib Breathing

1. Place hands on sides of lower ribs.
2. Inhale deeply and slowly while sides expand moving hands outward.
3. Exhale slowly through pursed lips and feel the hands and ribs move inward.
4. Rest.

Lower Back and Rib Breathing

1. Sit in a chair. Place hands behind back; hold flat against lower ribs.
2. Inhale deeply and slowly while rib cage expands backward; the hands will move outward.
3. Keep hands in place. Blow out slowly; hands will move in.

Segmental Breathing

1. Place hands on sides of lower ribs.
2. Inhale deeply and slowly while concentrating on moving the right hand outward by expanding the right rib cage.
3. Ensure that the right hand moves outward more than the left hand.
4. Keeping hands in place, exhale slowly and feel the right hand and ribs moving in.
5. Repeat, concentrating on expanding left side more than the right side.
6. Rest.

C. Coughing

Coughing promotes the removal of chest secretions.

1. Interlace the fingers and place the hands over the proposed incision site; this will act as a splint during coughing and not harm the incision.

2. Lean forward slightly while sitting in bed.

3. Breathe, using the diaphragm as described under diaphragmatic breathing (see above, item A).

4. Inhale fully with the mouth slightly open.

5. Let out 3 or 4 sharp "hacks".

6. Then, with mouth open, take in a deep breath and quickly give 1 or 2 strong coughs.

7. Secretions should be readily cleared from the chest to prevent respiratory complications (pneumonia, obstruction, etc.).

POSTURAL DRAINAGE

IF A PERSON IS HAVING DIFFICULTY COUGHING UP STICKY PHLEGM DESPITE DRINKING LOTS OF WATER AND BREATHING HOT WATER VAPORS, HAVE HIM LIE WITH HIS HEAD AND CHEST PARTLY OVER THE SIDE OF A BED (AFTER HE HAS BREATHED HOT WATER VAPORS) AND POUND HIM LIGHTLY ON THE BACK TO HELP BRING OUT THE MUCUS.

Postural Drainage Exercises

Postural drainage is the use of specific positions so that the force of gravity can assist in the removal of bronchial secretions from the affected bronchioles into the bronchi and trachea by means of expectoration

Nursing Management

1. make the patient comfortable before the procedure starts.
2. The exercises ar usually performed 2 to 4 times daily, before meals and at bedtime.
3. Discontinue the procedure if tachycardia, palpitations, dyspnea, chest pain, or other symptoms occur-may indicate hypoxemia.
4. Encourage the patient to cough after he has spent the allotted time in each position.
   Encourage diaphragmatic breathing throughout postural drainage exercises; this helps widen airways so that secretions can be drained.

Figure 7-7. Postural drainage. The patient is positioned to allow the involved segments of the lung to drain by gravity.

Upper lobes, anterior segment

Lower lobes, anterior basal segment

Lower lobe, lateral basal segment

Lower lobes, superior segments

INFLAMED VEINS (PHLEBITIS)

SOMETIMES NORMAL OR VARICOSE VEINS BECOME INFLAMED OR BLOCKED BY BLOOD CLOTS. INFECTIONS OF THE LEGS (OR ARMS). INJURY, OR BEING IN BED FOR A LONG TIME AFTER AN OPERATION CAN CAUSE THIS PROBLEM. (A PERSON WITH PHLEBITIS IS AT RISK FOR PULMONARY EMBOLUS, A BLOOD CLOT WHICH TRAVELS TO THE LUNGS. SEE RESPIRATORY SECTION FOR DISCUSSION.)

SYMPTOMS/SIGNS

- PHLEBITIS CAN OCCUR IN NORMAL OR VARICOSE VEINS IN LEG OR ARM (USUALLY LEG).
- THE PATIENT WILL COMPLAIN OF PAIN AND THE EXTREMITY MAY BE SWOLLEN.
- IF LOWER LEG IS INVOLVED, PAIN OFTEN INCREASES WHEN FOOT IS FLEXED TOWARDS THE HEAD (DORSIFLEXION OF FOOT).

TREATMENT

- ELEVATE THE EXTREMITY.
- BEDREST UNTIL LOCAL TENDERNESS AND SWELLING IS GONE.
- WARM WET COMPRESSES.
- WRAP EXTREMITY SNUGLY IN ELASTIC BANDAGE (FOOT TO THIGH, IF LEG).
- ASPIRIN FOR PAIN. ALSO ASPIRIN MAY HELP PREVENT FURTHER CLOT FROM FORMING.
- WHEN LOCAL SWELLING AND TENDERNESS IS GONE, GRADUALLY BEGIN WALKING THE PATIENT (WITH ELASTIC BANDAGE ON). PATIENT SHOULD WALK SLOWLY AND NOT SIT OR STAND. ACTIVITY CAN BE GRADUALLY INCREASED.
- DO GENTLE PASSIVE AND ACTIVE EXERCISE AS PATIENT IMPROVES.

PREVENTION

- WHEN A PATIENT IS BEING TREATED FOR INFECTION, BEGIN WALKING AS SOON AS POSSIBLE. THIS WILL HELP BLOOD CIRCULATE AND PREVENT BLOOD CLOTS.

<u>Passive Range of Motion Exercises</u>: (R.O.M.)

<u>Purpose</u>:

1. To maintain full joint motion
2. To prevent contractures
3. indicated for temporary or permanent loss of mobility

Activity:

Exercise for the patient carried out by the nurse:

1. Determine Joints that need R.O.M. exercises
2. Ask doctor about patients limitations
3. Perform exercises gently and slowly
4. Perform exercises to the end to normal R.O.M. or to the point of pain
5. Never force a joint to move beyond resistance or continue movement beyond point of pain
6. Explain procedure to patient
7. Position patient as flat as possible

I. Neck:

1. Support top of head with one hand, underside of neck with other hand.
   a. Extension
      Bend neck backward so patient looks at ceiling
   b. Flexion
      bend lead forward at neck bringing chin to chest
   c. Rotation
      turn patients head from right to left as if he were looking over his shoulder.

II. Shoulders:

Extension-flexion:

1. With patients arm in natural extended position at his side - palm facing his body
   a. Place one hand under his elbow grasp wrists with the other
   b. keeping elbow straight - bring it straight up until it reaches the ear

Vertical Abduction - Adduction:

1. Swing patents arm outward from the side, staying int the plane of the body (abduction)
2. Return arm to the side and direct it across midline to the other side (adduction)

3. To achieve full R.O.M. - externally rotate arm at shoulder, bring arm up to ear. Return to starting position
4. a. grasp elbow with one hand and the wrist with the other
   b. Carry patient's arm across body so hand touches

III. <u>Elbow</u>:

Extension-flexion

1. Place patient's arm at his side
2. Grasp wrist so hand won't drop
3. Keep upper arm on bed
4. Bring hand up toward shoulder (flexion)

IV. <u>Wrist</u>

1. Patient arm in natural extended position keeping elbow on bed lift hand into air
   a. Bend hand back
   b. Bend hand forward
   c. Rock hand sideways
   d. Rotate hand in circular motion

V. <u>Fingers</u>:

1. Same position as for wrist. Gently grasp palm and wrist with one hand
2. Place your hand on back of patients fingers gently bend his hand into a first
3. Gently straighten the fingers.
4. In same position gently spread two adjoining fingers apart and then bring them together. Repeat for all fingers.

VI. <u>Hip and Knee</u>: Extension - Flexion

a. one hand under ankle
b. One hand under knee
c. Bend hip and knee toward chest sliding your hand out from under the knee to allow full joint flexion.

Adduction - Adduction:

1. Place one hand on heel the other one ball of foot
2. Push foot toward the head and pull the heel back (dorsiflexion)

3. Plantar-flexion - pull foot down toward the bed and push the heel back.

VII. Circumduction:

1. Place one hand under ankle, grasp foot with other hand
2. Rotate ankle in circular motion

IX. Foot:

Inversion/Eversion

1. Place one hand under ankle - grasp foot with other hand - hold ankle securely. Twist foot with sole toward midline and then away from midline.

X. Toes:

Extension - Flexion:

1. Hold ankle with one hand
2. Curl toes toward sole
3. Straighten and stretch toes back

Abduction Adduction

1. Spread two adjoining toes apart)
2. Bring them together (adduction)

Special notes:

1. Joints begin to stiffen within 24 hours
2. Start R.O.M. exercises as soon as possible
3. Perform them at least once a shift
4. Repeat each exercise at least 3 times. More often necessary.

Type of body Part joint type of Movement

Neck, cervical spine — Pivotal

Flexion: bring chin to rest on the chest

Extension: return head to erect position

Hyperextension: bend head back as far as possible

Lateral flexion: tilt head as far as possible toward each shoulder

Rotation: turn head as far as possible to the right and to the left

Flexion: raise arm from side position forward to a position above the head

Extension: return the arm to position at side of the body

Hyperextension: move arm behind the body, keeping elbow straight

Abduction: raise arm to the side to a position above the head with palm away from the head

Adduction: lower arm sideways and across the body as far as possible.

Type of body Part	Joint	Type of Movement
Shoulder		
		Internal rotation: with elbow flexed, rotate the shoulder by moving the arm until the thumb is turned inward and toward the back
		External rotation: with elbow flexed, move arm until thumb is upward and lateral to the head
		Circumduction: move the arm in a full circle. Circumduction is a combination of all movements of the ball and socket joint
		Flexion: move palm to ward inner aspect of the forearm
		Extension: move fingers so that fingers, hands, and forearm are in the same plane
		Supination: turn lower arm and hand so that palm is up
		Pronation: turn lower arm so that palm is down

Flexion: bend the elbow so that the lower arm moves toward its shoulder joint and the hand is level with the shoulder

Extension straighten elbow by lowering hand

Hyperextension: bend the lower arm back as far as possible

Type of Body Part Joint	Type of Movement
Hip	
	Circumduction: move leg in a circle
Knee hinge Joint	
	Flexion: bring heel back toward back of thigh
	Extension: return heel to the floor

Ankle Hinge Joint

Dorsal flexion: move foot so that toes are pointed upward

Plantar flexion: move foot so that toes re pointed downward

Type of Body Part Joint	Type of Movement
Foot Gliding	
	Inversion: turn sole of foot medially
	Eversion: turn sole of the foot laterally
Toes Condyloid	
	Flexion: curl toes down ward
	Extension: straighten toes
	Abduction: spread toes apart
	Adduction: bring toes together

Type of Body Part	Joint	Type of Movement
Wrist		
		Hyperextension: bring dorsal surface of hand back as far as possible
		Adduction (radial flexion): bend the wrist medially toward the thumb.
		Adduction (ulnar flexion): bend the wrist laterally toward fifth finger
Fingers	Condyloid hinge	
		Flexion: make a fist
		Extension: straighten fingers
		Hyperextension: bend fingers back as far as possible.
		Adduction: spread fingers apart
		Adduction: bring fingers together
Thumb	Saddle	Flexion: move thumb across palmar surface of hand
		Extension: move thumb straight away from hand
		Adduction: extend thumb laterally (usually done when placing fingers in adduction and adduction)

Adduction: move thumb back toward hand

Opposition: touch thumb to each finger of the same hand

Type of Body Part	Joint	Type of Movement
Hip	Ball and socket	
		Flexion: move the leg forward and up
		Extension: move leg back beside the other leg
		Hyperextension: move leg behind body

Abduction: move leg laterally away from body

Adduction: move leg back toward medial position and beyond if possible

Internal rotation: turn foot and leg toward the other leg

External rotation: turn foot and leg away from the other leg

Intake and Output

Purpose:

1. To evaluate a patients internal fluid balance
2. To diagnose specific disease states
3. To plan fluid replacement by knowing deficits (lack of) fluids
4. to make a written record of the patients total fluid intake and output

I. Patients needing Accurate Recording of Intake and output:

1. Burns
2. Kidney failure
3. Severe diarrhea/vomiting
4. Cardiac problems/congestive heart failure
5. Patients receiving diuretics or steroids
6. Patients on intravenous therapy
7. Patients with urinary catheter
8. Patients with nasogastric tubes

II. **Measurable Sources of Fluid Intake:**

1. All fluids taken by mouth
2. All liquid food
3. All intravenous fluids and intravenous medications
4. Any gastro - intestinal tract instillation
5. Any body cavity instillation (bladder irrigation)
6. Tube feedings
7. Liquid used to clear tubes

III. **Measurable sources of Fluid output:**

1. Urine
2. Vomitus
3. Diarrhea or stool
4. Nasogastric drainage
5. Wound drainage
6. Blood loss
7. Any drainage tube/ex: colostomy's ileostomy's
8. urine catheter

Special note:

1. Estimate amount of diaphoresis (sweat, perspiration) If the patient's bed clothes are saturated with perspiration this is equal to about 1 liter of fluid.
2. Whenever possible, measure don't estimate fluids
3. For the patient who is incontinent, record the number of voiding's and estimate the amount of urine.
4. If available. always use a graduated fluid collection container to measure all amounts of fluid accurately.

IV. **Recording Intake and output**

1. At the end of each eight hour shift calculate total I and O.
2. Enter on patients I and O record
3. After three shifts chart the 24 hour total

Note: Intake and output, though not exactly equal, are usually, within 200 - 300 ccs of each other

V. Nursing action if Intake and output are not equal:

1. Check to see if any other health care worker has given the patient fluids and not recorded the amount.
2. Ask family members if they have given fluids to the patient
3. Check for error in adding measurements
4. Check to see if IV volumes are recorded each shift and that the remaining fluid in the bag is reported to the next shift
5. Check for losses that might not be recorded or noted by other health care workers

    a. excessive perspiration
    b. extended high temperature
    c. incontinence of stool or urine
    d. Rapid respirations
    e. Large open skin areas with serum loss

VI. Factors that add to fluid loss:

1. Hypotension
2. Hypovolemia
3. Stress
4. Surgery (alters hormonal regulation of output)
5. Kidney disease
6. Lung disease

Special Note: Check patient's vital signs and mental status when there is gross deviation between intake and output.

NURSING CARE OF THE UNCONSCIOUS PATIENT

Nursing responsibilities:

1. Maintain patent airway, breathing and circulation.
    a> Keep patient in "recovery position" (semiprone).

2. Assess the level of consciousness.

3. Evaluate the progression of all vital signs.

4. Maintain fluid and nutritional balance

a> Give IV as indicated.

b> Give feedings by NG tube as indicated.

5. Prevent complications.

a> Be aware of varying phases of restlessness - it may indicate the patient is regaining consciousness. It may also mean that he has a partially obstructed airway, distended bladder, overlooked bleeding, a fracture or brain injury.

b> Keep skin clean, dry and free from pressure.

c> Do range of motion exercises on all extremities 4 times daily to prevent contracture deformities.

d> Turn patient from side to side at regular intervals.

e> Observe and treat patient for distended bladder.

f> Observe and treat patient for constipation and diarrhea.

g> Give oral care periodically.

h> Protect the eyes from corneal irritation and drying.

i> protect patient during convulsive seizures.

j> Be alert for developing complications:

1> respiratory (infections, aspiration, obstruction)
2> fluid imbalance
3> infection (urinary, bed sores)
4> bladder and gastrointestinal distension
5> convulsive seizures
6> gastrointestinal bleeding

CARE OF THE UNCONSCIOUS PATIENT

Definition: Loss of consciousness or unconsciousness is a condition in which a person is unaware of events around him and cannot be awakened. He does not wake up when he is called by name or when he is shaken or when he feels light or strong pain.

Causes of unconsciousness:

1. Lack of oxygen to the body (asphyxia)
2. Head injuries
3. Bleeding into the brain
4. Electric shock
5. Convulsions
6. Shock
7. Poison and drugs or alcohol
8. Diabetes - Insulin shock - malaria
9. Fainting

Sings of unconsciousness:

1. Patient will not respond when called or touched
2. Signs vary according to the cause of the unconsciousness.
   a) Shock weak rapid pulse low blood pressure cold clammy pale skin blue lips and nailbeds dehydration.
   b) head trauma - signs of injury, unequal pupils

Care of the unconscious patient

1. ABC's make sure the airway is clear first!
   a) The muscles of an unconscious person are completely relaxed. If he is lying on his back the tongue will fall back and block the throat so air cannot get through.

2. <u>If the victim is breathing place him in the recovery of safety position</u>.

a) Kneel down on the side to which you will turn the victim. Stretch his nearest arm along his body and place that hand under his buttock.

b) Bend his nearest leg at the hip and knee. Place his other arm across his chest with his other hand on his shoulder.

c) Place one of your hands on his shoulder and the other on his hip then pull him onto his side. Move your hand from his shoulder and support his head during the rest of the turn.

d) Pull the victim's lower arm away from his back. Move his head back to ensure a clear air passage. Put the hand of the other arm under his cheek. Correct the position of his legs.

3. An unconscious victim MUST be turned to the recovery position. If he vomits the fluid will then drain out of his mouth and will not get into his air passage and cause choking.

4. Transport an unconscious person in the recovery position if possible. This will ensure that he does not inhale his vomit and choke, or that his tongue will not fall to the back of his throat and block the air passage.

5. Assess the patient carefully for possible causes of his unconsciousness and treat accordingly.

Enema's

I. **Purpose:**

1. to relieve constipation
2. To relieve fecal impaction
3. To cleanse bowel prior to surgery
4. To relieve abdominal distention

II. **Equipment:**

1. Water container with attached rectal tubing
2. Normal saline, tap water, soap solution
3. Water soluble lubricant
4. Plastic or towel
5. For bedridden patients, bedpan

III. **Administering enema to an adult:**

1. Explain procedure to patient
2. Explain benefits of relaxing and taking deep breathes
3. Place bed protector (plastic or towel) under patient
4. Place patient on his left side with top leg flexed at hip
5. Fill water container with 750 to 1000 cc of lukewarm solution
6. Allow solution to run through tubing so that all air is removed
7. Lubricate tip of tubing

8. Gently insert tube three to four inches into the rectum. Avoid traumatizing the patient if there are hemorrhoids.
9. Raise the container to a maximum of 18 inches
10. Slowly release clamp of tubing and allow solution to gently flow into the rectum. If the rate is slow, the patient will not experience cramping sensations in the abdomen
11. Always hold the tubing in place near to the patient's rectum.
12. If the patient has cramping, your can stop the infusion and tell him to take slow deep breaths. Then resume the procedure.
13. After the solution is finished secure the clamp and gently remove the tubing
14. Ask the patient to try to retain the solution for as long as possible 15-20 minutes.

IV. Other Types of Enemas:

1. Olive oil - 4-10 ounces
2. Temperature - Lukewarm
3. Follow procedure as above
4. Retain for one half hour to one hour
5. Follow up soap and water enema
6. Follow up plain tap water enema

V. Soap and Water Enema

1. Tap water
2. Soft soap (small size of walnut) two ounces of prepared solution to ten ounces of water.
3. Temperature - lukewarm
4. Amount of prepared solution 750 - 1000 cc.

Special Notes:

1. Soap and tap water enema's:
   a. Mild Soap solutions stimulate the bowel
   b. Strong soap solution can cause severe irritation of the mucous membrane of the colon.
2. Solutions that are too hot or too cold and instilled quickly can cause cramping, damage to rectal tissues and shock.

Rectal Tube

I. **Purpose:**

1. To help with relief of flatulence (gas) in the digestive tract followed by surgery.
2. To prevent abdominal distention caused by flatulence (gas)
3. To stimulate expulsion of (gas) in the lower digestive tract

II. **Causes of Flatulence:**

1. Excessive swallowing of air

III. **Equipment:**

1. Rectal Tube
2. Small plastic bag or stool specimen container
3. Lubricant
4. Bed protector (plastic - towel)

IV. **Procedure:**

1. Explain procedure to patient
2. Place patient on left side with upper leg flexed at hip
3. Tape plastic bag around distal end of rectal tube or insert tube into container
4. Vent upper side of plastic bag to prevent inflation
5. Lubricate rectal tube
6. Gently insert into rectum 2-4 inches for adults
7. Gently tape tube in place
8. Leave in approximately 20 minutes
9. Gently remove tube
10. Clean perineum - make patient comfortable
11. Clean tubing - removing and throw away plastic bag.

COMMON DISEASES
DIAGNOSIS-TREATMENT

DERMATOLOGY

DRY SKIN

Cause

- Dry skin is very common in Afghanistan and is due to the dry atmosphere.
- The skin can become so dry that it cracks and bacteria can enter causing an infection.
- Dry skin is also caused by protein malnutrition.
- It is common in children who don't wash often, old people, and on hands and feet of people who work outdoors.
- Caused by loss of natural oils in skin.

Symptoms

- Itching

Signs

- Skin is rough and has scales.
- it is not red and has no lumps, water, puss or scabs.

Investigations

- Take pulse, temperature and weight.

Treatment

- Soak skin in water with a little OIL in it. Rub skin gently with a stone to remove dead skin.
- Rub VASELINE and MENTHOL into the skin BD for one week.
- Use cold compresses for itching.
- if there are cracks in the skin, apply GENTIAN VIOLET to prevent secondary bacterial infection.
- If skin is dry on the feet, advise patient to rub feet with OIL and to wear socks.

Complications

- Secondary bacterial infection from scratching

Prevention

- Rub OIL into the skin regularly.
- Don't use strong soap.

COLD SORES

Cause

- HERPES virus that causes chicken pox, zoster, mouth ulcers, conjunctivitis and corneal ulcer.
- Spread by touching the fluid from the vesicles.

Symptoms

- Initially

  painful area around the mouth or nose.
- After 2 days
  - group of painful vesicles appear on a red base. Vesicles break and form a crust. Can also be fever and loss of appetite. lasts about a week and goes away without treatment.

Signs

- Tends to recur in the same place at irregular intervals over several years, but gets less severe each time and eventually disappears.

Investigations

- Take pulse, temperature and weight.
- Monitor all children for malnutrition.

Treatment

- As for all viruses:
  - rest in bed if sick.
  - drink plenty of fluids and ORS.
  - continue eating a soft diet.
  - continue feeding sick children.
  - PARACETAMOL for pain and fever.
- Feed babies with a cup and spoon if they can't suck.
- Wash the area with warm, soapy water to clear away the crusts and allow the sun to dry it.
- Remember the fluid is infectious and can spread the virus to other parts of the body or to other people.

Complications

- Generalized herpes infection, pneumonia, meningitis in malnourished children, diarrhea.

prevention

- Wash hands with soap before touching food.
- Wash hands with soap after touching the area.
- Breastfeed babies until 2 years old.

HERPES ZOSTER (SHINGLES)

A VIRAL DISEASE SEEN ONLY IN THOSE WHO ONCE HAD CHICKENPOX.

SYMPTOMS/SIBNS

A PATCH OF SMALL PAINFUL BLISTERS APPEARS USUALLY ON ONE SIDE OF THE BODY IN A CLUSTER OR STRIPE. USUALLY BLISTERS LAST 2 OR 3 WEEKS THEN HEAL. SOMETIMES PAIN REMAINS AFTER BLISTERS HAVE GONE.

TREATMENT

1. ASPIRIN FOR PAIN
2. KEEP CLOTHES FROM RUBBING

PTERYGIUM

A triangular growth of tissue that extends from the conjunctiva onto the cornea. It is caused by exposure to sun, wind and dust. When irritated, it becomes vascular (localized redness) and may cause a burning sensation. It is not an infection.

Prevention and Treatment

MILD

1. Dark sunglasses, important.
2. OPTISOL may decrease the burning discomfort. Administer for symptomatic relief.

SEVERE	If patient is losing his eyesight because of growth of tissue, refer him to hospital for surgical removal.

SQUINTS

Cause	Congenital weakness of one or more eye muscle.
Symptoms	Parents notice that one eye deviates. May be intermittent.
Signs	One eye deviates from the midline.
investigations	Take pulse, temperature and weight. Test the visual acuity.
Treatment	Treat when child is very young. The earlier the better. Cover the good eye with a patch for a month. For older children and adults, operation is the only treatment.
Complications	Nil
Prevention	Nil

EYE INJURIES

BLUNT INJURY TO THE EYE

A patient who has been struck forcefully in the eye may come to your clinic because of pain and/or decreased vision. He may have a corneal abrasion. If you see bright blood between the clear conjunctive and the white sclera, he has a SUBCONJUNCTIVAL HEMATOMA. Though this looks bad, it is not serious and goes away by itself. Reassure the patient.

A more serious injury results when there is bleeding in the clear chamber between the cornea and the pupil (anterior chamber). This condition is called a HYPHEMA and should be considered in all patients with blunt eye trauma and decreased vision.

HYPHEMA

Signs and Symptoms

- Decreased vision (can see light but vision is cloudy).
- Anterior chamber of the eye looks cloudy when a flashlight is directed toward it from the side OR you see a layering out of blood in the chamber.

Treatment

1. Bed rest in a quiet room with head elevated.
2. DIAZEPAM 5 mg 3 times/day for 3 days.
3. Emphasize to the patient or parents that this is a serious injury and the patient must stay in bed. If not, the bleeding may recur and cause irreversible injury.

C. Lymphatic System

A system of small vessels carrying a thin fluid called lymph from peripheral tissues to regional lymph glands (which filter the lymph) before it passes into the venous circulation at the level of the superior vena cava. The lymph is comprised of fluid from the extracellular spaces and often carries away products of inflammation of the tissues.

Lymphedema: That edema caused by build-up of lymph in the peripheral tissues as a result of blockage of the lymph channels in the more central areas. Caused by scarring, neoplasm, filariasis, or removal at surgery for another cause.
Symptoms: Gradual swelling, soft and slightly pitting at first, but becoming firmer and non pitting later. May become extreme as in Elephantiasis.

Treatment:

1. Low salt diet
2. Elastic wrap or extremity
3. Elevate the involved part.
4. Surgery if lymphedema is advanced

Epididymitis/Orchitis

Epididymitis is inflammation of the epididymis, likewise orchitis is inflammation of the testes. Epididymitis is usually caused by bacterial infection and should be treated. Orchitis is very rare and often associated with viral infections such as mumps.

Signs and Symptoms:

Painful, swelling of one testicle or epididymis.
Fever
Pain with ejaculation
Bacteria and/or WBC in ejaculate.

Treatment:

Epididymitis: Bedrest with testicle elevation, if possible, Fluids
Antibiotics - Trimethoprim/sulfa normal dose x 10 days.

Orchitis: Supportive therapy with bedrest, paracetomal, and fluids only.

Other GU infections

Tinea Cruris Fungal infection - See Dermatology section. PID and Gyn infections - See OB/Gyn section.

Acute Prostatitis - This is an uncommon infection of the prostate gland which occurs most commonly in young sexually active men.

Signs and symptoms: Dysuria
Pain with ejaculation
Swollen tender prostate on rectal exam.

Treatment: Trimethoprim/sulfa-normal dose x 10 days. if not cleared use Tetracycline 500 mg qid x 10 days

PROSTATITIS

PROSTATITIS IS A BACTERIAL INFECTION OF THE PROSTATE GLAND IN ADULT MEN.

SYMPTOMS/SIGNS

- PAIN IN THE PELVIS, FEVER, DIFFICULTY URINATING.
- THERE MAY BE URETHRAL DISCHARGE AND FREQUENT URINATION.
- THERE MAY ALSO BE BACK ACHE.
- ON RECTAL EXAM THE PROSTATE IS ENLARGED AND TENDER

TREATMENT

- FLUIDS
- STOOL SOFTENERS
- SIT IN A TUB OF HOT WATER
- COTRIMOXAZOLE FOR 14 DAYS (MINIMUM)

OR

ALTERNATE ANTIBIOTICS - TETRACYCLINE 500 MG EVERY SIX HOURS OR AMPICILLIN 500 MG EVERY SIX HOURS FOR 14 DAYS (MINIMUM)

HERNIA

Hernia is the protrusion of a viscus from its normal cavity through a congenital aperture.

Anatomy:

The testicle is formed in the abdomen next to the kidney and, before birth, the testicles migrate down and through the inguinal canal (in the groin) and under the skin to the scrotum, where they permanently reside.

When the inguinal canal remains open the abdominal contents can be forced into the inguinal canal by high intrabdominal pressure (as in straining to life a heavy object or by coughing). The extruded intestine, or omentum, thus pushed into the canal can be either restored to the abdominal cavity spontaneously, get stuck in the canal, or migrate into the scrotum thus enlarging that side of the scrotum.

Signs and Symptoms:

1. Some discomfort when the hernia pushes into the inguinal canal, especially the first time.

2. There is no pain when the hernia comes down frequently as the canal gets stretched and looser.

3. There may be pain if the hernia gets stuck (incarcerated) and much pain if it gets stuck and also obstructs the blood supply to the herniated loop of bowel (strangulated).

Examination:

1. Firm, slow, persistent pressure on the hernia mass in the direction of restoration into the abdomen will reduce the mass back into the abdomen, thus proving that the hernia is <u>reducible</u>.

2. If the hernia mass will not be restored to the abdomen, the hernia is <u>irreducible</u>.

<u>SYPHILIS</u>

SYPHILIS IS A SERIOUS BACTERIAL DISEASE SPREAD FROM PERSON TO PERSON THROUGH SEXUAL CONTACT.

SYMPTOMS/SIGNS

-FIRST SIGN IS USUALLY A PAINLESS SORE, CALLED CHANCER. IT APPEARS 2 TO 5 WEEKS AFTER SEXUAL CONTACT WITH A PERSON WHO HAS SYPHILIS. THE CHANCRE MAY LOOK LIKE A PIMPLE, BLISTER, OR OPEN SORE. IT USUALLY APPEARS IN THE GENITAL AREA OF THE MAN OR WOMAN (OR LESS COMMONLY ON THE LIPS, FINGERS, ANUS OR MOUTH). THIS SORE IS FULL OF SYPHILIS ORGANISMS EASILY PASSED ON TO ANOTHER PERSON. THE SORE IS PAINLESS (UNLESS IT BECOMES INFECTED WITH OTHER BACTERIA). THERE WILL BE NON-TENDER LYMPH NODES IN THE GROINS.

-THE SORE ONLY LASTS A FEW DAYS AND THEN GOES AWAY WITHOUT TREATMENT BUT DISEASE CONTINUES SPREADING THROUGH THE BODY

-WEEKS OR MONTHS LATER THERE MAY BE SORE THROAT, MILD FEVER, MOUTH SORES OR SWOLLEN JOINTS OR SKIN LESIONS AS SHOWN IN THIS DRAWING.
THESE LESIONS ARE VERY CONTAGIOUS.

All of these sings usually go away by themselves, and then the person often thinks he is well - but the disease continues. Without adequate treatment, syphilis can invade any part of the body, causing heart disease, paralysis, Insanity, and many other problems.

TREATMENT

-BENZATHINE PENICILLIN 2.1 MILLION UNITS IM, ONCE. (GIVE 1.2 MILLION UNITS IN EACH BUTTOCK).

ALTERNATE TREATMENTS:

1. TETRACYCLINE 500 MG FOUR TIMES A DAY ORALLY X 15 DAYS (DO NOT USE IN PREGNANCY)

OR

2. ERYTHROMYCIN 500 MG FOUR TIMES DAY ORALLY X 15 DAYS.

-ISOLATE PATIENT TILL ALL LESIONS HEALED

NOTE: IF SYPHILIS IS NOT TREATED PROPERLY IN THE EARLY STAGES, MONTHS OR YEARS LATER THE DISEASE MAY DESTROY THE CENTRAL NERVOUS SYSTEM AND/OR CARDIOVASCULAR SYSTEM. ALSO, UNTREATED SYPHILIS DURING PREGNANCY CAN DAMAGE THE BABY.

ALL SEXUAL PARTNERS SHOULD BE TREATED.

GONORRHEA

GONORRHEA IS AN INFECTIOUS DISEASE USUALLY SPREAD BY SEXUAL CONTACT. IN MAN THE FIRST SIGNS OF GONORRHEA BEGIN 2 TO 5 DAYS AFTER SEXUAL CONTACT WITH AN INFECTED PERSON. IN WOMEN THERE MAY BE NO SIGNS BUT THEY CAN STILL GIVE THE DISEASE TO SOMEONE ELSE.

SYMPTOMS/SIGNS

MEN:

- PAINFUL URINATION
- DROPS OF PUS FROM THE PENIS
- DIFFICULT URINATING

WOMEN:

- OFTEN NO SYMPTOMS
- MAY BE A LITTLE PAIN WHEN URINATING OR SLIGHT VAGINAL DISCHARGE

MAY HAVE PAIN IN THE LOWER ABDOMEN

(COMPLICATED CASES MAY HAVE FEVER, ARTHRITIS, RASH, CONJUNCTIVITIS, PHARYNGITIS)

TREATMENT OF UNCOMPLICATED GONORRHEA

PREFERRED TREATMENT: ONE DOSE OF 4.8 MILLION UNITS OF PROCAINE PENICILLIN IM ONE HALF IN EACH BUTTOCK) WITH 1 GRAM OF PROBENECID GIVEN ORALLY, IF AVAILABLE, PRIOR TO INJECTIONS.

OR

TETRACYCLINE 500 MG EVERY SIX HOURS FOR 10 DAYS.

OR

AMPICILLIN 3.5 GRAMS ORALLY (ONE DOSE) WITH 1 GRAM ORAL PROBENECID (IF AVAILABLE).

DO NOT USE TETRACYCLINE IN PREGNANT WOMEN.

ALL SEXUAL PARTNERS MUST BE TREATED, INCLUDING WIFE IF SHE WAS EXPOSED.

FOR COMPLICATED GONORRHEA, REFER TO HOSPITAL.

NOTE: IF THE MOTHER IS INFECTED, GONORRHEA MAY INFECT THE EYES OF A NEWBORN INFANT AS IT PASSES THROUGH THE BIRTH CANAL. FOR TREATMENT OF THE BABY, SEE DISCUSSION OF INFECTED EYES IN NEWBORN BABIES (NEONATAL CONJUNCTIVITIS) IN THE EYE SYSTEM

IMPOTENCE AND INFERTILITY

A. Impotence

Impotence is the inability to attain or maintain an erection. In the majority of the cases, the cause is psychological usually anxiety or depression. Rarely, impotence is caused by organic disease such as neurologic damage (spinal cord injury) or vascular disease.

Treatment:
The best treatment is to talk to the patient, especially about recent stresses. Educate the patient to the possible relationship of anxiety, depression and impotence. Diazepam only aggravates the condition-do not give this

B. Infertility (sterility)

Infertility is the inability for a man and a woman to have children. It can be caused by many things and either partner, or both, can be the cause. Some conditions can be treated, while some cannot. The following is a list of conditions which are treatable and can cause infertility in either the man or women:

Severe anemia
Malnutrition
Iodine deficiency (goiter)
Infections such as Tuberculosis
Man - Prostatitis
Epididymitis
Urethritis
Woman - Pelvic infection
Vaginal infection

Treatment:
Treat above problems talk to both husband and wife.

BRUCELLOSIS

BRUCELLOSIS IS A BACTERIAL DISEASE CARRIED BY INFECTED CATTLE, GOATS, [illegible], FAT-TAILED SHEEP, AND CAMELS. IT IS USUALLY CAUSED BY DRINKING MILK OR EATING POORLY COOKED MEAT FROM INFECTED ANIMALS OR HANDLING INFECTED MEAT OR WORKING WITH INFECTED ANIMALS WHILE HAVING A CUT ON THE SKIN.

SYMPTOMS/SIGNS

-BRUCELLOSIS MAY START WITH FEVER AND CHILLS, BUT OFTEN BEGINS GRADUALLY WITH INCREASING TIREDNESS, WEAKNESS, LOSS OF APPETITE, HEADACHE, STOMACH ACHE AND JOINT PAINS.

-FEVERS MAY BE MILD OR SEVERE. THEY TYPICALLY START IN AFTERNOON WITH CHILLS AND END WITH SWEATING IN EARLY MORNING. THE FEVERS MAY STOP FOR SEVERAL DAYS, THEN RETURN.

-LYMPH NODES AND SPLEEN MAY BE ENLARGED. OCCASIONALLY THE LIVER IS ENLARGED.

IF NOT TREATED, BRUCELLOSIS MAY LAST FOR YEARS.

TREATMENT

-TETRACYCLINE 500 MG EVERY SIX HOURS FOR AT LEAST 21 TO 30 DAYS. (ADULT DOSE) AMPICILLIN MAY BE EFFECTIVE IF UNABLE TO TAKE TETRACYCLINE.
-BED REST WHILE HAVING FEVERS
-GOOD HYDRATION AND NUTRITION.

PREVENTION

-PASTURIZE OR BOIL MILK.
-AVOID HANDLING CATTLE, GOATS, CAMELS AND SHEEP IF CUTS OR SCRAPES ON THE SKIN.