



Integrated Technical Guidelines *for* **Frontline Healthworkers**



Second Edition



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Foreword

The Zambian health reform process has reached its ninth year of implementation. Management systems have been strengthened through reorganising the health care delivery system and decentralising responsibility and authority for health care to District Health Boards and Hospital Management Boards respectively. This includes concerted efforts to strengthen the capacity of health workers in areas that have not traditionally been part of their functions, such as planning and managing health services, and working with communities. The activities undertaken to date are not a one-stop effort – the government and co-operating partners are committed to building the capacity in the health sector in all areas of need in order to achieve the vision of providing “*equity of access to cost-effective, quality health care as close to the family as possible*”.

On behalf of the Central Board of Health (CBoH), I salute the efforts of each and every frontline health worker at community level, health posts, health centres, district hospitals, and the district health offices throughout the country. You have shown dedication and commitment in implementing the health reforms under difficult conditions. Undoubtedly, frontline health workers remain the *key players* in achieving the health reform vision.

Despite the gains made to date, however, many illnesses and conditions such as malaria, the Human Immunodeficiency Virus (HIV) and the Acquired Immunodeficiency Syndrome (AIDS), diarrhoeal diseases, and acute respiratory infections (ARI) continue to challenge the performance of the health sector as it attempts to reduce the disease burden and deaths in Zambia. It is, therefore, imperative that the frontline health workers are technically up-to-date in the provision of quality basic health services.

In 1997, the CBoH disseminated the first edition of the Integrated Technical Guidelines (ITGs) for use by frontline health workers. This is the Second Edition, with up-to-date technical content in key promotive, preventive and curative interventions required to deliver the Basic Health Care Package (BHCP). We believe that frontline health workers will find these guidelines useful and that the Guidelines will enhance their ability to deliver quality technical promotive, preventive, and clinical services at health facilities and in the community. It is my sincere hope that concerted efforts by each and every one of us will go a long way in reducing the high disease burden and deaths borne by Zambians.



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Details of the contributors to this book are listed on the next page.

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Abbreviations

AFB acid-fast bacillus	CHW community health worker
AFP acute flaccid paralysis	CNS central nervous system
AIDS acquired immunodeficiency syndrome	COC combined oral contraceptive
ANC antenatal care	CPR contraceptive prevalence rate
APD acute psychotic disorder	CVA cerebral vascular accident
ARI acute respiratory infection	DDCC District Development Co-ordinating Committee
ARV anti-retroviral drug	DHMT District Health Management Team
ATS anti-tetanus serum	DOTS directly observed treatment short course (for TB)
BCG <i>Bacillus Calmette-Guérin</i> (TB vaccination)	DPT diphtheria, pertussis, and tetanus (vaccine)
BHCP basic health care package	DRRT District Rapid Response Team
b.i.d. twice a day	DT defaulter tracing
CA cancer	DTLFP District TB and Leprosy Focal Point
CBD community based distributor	ECC Epidemic Co-ordinating Committee
CBO community based organisation	ECPs emergency contraceptive pills
CBoH Central Board of Health	
CBR community based rehabilitation	

EHT environmental health technician	HIV human immunodeficiency virus
EPI expanded programme of immunisation	HIV + HIV positive
EPR emergency preparedness and response	HLD high level disinfectant
FAMS financial and administration management system	HMIS health management information system
FBC full blood count	HSV herpes simplex virus
FGD focus group discussion	IDD iodine deficiency disorders
FP family planning	IEC information, education, and communication
GMP growth monitoring and promotion	IM intra-muscular
GTI genital tract infection	IMCI integrated management of childhood illnesses
Hb haemoglobin	IMR infant mortality rate
HBC home based care	IP infection prevention
HCC health centre committee	IPT intermittent presumptive treatment
HepB hepatitis B	ITGs integrated technical guidelines
HIA health institution aggregation (form)	ITNs insecticide treated mosquito nets
Hib <i>haemophilus influenza</i>	IUD intra-uterine device

IVF intravenous fluid	ORS oral rehydration salts
IVI intravenous infusion	OVC orphans and vulnerable children
LAM lactational amenorrhea method	PCP pneumocystis carinii pneumonia
LGV <i>Lymphogranuloma venereum</i>	PHAST participatory hygiene and sanitation tools
MMR maternal mortality rate	PHC primary health care
MoH Ministry of Health	PHO provincial health office
MTCT mother-to-child transmission	PID pelvic inflammatory disease
ND notifiable disease	PLWA person living with AIDS
NFP natural family planning	POP progestin-only pill
NG naso-gastric	PPH postpartum haemorrhage
NGO non-governmental organisation	PTA parent-teacher association
NHC neighbourhood health committee	PV <i>per vaginam</i>
NIDs national immunisation days	QA quality assurance
o.d. once a day	q.i.d. four times a day
OPD outpatient department	RBM roll back malaria
OPV oral polio vaccine	RH reproductive health

RPR rapid plasma reagent	URTI upper respiratory tract infection
RRT rapid response team	USAID United States Agency for International Development
SC sub-cutaneous	UTH University Teaching Hospital
SIA supplemental immunisation activities	UTI urinary tract infection
SP sulfadoxine-pyramethamine	VCT voluntary counselling and testing
Stat. at once	VDC village development committee
STGs standard treatment guidelines	VIP ventilated improved pit latrine
STI sexually transmitted infection	VSC voluntary surgical contraception
TB tuberculosis	VVM vaccine vial monitor
TBA traditional birth attendant (tTBA is trained traditional birth attendant)	WASHE water, sanitation, and health education
TDRC Tropical Diseases Research Centre	WBN WASHE basic needs
t.i.d. three times a day	WHO World Health Organisation
TT tetanus toxoid	ZDHS Zambia Demographic and Health Survey
UCI universal child immunisation	ZIHP Zambia Integrated Health Programme
UNICEF United Nations Children's Fund	

Glossary

Acute: Sudden onset, usually with intense manifestation in severity and of relatively short duration.

Antisepsis: Protection against infection by destroying or containing the growth of micro-organisms attached to the skin or mucous membranes through the use of chemicals or disinfectants.

Artificial feeding: Feeding an infant on breast milk substitutes.

Asepsis: (*aseptic technique*): A method(s) of achieving a germ-free condition or environment. Asepsis helps to eliminate or reduce to a safe level the number of pathogenic organisms from the skin or tissues of the human body, or from surgical instruments.

Asymptomatic: With no observable symptoms.

Breast milk substitutes: Food marketed or otherwise represented as partial or total replacement for breast milk.

Causative agent: Substance that causes disease.

Cessation of breastfeeding: Stopping breastfeeding.

Chronic cough: Cough lasting more than 3 weeks.

Chronic illness: Disease of long duration – more than 3 weeks; usually develops slowly.

Cleaning: The process that physically removes dirt and other impurities, such as blood and secretions, from instruments and other equipment. For effective cleaning, it is important to wash the instruments with water and a liquid detergent, such as Axion. This process will remove up to 80% of most micro-organisms. Bath soap is not as effective as liquid soap in cleaning instruments.

Colostrum: A thick yellow milk secreted by the breasts during the first few days after delivery, that gradually evolves into mature milk at 3-14 days postpartum. It contains more antibodies and white blood cells than mature breast milk.

Complementary foods: Any food, whether manufactured or locally prepared, suitable as a complement to breast milk or infant formula when either becomes insufficient to satisfy the nutritional requirements of the infant. Also called weaning food or breast milk supplements.

Cost-effectiveness: Where the same desired result is achieved with the investment of less resources (human, material, financial, or time) as compared with an alternative approach.

Curative interventions: Eliminate illnesses or reduce their impact, e.g. early detection, prompt and effective treatment, and referral of illnesses, such as malaria, pneumonia, etc.

Decontamination: To render harmless or neutralise poisons used in the treatment of instruments and equipment before cleaning, to make them safer for handling by all personnel, particularly cleaning personnel. Such items include the examination bed, surgical instruments, gloves that have been contaminated with blood or body fluids in the course of medical procedures, etc.

Designated instructed observer: An individual who has been given the responsibility and guidance for observing a TB patient taking their drugs.

De-worming: Regular treatment for getting rid of intestinal worms.

Directly Observed Therapy Short Course (DOTS): A measure to ensure patient adherence to drug treatment; all doses of drugs are administered under supervision by a designated instructed observer.

Disinfection: The process of removing most, but not all, disease-causing micro-organisms from equipment and surfaces, usually by using chemicals.

Dormant micro-organism: Latent or sleeping micro-organism dwelling in specific areas of the body, such as the eye, mouth, ear, nerves, skin, respiratory system, and intestines. If these micro-organisms are transmitted to another location or the immunity becomes low, they become harmful. The types of organisms frequently encountered include: streptococcus, haemophilus influenza, fungal infections, and herpes zoster virus.

Early breastfeeding: Breastfeeding in the first 3 weeks of life.

Early postpartum period: The first 3-6 weeks after delivery.

Efficiency: The ability to achieve goals within acceptable costs and time limits.

Equity of access: Where all members of a community have equal access to health care, regardless of where they live, their financial situation, and their social status.

Exclusive breastfeeding: Giving an infant no other food or drink, not even water, apart from breast milk, with the exception of drops or syrups consisting of vitamins, mineral supplements, or medicines.

Frontline Health Worker: A health professional working at the first contact level of the health delivery system.

Growth monitoring and promotion: A regular and systematic monitoring of growth that helps to detect malnutrition early in children, before they become severely malnourished.

Health sector reforms: A sustained, purposeful change to improve the efficiency, equity, and effectiveness of the health sector.

High-level disinfection (HLD): The process of destroying all microorganisms including vegetative bacteria, tuberculosis, fungi, and viruses through boiling or the use of chemicals. Some bacterial endospores are not destroyed through this process.

HIV-negative: Women and men who have taken an HIV test with a negative result, and know their result and are assumed to be uninfected.

HIV-positive/HIV-infected: Women and men who have taken an HIV-test whose results have been confirmed, and know that they are positive. Also referred to as living with HIV.

Home-prepared formula: Infant formula prepared at home from fresh or processed animal milks, suitably diluted with water with the addition of sugar.

Idiopathic: Unknown aetiology

Indicator: A variable to be measured; it shows change in a situation such as achievement or answer to a question, e.g. "To what extent does improved immunisation coverage reduce the incidence of vaccine preventable diseases in children".

Infant: A child from birth to 12 months of age.

Intrapartum: The period during labour or delivery

Lactational amenorrhoea: Cessation of menses during the time a mother is consistently breastfeeding.

Micro-organism: Any organism of microscopic size, such as bacteria, parasites, viruses, fungi, etc.

Mother-to-child transmission (MTCT): Transmission of HIV to a child from an HIV-positive woman during pregnancy, delivery, or breast-feeding. Also called vertical transmission. The term can also apply to transmission of an STI from the woman to her child, such as syphilis.

Neonatal: Period immediately following birth and continuing through the first month of life.

Preventive interventions: Interventions aimed at controlling occurrence and progression of disease. There are two types: primary prevention and secondary prevention.

Primary prevention interventions: Interventions that preserve health by removing the causes and determinants of illness, e.g. immunisations, improvements in water and sanitation, use of insecticide treated mosquito nets, and activities aimed at preserving good nutritional status.

Promotive interventions: Interventions that promote health. These include inter-personal counselling, group education, and distance promotion through channels such as the radio, print media, or television. Promotive interventions are an important part of the provision of the basic health care package as they improve people's knowledge of the causes and prevention of disease, and empower people to remain healthy.

Referral system: A defined process through which patients are managed at each successive level of the health system, based on their clinical needs and the skills available.

Replacement feeding: The process of feeding a child who is not receiving any breast milk with a diet that provides all the nutrients the child needs. During the first six months, this should be with a suitable breast milk substitute such as commercial formula or home prepared formula with a micro-nutrient substitute. After six months it should be with a suitable breast milk substitute and complementary foods made from appropriately prepared and nutrient-enriched family foods, given 3 times a day.

Secondary prevention interventions: Interventions put in place after a person has become sick and are aimed at preventing the illness from getting worse or causing death, e.g. maternal syphilis screening, oral rehydration therapies.

Sterilisation: The process that destroys all micro-organisms, including endospores or To make infertile or barren as a method of family planning.

Stigma: A distinguishing feature of social disgrace, such as being infected with HIV or an STI or having AIDS.

Universal precautions: A set of simple guidelines applicable in all health care settings, including the home, to prevent the transmission of blood-borne infections. These include: taking care to prevent injuries when using, handling, cleaning, or disposing of sharp instruments; avoiding the recapping, breaking, or bending of needles; disposing of sharp items in puncture-proof containers, using protective barriers (gloves, eye glasses, water proof aprons, and footwear) to prevent exposure to potentially infective body fluids; washing immediately skin surfaces that are contaminated with blood or other potentially infective body fluids.

Voluntary counselling and testing (VCT): HIV testing with pre and post-test counselling, which is voluntary, with fully informed consent, and is confidential.

Wet nursing: Breastfeeding of an infant by someone other than the infant's mother.

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Introduction

The vision of the health reforms in Zambia is to provide equitable access to high quality, cost-effective interventions as close to the family as possible. To achieve this vision, the National Strategic Health Plan was developed in 1966, and was revised in 1998 and 2000 respectively in order to integrate new developments. The Zambian health reforms are based on four principles¹ commonly known as LAPA:

- **Leadership:** building the capacities of health providers at the various levels of operation
- **Accountability:** for resources provided to support health care delivery, for the quality of health services provided by health workers, and for responsiveness to the communities they serve
- **Partnership:** bringing together a positive relationship between and among stakeholders, including the community
- **Affordability:** adopting interventions, tools, and structures based on the resources available.

To ensure effective implementation of the health reforms, one of the priorities was to align the health management structure and systems with the principles articulated in the National Health Policies and Strategies of 1992. During the 1990s, there has been decentralisation of authority and responsibility to levels as close to the communities as possible, with District Health Boards (DHBs) and Hospital Management Boards (HMBs) taking management responsibility for health service delivery, including financial and human resources. Some health facilities have been renovated to ensure the minimum physical standards required to provide basic health services at each level, as specified in the Basic Health Care Package (BNCP). The Financial Administration Management System (FAMS), the health management information system (HMIS), and the procurement system are now functional and inform decision-making by the CBoH and the MoH.

Furthermore, the roles and functions of health workers have been streamlined, and activities to increase their capacity are continuing, for example through in-service training, and strengthening of the training institutions. There are also a number of activities to strengthen partnerships with other sectors, non-governmental organisations (NGOs), and the community. A lot still remains to be done, however, and most of it hinges upon the proficiency of the frontline health worker, who is critical to increasing the coverage of health services, thereby increasing access to quality health services.

¹ 2001-2005 National Health Strategic Plan

The BHCP is based on the major causes of the disease burden in Zambia, and defines affordable care for each level: community; health post; health centre; 1st level hospital; 2nd level hospital; and 3rd level hospital. Up to 90% of the major health threats to Zambians can be overcome through the delivery of cost-effective interventions in the following six technical areas:

- Malaria
- Child Health and Nutrition
- Reproductive Health
- HIV/AIDS and Sexually Transmitted Infections
- Tuberculosis
- Water and Sanitation.

This Second Edition of the ITGs for frontline health workers outlines the key interventions for each of the technical areas of the BHCP, as well as the minimum standards of performance expected at community, health post, and health centre levels.

It is hoped that the use of these guidelines will enhance the frontline health worker's knowledge about the most important health problems in Zambia, and the cost-effective interventions to tackle these problems. Use of these guidelines should improve the ability of frontline health workers to promote health and prevent illness, including proper case management and referrals, and thereby contribute to the attainment of the ultimate goal of "Better Health for all Zambians".

Chapter 1 – Infection Prevention

Introduction

Why Infection Prevention Is Important

Proper infection prevention practices are fundamental to quality of care, and essential to protect health workers, patients, and communities, particularly in a country such as Zambia, where the prevalence of highly infectious and dangerous diseases such as HIV and Hepatitis B are so high, the failure to follow proper infection prevention practices puts health workers, patients, and the community at tremendous risk.

The infection prevention practices described in this section are intended for use in all types of medical and health care facilities, from 3rd level hospitals to small rural health centres. They are designed to minimise costs of managing nosocomial infections and to protect expensive and often fragile equipment, while at the same time assuring a high degree of safety.

The chapter should be read by all health care providers and the recommended practices applied to all their interventions.

Causes of Infection

Micro-organisms are the causative agents of infection; they live everywhere in our environment. Humans carry these micro-organisms on their skin, in the upper respiratory tract, and the digestive system. In ordinary circumstances, these micro-organisms are known as normal body flora. These micro-organisms also inhabit animals, plants, soil, air, and water can contaminate instruments or equipment.

Some micro-organisms are considered more harmful than others; consequently, they are more inclined to cause infection and disease. This occurs when certain favourable conditions exist for these bacteria, viruses, and other germs to survive and spread in the surrounding environment.

Important Points

1. The micro-organisms include bacteria, viruses, fungi, and parasites. Bacteria can be further divided into 3 categories: vegetative (staphylococcus); mycobacteria (tuberculosis); and endospores (gangrene and tetanus), that are the most difficult to kill because they have a protective coating.

2. All micro-organisms can be eliminated with high-level disinfection, except endospores that can only be eliminated by sterilisation or decontamination by radiation.
3. Infection prevention often relies on placing barriers between the host and micro-organisms. The protective barriers can be physical, mechanical, or chemical.
4. In order to create an environment free of communicable diseases, all providers of health services at all levels are duty-bound to understand the basic conditions of protection against infection. This includes all cleaning and maintenance staff.
5. Because it is not possible to know in advance whether an individual is infected with a communicable disease, such as hepatitis, it is incumbent on the provider of services to observe the universal precautions at all times.
6. Infection can spread from person to person, from the staff to other persons or vice versa, and from contaminated instruments or equipment; for example:
 - When touching any wound or contaminated instrument
 - When cleaning instruments, equipment and contaminated surfaces
 - During any surgical procedure such as a vaginal or dental examination
 - When examining a patient without washing hands before and after.

The Comparative Danger of Exposure to the Hepatitis B and HIV Viruses

The risk of infection after exposure to hepatitis B from a needlestick injury is 27-37%. With HIV, the risk is lower, at 0.4% (*i.e.* when the patient is HIV+).

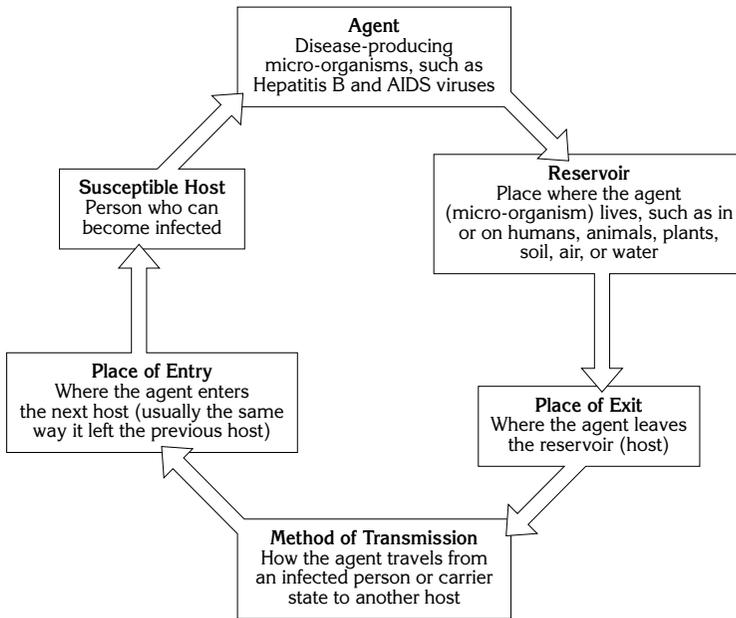
While most cases of transmission of Hepatitis B and HIV to health workers have been associated with preventable accidents, such as puncture wounds, transmission can also occur through accidental mucous membrane contact, such as a splash of body fluids in the health worker's eye or nose.

Broken skin or any unhealed cut or scratch can also be a point of entry for both viruses. For this reason splashes of blood onto small wounds should be avoided.

The Disease Transmission Cycle

The disease transmission cycle is the transmission of a disease producing organism from a host to a recipient. The essential factors in the transmission of disease-producing micro-organisms from person to person are shown in Figure 1.1

Figure 1.1: Disease Transmission Cycle



Infection Prevention

Principles of Infection Prevention

- Consider every person, whether client or staff, infectious.
- Wash hands with soap before and after every intervention.
- Wear gloves before touching anything wet – broken skin, mucous membranes, blood, or other body fluids (secretions or excretions) – or soiled instruments and other items.
- Use physical barriers (protective goggles, face masks and aprons) if splashes and spills of any body fluids (secretions or excretions) are anticipated.
- Use safe work practices, such as not recapping or bending needles, safely handling sharp instruments, and disposing of sharps in puncture proof containers.

- Properly process instruments and other items that come in contact with blood or body fluids: decontaminate, clean, sterilise or high -level disinfect, according to the infection prevention protocols.
- Dispose of contaminated instruments and materials properly and safely.
- Isolate patients only if secretions (airborne) or excretions (urine or faeces) cannot be contaminated.

Practices to Protect against Infection

Infection prevention relies on placing barriers between the host and micro-organisms. These protective barriers can be physical, mechanical, or chemical processes that help to prevent the spread of infectious organisms from one client to another or from health centre staff to client or vice versa, either by lack of infection prevention practices or from contaminated instruments or equipment.

Protective barriers include the following:

1. Hand Washing

Why?

- Washing of hands, besides being easy, is one of the most important ways to maintain an infection-free environment in every health centre.
- It reduces the number of micro-organisms on the skin:
 - *By 50% washing with water only*
 - *By up to 80% with soap and water.*
- It helps prevent the transmission of contaminants from one person to another.

Hands Should Be Washed Before:

- The start of the workday
- Putting on gloves
- Examination of a patient and, in general, any dealings with a sick patient
- Giving injections
- Drawing blood
- Handling sterilised instruments
- Eating or drinking
- Writing of reports or handling patient files
- Going home.

Hands Should Be Washed After:

- Examining each patient
- Touching any part of the body or any mucous membrane excretions
- Removing of gloves
- Personal use of the bathroom
- Cleaning the nose, coughing or sneezing
- Touching any of the instruments that have been used in medical procedures.

Procedures for Washing Hands:

- Remove all jewellery, watches, and nail polish (jewellery and nail polish give protection to micro-organisms)
- Wash hands in running water from faucet
- If running water is not available, use a cup to pour water
- Wash hands for 30-45 seconds with soap
- Return the soap directly to the soap dish to prevent it touching the water basin, which may be contaminated
- Use fine sticks to clean fingernails
- Dry hands with a paper towel or a clean dry cotton towel.

If Water is Not Available:

- Clean hands with 70% alcohol
- Make available closed bottle containing alcohol ready for use
- Use moisturisers, because alcohol renders the skin rough. However, do not use the moisturiser after every wash because it could become contaminated with micro-organisms.

2. Wearing Gloves

Gloves should be worn during surgical operations, clinical tests, placing loops, handling contaminated instruments and materials. This protects both the health provider and clients who will be protected from infection when touched by providers.

Key Points:

- Use gloves ***only once*** in order to avoid infection transmission when examining a patient
- Do not use any medical gloves whose validity has expired
- Do not use any gloves that are worn out, cracked, peeling, or have holes or tears
- Do not touch the exterior of the gloves when putting them on
- Change gloves if, by mistake, they have been contaminated
- Wash hands before putting on gloves and after taking them off.

***Procedure to Follow When Putting On and Taking Off
Sterile Surgical Gloves:***

- a. First, wash and dry hands thoroughly
- b. Place the sterilised container holding the gloves on a clean surface, making sure not to touch the inside of the container
- c. Care should be taken to open gloves in a clean and dry area
- d. Select the correct size of gloves
- e. Put powder on hands if the gloves are not powdered
- f. Hold the folded cuff of the glove with your thumb and forefinger (index finger) without touching the outside of the glove
- g. Insert the fingers of your other hand in a downward direction, keeping your thumb towards the palm. The fingers must be separated from each other. Pull the glove back towards your wrist
- h. If, after putting on the first glove it is not comfortable, wait until you have put on the other glove before adjusting it. This is to ensure that it remains sterile
- i. Hold the second glove with the first, gloved hand, and insert your fingers into the glove. Note: It is important to avoid contaminating the sterilised glove with the ungloved hand
- j. To fold back the cuffs, put your fingers between the cuff and the glove, touching only the outside of the gloves
- k. Do not touch anything that is not sterile once you are wearing the gloves – holding your hands in front of your eyes is a good technique
- l. If you feel that the gloves have been contaminated, remove them and put on another sterilised pair
- m. Remove gloves from the inside to the outside, making sure not to let them touch the palm or fingers because the gloves could be contaminated.

***Procedure to Follow When Putting On and Taking Off
Non-Sterile Gloves:***

- a. First, wash and dry your hands thoroughly using the guidelines above
- b. Hold the glove by its cuff and insert your other hand. Repeat for the second hand
- c. Pull down the cuff to cover the wrist. If you are wearing a gown with sleeves, let it cover the sleeves
- d. Before taking off disposable gloves, wash your hands with a disinfectant solution (chlorine 0.5%) to kill any micro-organisms on the gloves

- e. With your left hand, hold the wrist end of the right glove on the outside
- f. Pull the glove inside out
- g. Hold the folded glove with the fingers of your right hand
- h. Insert the fingers of your right hand into the left glove at the wrist and slip it off
- i. Throw the gloves into a rubbish bin
- j. Wash your hands carefully.

3. Use of Antiseptics

Antiseptics are chemical agents used on the skin and other body tissues, to destroy or suspend the multiplication of most micro-organisms without damaging or irritating the skin or mucous membrane. Cleaning the skin with antiseptic solution is very important to prevent infection.

When to Use Antiseptics

- Before giving any injection, remove as many micro-organisms as possible from the client's skin. Use a 60-90% alcohol solution and make sure that the area is dry before giving the injection.
- Before taking blood samples
- Vaginal preparation for procedures such as IUD insertion
- Hand-washing before examining clients who are susceptible to infection, such as newborns or clients with weak immune systems.

Precautions that Must Be Followed When Using Antiseptics

- Antiseptics are used only to sterilise the skin or mucous membranes. They should *never* be used to sterilise non-living objects, such as the operating table, instruments, *or* reusable gloves
- Alcohol must *not* be used to disinfect mucous membranes because it causes burning.
- Do not remove hair from the operation site unless it is necessary. If it is absolutely necessary, trim hair close to the skin surface immediately before surgery. Shaving increases the risk of infection, because it causes small nicks in the skin that are ideal for the growth of micro-organisms.
- Before choosing an antiseptic solution, ask the client about allergic reactions.
- If the area around the patient's reproductive organs is visibly unclean, wash with soap and water before wiping with antiseptic.

- Select and apply an appropriate antiseptic using dry, disinfected forceps and cotton soaked in the antiseptic. Thoroughly cleanse the skin working from the operation site outwards using a circular motion.
- Do not let antiseptic collect underneath the client's body, to avoid causing skin irritation.
- Let the antiseptic dry before starting the procedure.
- Dispose of cotton and muslin according to recommended practices.

Commonly Available Antiseptics

Many chemicals are safe skin antiseptics. The following are commonly available in Zambia.

a. Alcohol solutions (60-90%) ethyl, isopropyl, or methylated spirit.

These are the safest known antiseptics. They are commonly available. They are very effective at reducing the number of organisms on the skin, including the hepatitis and HIV viruses. They rapidly kill all fungi and bacteria, including mycobacteria, although they do not have a long-term killing effect. However, they evaporate rapidly, causing drying of the skin. They must not be used on mucous membranes. They are easily inactivated by organic materials. They are flammable, so they should be stored in a cool, well-ventilated area.

b. Iodine (1-3%), tincture and aqueous, Iodophor solutions, various concentrations.

Iodines are effective antiseptics. Iodophors are solutions of iodine mixed with a carrier. Povidone-iodine is the most common iodophor. Iodophors require up to two minutes of contact time to release free iodine; however, once released, the iodine has rapid killing action. Note: Iodophors manufactured for use as antiseptics are not effective for disinfecting inorganic objects and surfaces.

Iodophors are inexpensive and commonly available. They kill vegetative bacteria, mycobacterium viruses, and fungi. Iodophors are non-irritating (unless the person is allergic to iodine) on skin and mucous membranes, making them ideal for vaginal preparation before IUD insertion.

Note: iodine must never be used on mucous membranes.

Iodophors have little residual effect. Iodine and iodophors are inactivated by organic materials. Iodine may cause skin irritation and must be removed from the skin after drying. Use alcohol to remove iodine. Iodine skin absorption may cause hypothyroidism in newborn infants.

- c. Parachlorometaxyleneol (PCMX or chloroxylenol), various concentrations (e.g. Dettol).
- d. Chlorhexidine gluconate (4%).

This is an excellent antimicrobial and is safe even for newborns. It remains active for many hours after use and is minimally affected by organic material. However, it is expensive and not always available. Its action is reduced by soaps and by substances found in hard water. It must be used repeatedly for maximum effectiveness.

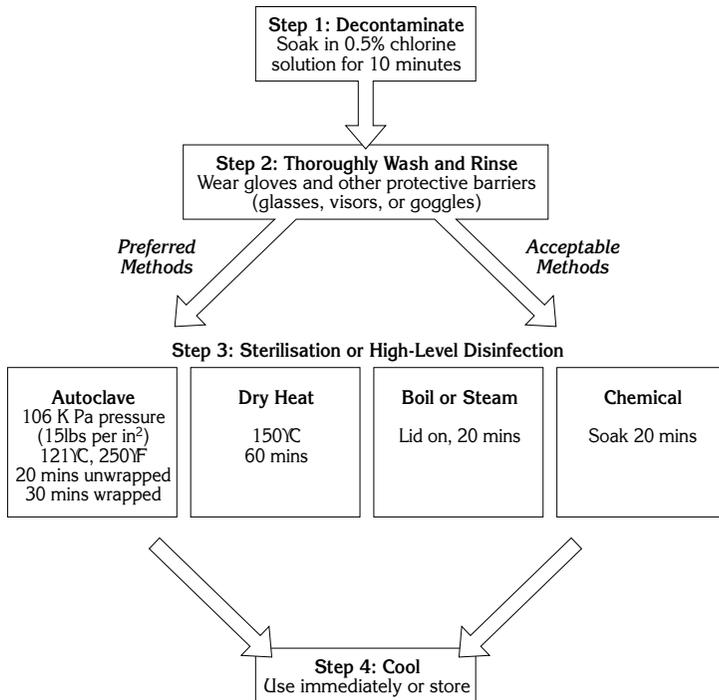
- e. Certrimide and Chlorhexidine Gluconate (various concentrations; e.g. Savlon).

Handling Contaminated Material

Steps When Handling Contaminated Material (See also Figure 1.2)

1. Decontamination: the first step in processing used surgical instruments, reusable gloves, and other items.
2. Cleaning: the second step after decontamination of surgical instruments, reusable gloves, and other items.
3. Sterilisation: of surgical instruments, reusable gloves, and other items.

Figure 1.2: Key Steps in Processing Contaminated Instruments and Other Material



Step 1: Decontamination

Decontamination makes objects safer to be handled by staff before cleaning. Decontamination in a 0.5% chlorine solution rapidly inactivates HIV and Hepatitis B viruses. It is the first step in processing soiled surgical instruments and other items.

- Immediately after use, place instruments and other items in 0.5% chlorine solution for 10 minutes. See Tables 1.1 and 1.2 for instructions on how to prepare a 0.5% chlorine solution.
- Surfaces, especially procedure tables, that may have come in contact with body fluids, should be decontaminated. Wiping with a suitable disinfectant, such as 0.5% chlorine solution, before reuse when visibly contaminated or at least daily, is an easy-to-do, inexpensive way to decontaminate large surfaces.
- Dispose of contaminated objects, such as cotton and gauze in a leak-proof container, making sure not to touch the outside of the container.

Table 1.1: Instructions for Preparing a 0.5% Chlorine Solution from a Concentrated Solution

Total Parts (TP) H2O =	[	% Concentrate % Dilute	]	-1	=	
<i>Example: Make a dilute chlorine-releasing solution (0.5%) from 3.5% concentrated solution (e.g. Jik).</i>						
1. Calculate TP (H2O) =	[	3.5% 0.5%	]	-1	=	7-1 = 6
2. Take 1 part concentrated solution and add to 6 parts clean water.						

Table 1.2: Instructions for Preparing a 0.5% Chlorine Solution from a Dry Powder

Grams/Litre =	[	% Dilute % Concentrate	]	X 1000	=	
<i>Example: Make a dilute chlorine-releasing solution (0.5%) from a concentrated powder (35%)</i>						
1. Calculate g/l =	[	0.5% 35%	]	X 1000	=	14.2g/l
2. Add 14.2 grams (approximately 14 g) to 1 litre of water.						

Step 2: Wash and Rinse

- After decontamination, instruments should be rinsed immediately with cool water to prevent corrosion and to remove visible material before being thoroughly cleaned.
- A thorough cleaning with detergent and water physically removes organic material such as blood and secretions. Cleaning is a very important step in providing infection-free equipment and instruments because without it, neither sterilisation nor high-level disinfection is effective.
- Rinse instruments in clean water until no detergent remains.
- Dry by air or with a clean towel.

Step 3: Sterilisation or High-Level Disinfection

Sterilisation destroys all micro-organisms, including bacterial endospores. Therefore, wherever possible instruments that have been in contact with blood or tissues under the skin should be sterilised after first being decontaminated, thoroughly cleaned, rinsed, and dried. There are two main methods of sterilisation:

- a. Steam sterilisation
- b. Sterilisation by dry heat (electric oven).

a. Steam Sterilisation by Autoclaving

Steam is an effective steriliser if four conditions are met:

- Adequate contact between steam and the micro-organisms. This requires proper cleaning and sterilisation packs that are neither wrapped nor packed in too tightly
- The temperature is maintained at 121° C
- Sufficient time is given (see below)
- Sufficient moisture; *i.e.*, “saturated” steam with 100% relative humidity.

Procedures for sterilisation by autoclave:

- Decontaminate, clean, and dry all instruments to be sterilised
- Follow carefully the operating instructions supplied by the manufacturer
- All jointed instruments should be in the open or unlocked position, and instruments with more than one part disassembled
- Wrap needles and sharp edges in muslin to prevent dulling of edges
- To allow free circulation of steam, make sure instruments are not bound tightly together, and that packs are arranged to facilitate steam penetration to all surfaces

- Wrap instruments in two layers of cotton muslin
- Heat water until steam escapes from the pressure valve only, then reduce the heat but make sure steam continues to escape from the pressure valve. Do not allow to boil dry
- Sterilise wrapped items for 30 minutes, and unwrapped items for 20 minutes at a temperature of 121° C. Pressure should be 106 kPa (15 lbs/in²)
- Wait 20 to 30 minutes (or until the pressure gauge reads zero) to allow the steriliser to cool sufficiently. Then open the lid to allow steam to escape
- Make sure instruments have dried completely before removal. This may take up to 30 minutes
- Place sterile trays and packs on a surface padded with paper or fabric to prevent condensation
- Do not store trays or packs until they reach room temperature; this usually takes about one hour
- Instruments wrapped in cloth or paper can be stored for one week, but only if kept dry
- Instruments sealed in a plastic bag can be stored up to one month
- Unwrapped instruments should be used the same day
- All packs should be labelled with an expiration date.

Note: cotton muslin can be heated up to a temperature of 204°C. Gloves made of plastic or latex should not be placed inside a dry hot oven at all because they will perish. Gloves can be cleaned, but once used they can never be re-sterilised at the health centre. Therefore, washed gloves should never be used for suturing, internal examinations, etc.

b. Sterilisation by Dry Heat

Dry heat is a practical way to sterilise instruments. A commercial steriliser with a fan is recommended, but dry heat can be done with a simple oven. Note, however, that it cannot be used for plastic or rubber items because of the high temperatures required.

- Dry heat dulls sharp points and edges less than autoclaving and chemical sterilisation; therefore, it is ideal for sterilising reusable needles and syringes.
- Dry heat reaches all surfaces of instruments; therefore, it is good for instruments that cannot be disassembled.
- Leaves no chemical residue.

Procedures for sterilisation by dry heat:

- Decontaminate, clean, and dry all instruments to be sterilised
- Wrap instruments in cotton muslin (if temperature to be used will exceed 204°C) or aluminium foil, or place in a metal, lidded container
- Place instruments in metal containers or on trays in an oven and heat to the desired temperature
- After the desired temperature is reached, begin timing. Table 1.3 shows the recommended temperature-time combinations.

Table 1.3: Recommended Temperature-Time Ratios for Sterilisation

170°C	60 minutes
160°C	120 minutes
150°C	150 minutes
140°C	180 minutes
121°C	Overnight

Note: Depending on the temperature selected, the total cycle time (pre-heating, sterilisation time, and cool down) will range from about 2½ hours at 170°C, to 4½ hours at 140°C.

- After cooling, remove loose items with sterile forceps, and store in sterile covered containers.

High-Level Disinfection (HLD)

When sterilisation is not possible or suitable, high-level disinfection (HLD) is the only acceptable alternative. HLD destroys most micro-organisms, including the Hepatitis B and AIDS viruses, but not some bacterial endospores.

There are 2 methods of HLD:

- HLD by boiling
- HLD by chemicals.

High-Level Disinfection by Boiling

Boiling water is an effective way to disinfect instruments and gloves when sterilisation is not available; however, boiling does not kill all endospores and thus will not achieve sterilisation.

High-Level Disinfection by Chemicals

This is done using sodium chlorhexidine gluconate at a 5% concentration, available in Zambia (sodium hypochlorite).

Procedures for HLD Using Chemicals

Decontaminate, and thoroughly:

1. Wash and dry instruments to be disinfected
2. Fully immerse instruments in the correct dilution of disinfectant that has been correctly stored in a cool, dark area
3. Soak for 20 minutes
4. Remove instruments from disinfectant, using large forceps
5. Rinse well with boiled water, then air-dry
6. Either use promptly or store up to one week in a high-level disinfected (HLD) covered container
7. To prepare an HLD container, fill it with a 0.5% chlorine solution and soak 20 minutes. Rinse the inside thoroughly with boiled water and air-dry before use.

Note: The chlorine solution can be transferred to a plastic container and reused.

Safety Tips When Using Needles and Syringes

- Use each needle and syringe only once.
- Do not use needles and syringes on more than one patient; if using reusable syringes decontaminate, clean, and sterilise or high-level disinfect them between each use.
- Do not give needles or syringes to patients to reuse.
- Do not disassemble needle and syringe after use.
- Do not bend, recap, or break needles before disposal.
- Decontaminate needles and syringes before disposal.

Waste Disposal

The purpose of waste disposal is to:

- Prevent the spread of infection to health centre personnel who handle the waste
- Prevent the spread of infection to the local community
- Protect those who handle wastes from accidental injury.

Medical waste may be non-contaminated. Non-contaminated waste (*e.g.*, paper from offices, boxes) poses no infectious risk and can be disposed of according to local guidelines. Proper handling of contaminated waste (blood or body fluid-contaminated items) is required to minimise the spread of infection to health centre personnel and to the local community.

Proper handling means:

- Wearing utility gloves (heavy rubber gloves)
- Disposing of all sharp items in puncture-resistant containers
- Burning syringes (together with other sharps) prior to disposal
- Carefully pouring liquid waste down a utility drain or flushable toilet
- Burning or burying contaminated solid waste, or transporting it to the disposal site in covered containers
- Washing hands, gloves, and containers after disposal of infectious waste.

As a summary of many of the key issues raised in this chapter, Table 1.4 below lists the “Universal Precautions”.

Table 1.4: Universal Precautions against Infection

- 1. Wear gloves for:**
 - Any contact with body fluids
 - Any contact with mucosal or cutaneous lesions
 - Any contact with contaminated or potentially contaminated material.
- 2. Cover all wounds**
- 3. Wash hands:**
 - Immediately after any contact with potentially infective fluids
 - After every health care procedure.
- 4. Wear protective clothing (masks, goggles and aprons) when there is a risk of splashing, during:**
 - Deliveries
 - Surgery
 - Trachio bronchial aspiration
 - Catheterisation.
- 5. Carefully handle potentially infected sharps:**
 - Never bend needles back or put in their original holder
 - Do not remove needles by hand from syringes or vacucontainers
 - Dispose of needles and other sharps immediately in a special, puncture-proof container.
- 6. Disinfect surfaces and instruments:**
 - Disinfect all instruments and surfaces soiled with blood or other bodily fluids with a 1:10 bleach solution (Jik) or other effective disinfectant.
- 7. Dispose of contaminated material:**
 - Place contaminated material in a labelled, sealed package and then incinerate.
- 8. Laboratory settings**
 - Transport all laboratory specimens in hermetically sealed tubes or flasks, inside sealed packaging. Mouth pipetting is forbidden.

Chapter 2 - Malaria

Introduction

Malaria is a serious illness caused by a plasmodium parasite. It is transmitted by mosquitoes and, less frequently, by transfusion with unscreened blood. Out of all the malaria cases in Zambia, 95% are caused by *Plasmodium falciparum*.

Mode of Transmission

- The anopheles mosquito picks up the parasite from an infected human being.
- The parasite then develops in the mosquito's body.
- The parasite is finally injected into another human being and invades the liver cells. The parasites are released from the liver into the blood stream and enter the red blood cells.
- The parasite matures/multiplies further in the red blood cells until the red blood cell bursts. This releases mature parasites and toxic materials into the blood stream.

High Risk Groups

- **Children under 5:** rates for children under five are nearly six times those of older age groups.
- **Pregnant women:** during pregnancy, a woman may have malaria but not know it, as the parasites tend to concentrate in the placenta and not in the blood. Clinical malaria episodes are more frequent, and infections are more severe.

Policy Statement

- 1 Based on available evidence, the government has decided to change the first line treatment of malaria from Chloroquine to Artemesin-Based combination such as Artemether-Lumefantrine (Coartem[®]). During transition period, Sulfadoxine-Pyrimethamine (Fansidar) will be used as 1st line drug treatment of malaria. Quinine will be used as 2nd line treatment.
- 2 Prevention of malaria in pregnancy will now be Intermittent Presumptive Treatment (IPT) using Sulfadoxine-Pyrimethamine (Fansidar).

Epidemiology

- Malaria is a serious public health problem in Zambia.
- Incidence rates have nearly tripled in the past 23 years. Case fatality rates have increased nearly 5-fold.

Health Promotion

Much of the malaria in Zambia could be avoided if people had better knowledge about the most effective methods of prevention, were able to recognise symptoms, and were given appropriate treatment and referral. The following are some actions health workers should take to implement health promotion related to malaria:

- Identify the target group(s) for each of the key messages (see list of key messages below)
- Select a mix of media for the dissemination of the key messages to the target group (*e.g.* one-on-one counselling using print materials for support, group education using print materials for support, mass media and community action groups)
- Identify a mix of channels that will be used to disseminate the key messages (*e.g.* the health centre, the community, NGOs, churches, other ministry representatives, donor-supported projects, service groups such as Lions or Rotary, private businesses or drug vendors)
- Ensure that you have the necessary health promotion materials to be used (for assistance contact the District Health Management Team (DHMT))
- Train those who will use the materials, such as the Neighbourhood Health Committee (NHC), on how to use them.

Key Messages

- Malaria is transmitted only by mosquito bites, not by any other cause (such as cold food, dirty water, witchcraft, etc.)
- Anopheles mosquitoes bite primarily from 22.00 hours to 06.00 hours when people are asleep. Therefore, the best way to prevent malaria is by sleeping under an insecticide treated mosquito net every night. Some mosquitoes bite earlier in the evening, but these are not usually malaria-carrying mosquitoes.
- Anopheles mosquitoes do not breed or rest in tall grass or maize leaves. Therefore, cutting grass or maize is not an effective way of preventing malaria.
- Anopheles mosquitoes can fly long distances and breed in small amounts of water such as a footprint. Therefore, clearing breeding sites is generally not a cost-effective way of preventing malaria, unless it is carried out systematically and comprehensively.
- Insecticide Treated Mosquito Nets (ITNs) should be re-treated with an insecticide every twelve months or after three washes in order to be most effective. Do not wash mosquito nets too frequently.

- Pregnant women and children under-5 are at highest risk of serious illness and death from malaria and, therefore, should sleep under ITNs every night, even in the cold and dry seasons.
- Pregnant women may have serious malaria but not feel sick. This hidden malaria can seriously affect their unborn child. Therefore, women need to take malaria medicine during pregnancy. Over the last 2 trimesters of pregnancy, pregnant women should get anti-malaria medicines from a health worker during antenatal visits.
- Body hotness (fever) in an adult or child may indicate malaria. You should seek health care immediately.
- Convulsions or fits are a sign of serious malaria, not witchcraft. Take the patient with convulsions or fits to the health centre or hospital immediately.
- Ensure that you take the correct anti-malaria drugs and complete the treatment. Do not share or hoard medicines because they expire and would not be effective in the treatment of malaria.
- Chloroquine is not as effective in treating malaria as it was in the past because the parasite has developed resistance to it. Therefore, if you treat with chloroquine and the patient does not improve within 48 hours, go immediately to see a qualified health worker, as you may need a different drug.

Prevention

Use of Insecticide Treated Mosquito Nets

You should promote the increased use of Insecticide Treated Mosquito Nets (ITNs) by children under 5 and pregnant women.

Important Facts about the Impact of Insecticide Treated Nets

- One of the most effective methods of preventing malaria.
- Easy to use and re-treat by individual households.
- Provide year-round protection from mosquito bites.
- Reduces child deaths due to malaria by 63%.
- Reduces exposure to mosquito bites for the whole community because of the reduction in the mosquito population and the proportion of people infected with parasites.
- Untreated nets are only half as effective.

Steps in Implementing an ITN Programme in the Health Centre Catchment Area

Currently, nearly half of the 72 districts in Zambia have at least a small ITN programme in some parts of their catchment area. This is a good beginning that should be built upon. These projects have demonstrated the viability of ITN sales through the health centre or community and cost-recovery through revolving funds. For these reasons, frontline health workers at health centres are urged to develop an ITN programme in their catchment area. The following are some of the steps to take:

1. Collaborate with the District Malaria Task Force
2. In consultation with the District Malaria Task Force and the Health Centre Committee (HCC) members, analyse the current ITN situation in the health centre catchment area to determine what specific groups will be targeted, and what the household coverage goal for ITNs will be for the coming year
3. HCC members can request technical assistance from the DHMT, the Provincial Health Office (PHO), or the National Malaria Control Centre
4. Work together with the NHC and the DHMT to identify and co-ordinate resources to implement the programme.

Implement Targeted Vector Control Programme

Factors to Keep in Mind in Designing the Programme

- Complement vector control programmes with increased household use of ITNs.
- Dispel misinformation on some vector control strategies; the most common of these is the cutting of grass or maize (based on the erroneous idea that malaria mosquitoes breed or rest in long grass or maize).
- Recognise that some vector control strategies currently in use (such as residual household spraying) are effective if done properly, but are generally not affordable by the health sector alone.
- Re-focus vector control efforts on proven cost-effective approaches that are a good use of limited public sector funds, and seek partners to assist in funding more costly interventions.

Chemical Control Programmes (Residual Spraying and Larviciding)

- Household residual spraying must be done with an approved and effective insecticide at least annually or during hot and rainy seasons when malaria is common. Otherwise, residual spraying will not be effective.
- Situations in which residual spraying can be most cost-effective are the sleeping areas of institutions like schools and hospitals. Ensure that you work with the district council.
- Work with private businesses in your catchment area to support wider coverage of spraying in private homes.
- Where local expertise and adequate resources are available, targeted application of larviciding may be appropriate.

Environmental Modification Measures

These include:

- Drainage maintenance
- Filling and removal of breeding sites
- Ensuring the proper functioning of drains/ditches
- Removal of vegetation and rubbish causing blockages and standing water
- Prohibiting and taking action against unauthorised quarrying, irrigation, and other constructions conducive to vector breeding
- Promoting mosquito-proofing of buildings (application of mosquito screens to doors, windows, and the eaves of buildings), particularly households and public places, such as schools, health facilities, hotels, restaurants, and places of work.

Other Methods of Prevention

Various other personal behaviours and products provide some protection but, while they can be recommended, they are expensive and do not have an important public health role in reducing the burden of malaria.

These include:

- Mosquito repellent coils
- Mosquito repellent aerosols and liquids
- Covering up with clothing in the evenings, including covering of babies on the backs of caretakers is recommended. However, because relatively less malaria is transmitted before 22.00 hours, this has little impact.

Malaria Prophylaxis during Pregnancy

Important Facts about Malaria in Pregnant Women

- Malaria in pregnancy is frequently *asymptomatic*.
- Even if a woman has malaria, she may still *test negative for parasites in the blood*, as the parasites tend to go into the *placenta*.
- *Placental malaria* can have a serious impact on both the mother and the child.

Important Facts about Malaria in HIV Positive Pregnant Women

- They have more parasitaemia and placental malaria than other pregnant women.
- Malaria is equally serious in all pregnancies (whereas in HIV negative women, the risk is highest in first pregnancies).
- Their children are at greater risk of death from malaria, particularly if the mother had placental malaria or the child is born with low birth weight.
- Placental malaria may also increase the risk of transmission of HIV from the mother to the infant.

Negative Impacts of Malaria in Pregnancy

- Maternal anaemia
- Maternal death
- Abortion
- Stillbirth
- Prematurity
- Intra-uterine growth retardation
- Low birth weight.

Intermittent Presumptive Treatment (IPT – Prophylaxis with Sulfadoxine-pyrimethamine)

Given their high risk, *all* pregnant women should receive anti-malarial prophylaxis. Following this, it has been recommended that all pregnant women should receive Intermittent Presumptive Treatment, which is 3 adult treatment doses of Sulfadoxine-pyrimethamine (Fansidar) during their 2nd and 3rd trimester, *at least* one month apart. This approach should be accompanied by the provisions of ITNs at highly subsidized prices through the Ante Natal Clinics and voucher system.

Note: For details on IPT during pregnancy, see Chapter 5:
Maternal and Neonatal Health and Family Planning.

Malaria Prophylaxis for Patients with Chronic Conditions

The recommended anti-malarial is dapsone/pyrimethamine (Maloprim), available in liquid in a dose of 25mg/12.5mg/5ml and in tablet form in a dose of 100mg/12.5mg. This is given to patients with certain chronic conditions, such as the following:

- Hyperactive malarious splenomegaly
- Splenectomy
- Sickle cell disease
- Other chronic anaemias
- Patients on systemic corticosteroids (*e.g.* prednisone) or other immuno-suppressive treatments.

Table 2.1: Weekly Dosages for Dapsone-pyrimethamine (Maloprim)

Age Group	Under 1 Year	1-3 Years	4-6 Years	7-11 Years	11-15 Years	Over 15 Years
Liquid - mls.	2.5	5	7.5	-	-	-
No. of Tablets	-	-	-	½	¾	1

Management

Symptoms of Uncomplicated Malaria

- Fever
- Headache
- Abdominal pains
- Nausea and vomiting
- General body pains and body weakness.

Symptoms of Severe Malaria

In severe forms of malaria, the brain (cerebral malaria) and kidneys (black water fever) may be involved. Severe forms of malaria may lead to death. Symptoms associated with severe forms of malaria include:

- Convulsions
- Changes in behaviour, such as level of consciousness (*see Chapter 4: The Sick Child*).

Malaria Diagnosis

Early and adequate diagnosis is crucial in malaria case management.

- The best way to diagnose a malaria case is by examining the patient's stained blood film with a microscope. A blood film (thick and thin) must be properly made, dried, and stained with Giemsa stain (for greater detail refer to the Basic Malaria Microscopy manual).
- Diagnosis can also be done clinically, from the history of fever, body pain, headache, vomiting, diarrhoea, history/earlier experience, and no other infection that would cause fever. (*See Chapter 4: The Sick Child, for more detailed discussion of physical assessment, including danger signs.*)

Treatment of Uncomplicated Malaria

First Line Treatment

- Based on available evidence, the government has decided to change the first line treatment of malaria from Chloroquine to Artemether-Lumefantrin (Coartem®). During transition period, Sulfadoxine-pyrimethamine (Fansidar) will be used as 1st line drug treatment of malaria. Quinine will be used as 2nd line treatment.
- For children under 5, give in liquid form or crush tablets and give with liquid.
- Start the treatment at the health centre before sending the patient home. Provide counselling on dosages and ensure that the caretaker or patient understands; this will improve compliance.
- The age-related dosage schedule is as indicated in Table 2.2 below:

Table 2.2: Dosages for Chloroquine

Age Group	Day 1	Day 2	Day 3
< 6 months	5 mls: 1 teaspoon/ ½ crushed tablet	5 mls: 1 teaspoon/ ½ crushed tablet	2.5 mls: ½ teaspoon/ ¼ crushed tablet
6-12 months	7.5 mls: 1½ teaspoons/ ¾ crushed tablet	7.5 mls: 1 ½ teaspoons/ ¾ crushed tablet	2.5 mls: ½ teaspoon/ ¼ crushed tablet
1-3 years	10 mls: 2 teaspoons/ 1 crushed tablet	10 mls: 2 teaspoons/ 1 crushed tablet	5 mls: 1 teaspoons/ ½ crushed tablet
4-5 years	15 mls: 3 teaspoons/ 1 ½ crushed tablets	15 mls: 3 teaspoons/ 1 ½ crushed tablets	7.5 mls: 1 ½ teaspoons/ ¾ crushed tablet
5-9 years	2 tablets	2 tablets	1 tablet
10-15 years	3 tablets	3 tablets	1 ½ tablets
>15 years	4 tablets	4 tablets	2 tablets

The full treatment for SP consists of a *single dose* as follows:

Table 2.3: Dosages for Sulfadoxine-pyrimethamine

Age Group	Under 1 Year	1 to 3 Years	4 to 6 Years	7 to 11 Years	12 to 15 Years	Over 15 Years
No. of Tablets	¼ tablet	½ tablet	1 tablet	1 ½ tablets	2 tablets	3 tablets

- For children under 5, crush SP tablet and give with liquid.
- The full treatment should be given at the health centre to ensure compliance.
- Prescribe an anti-pyretic such as paracetamol to reduce fever. SP may not reduce fever in the first 48 hours.

Artemether-Lumefantrine Coartem® dosage chart

Treatment guidelines will be given as an addendum to the 2nd edition of this ITG.

Second Line Treatment

- If a patient does not begin to respond to treatment with fansidar within 48 hours, shift treatment to the second line drug (quinine). If the patient has not responded to quinine within 48 hours, refer to the hospital.

Management of Severe Malaria

Any patient with severe malaria, including any unconscious patients with a fever:

- Give quinine IV or IM immediately, if available (*see Chapter 4: The Sick Child, for details on the administration of quinine*).
- Transfer immediately to the nearest hospital.
- At the hospital level, regular assessment of response to treatment is very important in cases of severe malaria. This involves close monitoring by nursing staff and regular laboratory monitoring of complications like hypoglycaemia and anaemia.

Epidemic Detection And Response

Definition: A malaria epidemic is an incidence of illness in a particular population that is higher than generally expected for that time period.

To determine whether your catchment area has a problem with malaria epidemics, you can do the following:

- Compare malaria incidence figures for a given month across different years and see whether the seasonal trends are what you would expect for that month every year. For instance, compare malaria incidences in January for the past several years. Were they always about the same or did they go up significantly in one year more than others? What about the incidences for malaria in November? December, etc?
- If the rates went up in a given period in one year more than in most other years (more than expected for a given month), then you may have had a malaria epidemic in your catchment area *and not have known it*
- If that is the case, look to see which populations in your area are less exposed to malaria generally and so may have less resistance. These are the groups that are most susceptible to epidemics. They could be urban groups that are not used to being exposed, groups who usually live in cooler climates, refugee groups from low endemic areas, etc.
- Map these populations on your catchment map
- Develop a malaria epidemic detection and response programme for your catchment area. You will have to develop a plan of action for dealing with future malaria epidemics in this population group.

Steps in Implementing a Malaria Epidemic Detection and Response Programme

1. Tell the DHMT about the malaria epidemic you detected in your area, to raise awareness.
2. Work with the district to set up an inter-sectoral Epidemic Co-ordinating Committee (including the Army, Red Cross, NGOs, GRZ line ministries, and Neighbourhood Health Committees) and a District Rapid Response Team (DRRT).
3. Assist other health centres to conduct a health centre epidemic situation analysis, identifying those populations that might have low resistance in the catchment area and therefore be epidemic-prone (including refugees or displaced persons who have migrated from unstable malaria areas to areas of high, perennial transmission).
4. Seek technical assistance from the DHMT, the PHO, or the National Malaria Control Centre, when necessary.
5. Set up an information system in the health centre to detect future epidemics among these populations.
6. Determine how the health centre will respond to an epidemic if one is detected.
7. Prepare an Epidemic Kit containing those items that are needed to respond (*e.g.* extra stocks of spray machines, drugs, microscopes, blood slides and reagents, insecticides, ITNs, and other logistical support) and ensure that vehicles are in good working condition.

Chapter 3 – Child Health: The Well Child

Introduction

Child health is one of the indicators of the performance of a national health care system.

Policy Statements

- Children should be breastfed exclusively for the first 6 months.
- All childhood preventive services are *free*, including diagnosis and treatment of diseases in children up to the age of 5 years (growth monitoring and immunisations, inclusive of syringes and needles).
- Well child services should be provided up to 5 years.
- Vitamin A supplementation and de-worming are to be provided to all children up to 6 years, every 6 months.

Health Promotion

During Prenatal Care

- Talk to all pregnant women about the benefits of breastfeeding.
- Unless medically indicated, infants from birth to 6 months of life should be exclusively breastfed. *Exclusive breastfeeding* is the feeding of an infant from *birth to 6 months* of life on breast milk or expressed breast milk only without water, other liquids, or *complementary* foods (refer to Chapter 7: HIV/AIDS for guidance on feeding an HIV positive infant).
- Explain the benefits of colostrum (the first yellow breast milk after delivery).
- Inform pregnant women on the risks associated with delayed initiation of breastfeeding, early introduction of complementary feeding, and certain rituals/practices associated with initiation of breastfeeding (such as washing the breasts in herbal solution).

At Delivery

Help mothers to initiate breastfeeding within half an hour of birth.

Early Postpartum Period

- During the stay in the health centre, encourage mothers to breastfeed frequently, i.e. at least 8 times within 24 hours.
- Allow mothers and their babies to be together at all times.
- Explain that there is some milk in the breasts (even though it cannot be squeezed out), and frequent suckling will stimulate more milk production.
- Do not give water, other liquids, or foods, and discourage the mother and her relatives from doing so.
- Ensure correct positioning and attachment for breastfeeding, especially with first-time mothers. If unsure of correct attachment, refer to trained personnel in your health centre, if one is available.

If the child is under 6 months and is receiving water, other liquids, or foods:

- Build the mother's confidence that she can produce all the milk that the child needs
- Suggest that she gives more frequent and longer breastfeeds, day and night, while she gradually reduces and stops the other liquids or foods
- Advise follow-up within one week
- Refer the mother to family members and/or to community mother support groups, where available.

Breastfeeding

Inappropriate feeding practices and frequent illnesses contribute to malnutrition in children under 5 years of age. Most mothers introduce complementary feeding with watery maize porridge and water during the first 6 months of life. This reduces the benefit of breastfeeding and increases the risk of malnutrition and infection.

Good Breastfeeding Technique

For good attachment to the breast, position the baby as illustrated in Figure 3.1 below:

- Baby's chin touching the breast
- Mouth wide open
- Lower lip turned outward
- More areola visible above than below the mouth.

Figure 3.1: Attachment to the Breast

A baby well attached to the mother's breast



A baby poorly attached to the mother's breast



Common Breastfeeding Problems

1. Sore and Cracked Nipple

The most frequent cause is improper latching onto the nipple by the infant.

Management

- Advise mother on the proper positioning of the baby (see illustration above).
- Avoid soaps, sprays, or medicated creams.
- Encourage the mother to leave some milk on the nipple after breastfeeding and let nipples air-dry.
- If breast pain persists and nipples are shiny, suspect yeast infection and treat nipples and baby's mouth with *gentian violet* twice daily for 5 days.

2. Breast Engorgement

Breasts are painful because they are too full. This is usually due to delayed initiation of breastfeeding or infrequent breastfeeding.

Management

Advise mother to:

- Continue breastfeeding at frequent intervals
- If the areola area is too tight for the baby to suck effectively, express some milk to make the breasts softer for the baby to suck
- Apply a warm moist towel for about 10 minutes to the breast before trying to express the milk.

3. Breast Infection (Mastitis)

Most commonly caused by a blocked duct; mastitis may lead to an abscess.

Management

- Reassure mother that the baby can feed on the affected breast without causing harm to the baby (who probably has similar bacteria).
- If the mother is unwilling to feed the baby on the affected breast, show her how to express the milk from it to prevent the infection from spreading.
- Treat the mother for pain and fever.
- Prescribe appropriate antibiotics (procaine penicillin 1.2 million units (2ml) or cloxacillin 500 mg q.i.d. or amoxicillin 500 mg t.i.d. x 10 days).
- If an abscess forms, refer to the hospital for incision and drainage. After recovery, the mother can continue to breastfeed the same breast.

4. Inadequate Intake of Breast Milk

- If exclusively breastfeeding, ask how many times the baby wets nappies (child should urinate at least 6 times in 24 hours, if receiving enough breast milk).
- Check the baby's growth curve as an indicator of adequate breast milk intake.
- If inadequate intake is established, advise according to cause:
 - Advise mother on proper positioning of the baby (see illustration above)
 - If supplementary feeding has been started too early, counsel mother to delay until the child is at least 6 months old
 - Explain that more sucking stimulates more milk production
 - If breastfeeding fewer than 8 times in 24 hours, advise more frequent breastfeeding
 - Advise longer breastfeeds of 15-20 minutes on both breasts.
- Ask about mother's health and any medications she may be taking; refer for medical consultation if indicated.

HIV/AIDS and Breastfeeding

Refer to the Infant Feeding Options section in *Chapter 7: HIV/AIDS*.

Complementary Feeding

Advise the caretaker, after 6 months, to provide appropriate, nutritious, frequent meals in adequate quantities to help the child grow well and fight infections. Share the following good practices with the community:

- Breastfeed babies exclusively for the first 6 months
- Give children a mixed diet starting when they are 6 months of age, with continued breastfeeding up to 24 months and beyond
- Feed children frequent and adequate amounts of available foods
- Feed children foods rich in vitamin C. Vitamin C improves the absorption of iron. Good sources of vitamin C include fruits and local vegetables such as bondwe (amaranthus), cassava leaves, pumpkin leaves, etc.
- Give children animal proteins such as meat, fish, poultry, caterpillars, etc. These foods contain iron and they help promote the absorption of iron from vegetables
- Make an extra effort to feed the child small frequent feeds during and after an illness.

Environmental Control Measures

Educate the community to:

- Get water from a safe source. Boil drinking water for at least 10 minutes or add Clorin to drinking water. Store drinking water in a well covered container
- Prepare and handle food safely. Wash hands before handling food, wash raw food in safe water, cover the food after preparation, and eat it when it is fresh or warm
- Wash hands before feeding the baby, after changing the baby's nappy, and after using the toilet
- Use a pit latrine or flush toilet
- Dispose of the child's stool in a pit latrine, or flush toilet, or bury safely
- Make sure the child gets vitamin A supplementation every 6 months, up to 6 years of age
- Improve ventilation in all rooms in the house, especially where cooking is done or heated with fire
- Keep young children warm and protected from the cold
- Avoid overcrowding in homes
- Use mosquito nets impregnated with insecticides; insecticide treated mosquito nets should be retreated with insecticide every 12 months or after 3 washes. Do not wash the nets too often

- Ensure that child sleeps under a treated mosquito net every night
- Eliminate dambos and other mosquito breeding sites
- Spray households with insecticides; spreading larvicide on breeding sites are not cost-effective for districts or health centres, unless they are done in a very intensive and systematic manner
- Determine if there is scope in the health centre catchment area for decreasing the malaria burden through environmental modification and if so, identify high priority sites for these activities.

Environmental Modification

For examples of environmental modification activities, refer to *Chapter 2: Malaria*.

Prevention

Introduction

- Follow the guidelines for growth monitoring and promotion (growth monitoring, assessment of feeding, and counselling on feeding) provided in the section on Growth Monitoring and Promotion later in this chapter.
- *All* children 6 months to 6 years of age should receive vitamin A supplements every 6 months. Guidelines for vitamin A supplementation are provided below.
- Encourage family planning and child spacing.
- Carry out routine de-worming of children 2 to 6 years old every 6 months.
- Conduct immunisations at the health centre and outreach posts as per recommended immunisation schedule.

Vitamin A Supplementation

Introduction

Vitamin A is needed for growth and to help fight and reduce morbidity and mortality, especially in children with measles, diarrhoea, and malnutrition. It also prevents blindness and helps to maintain a healthy mucous membrane and skin. Vitamin A supplementation of young children is recommended in Zambia because of widespread vitamin A deficiency. Vitamin A supplementation is one of the most cost-effective and important public health interventions.

Administering Vitamin A

- For children, snip the protruding tip of the capsule, and squirt appropriate number of drops (*see Table 3.1 below*) into the child's mouth.
- Vitamin A is supplied in capsules containing 100,000 or 200,000 IU of vitamin A (one drop = 50,000 IU).
- Practice cutting capsules to ensure that you get only 2 drops per 100,000 IU capsule (4 per 200,000 IU capsule), otherwise the dosage will be incorrect.

Table 3.1: Vitamin A Supplementation Dosages

Age	Dose
To mother at delivery, or up to 4 weeks later	200,000 IU (4 drops)
6-11 months (or if < 8 kg)	100,000 IU (2 drops)
12-71 months	200,000 IU (4 drops)

As well as for routine preventive supplementation, vitamin A is also administered as part of the treatment of:

- Malnourished children
- Children with measles
- Children with persistent diarrhoea (lasting two weeks or more)
- Children with night blindness.

For dosages refer to the Vitamin A Schedule in
Chapter 4: The Sick Child.

Record Keeping

- Record the vitamin A dose given on the child's immunisation and growth card and in the register.
- Always check the vitamin A supplementation status whenever the child is brought in to the health centre.

Immunisation

Introduction

- Immunisation is one of the most cost-effective and important public health interventions.
- Children should be immunised against all 6 target diseases: measles, polio, diphtheria, whooping cough (also called pertussis), tetanus, and tuberculosis.

- Protect the unborn baby against neonatal tetanus by immunising the mother with tetanus toxoid (TT) (see Chapter 5: Maternal and Neonatal Health and Family Planning).
- Zambia is in the process of introducing new vaccines against Hepatitis B (HepB) and Haemophilus Influenzae (Hib) respectively.
- Outreach activities can improve coverage.

Key Messages about Immunisation

- Target ages for immunisation (ages 0-59 months and young women) to receive TT (see also Chapter 5: Maternal and Neonatal Health and Family Planning).
- Diseases like measles, tetanus, and polio are preventable through immunisation.
- The child is only fully protected when the full immunisation course is complete.
- Importance of participation of community volunteers and NHCs in defaulter tracing and outreach activities.
- When and where immunisation is available.
- Information to caretakers:
 1. Date, place, and time of the next immunisation
 2. Information on immunisation schedule (4 visits)
 3. Possible side effects and their management.

Immunisation Campaigns

In certain circumstances, supplemental immunisation activities (SIA) are conducted, e.g.:

1. For diseases for which there is a *global mandate* for elimination or eradication (polio and neonatal tetanus have been targeted for eradication by the year 2005)
2. When large disease *outbreaks* occur.

Successful Immunisation Programme

Additional steps to ensure a successful immunisation campaign include:

- Health facilities with a refrigerator should offer immunisations
- Checking the immunisation status of children on all cards whenever they come to the health facility
- Training CHWs or NHCs to read the immunisation cards, to identify children needing immunisations through door-to-door campaigns in their communities, and to refer to the health centre for immunisation

- Using every opportunity to immunise children (if eligible) whenever they come to the health centre for an illness or another reason
- Do not hesitate to open a vial, even for a single eligible child.

There are no contra-indications to immunising a sick child if the child is well enough to go home. The risk of delaying an immunisation because of a current illness is that the child may not return and the opportunity is lost. Missed immunisation opportunities are a major cause of delay in completing the schedule.

Contra-indications to Immunisation

- Do not give DPT 2 or DPT 3 to a child who has had convulsions within 3 days of receiving DPT 1 and DPT 2 respectively.
- Do not immunise seriously ill children before referral to the hospital.

Vaccine Schedules

Table 3.2: Recommended Schedule for Childhood Immunisation

Vaccine	Minimum Age at First Dose	Number of Doses	Minimum Interval between Doses
BCG	Birth	1	—
Polio (OPV-0)	Birth-13 days	1	—
Polio (OPV-1, 2,3)	6 weeks	3	4 weeks
DPT (DPT-1, 2,3) + HepB and Hib *DPT booster at 18 months	6 weeks	3	4 weeks
Measles + OPV-4 if OPV-0 was missed	9 months	1	—

You should note the following:

- Multiple vaccines can be given on the same visit
- New vaccines (HepB and Hib) will be administered using the same schedule as for DPT 1, 2 and 3, and will use the same reporting
- If measles vaccine has not already been given, it should be administered whenever a child is admitted to the hospital to prevent nosocomial measles transmission
- Mass measles immunisation campaigns are planned for the 9-14 year age-group; for these campaigns to be most effective, coverage of over 90% is needed.

School Health Vaccination Schedule

All children enrolling for Grade 1 should present their children’s clinic cards to the school administration/health authority to have their immunisation status checked and be immunised, if they missed out on the immunisation schedule, to maximise protection of school age children. Both boys and girls will receive one TT dose upon enrolment. Additional TT doses will be given to school girls of childbearing age. Measles immunisation should be given to children who missed their dose in infancy. A booster dose of BCG should be given if there is no scar.

Table 3.3: Vaccination of School Children

Age	Vaccine
School entry	BCG booster if no scar
School entry	Measles if no previous immunisation recorded
School entry	TT
Other school grades	TT to girls of childbearing age

Preparation of Vaccines

- Check for expiry date on the bottle/vial.
- Check the volume of diluents that you must mix with the vaccine.
- Use an 18 gauge needle to draw up the diluents into a 5ml mixing syringe.
- Open the vaccine container then inject the diluents into the ampoule or vial.
- Mix dried vaccines (BCG, measles) with water for injection (diluents) by withdrawing vaccine and diluents slowly into the syringe and then injecting it back. Use the diluents which came with the vaccines.

Injection Sites (For position of needles refer to Figure 1 on page 21 of the Vaccination Manual)

Intra-dermal injection: intra-dermal is the top layer of the skin. Intra-dermal injection results in a flat-topped swelling in the skin, like a mosquito bite.

- Clean the skin with water.
- Hold the syringe and needle along the surface of the skin.
- With the bevel facing up, insert just the tip of the needle.
- **Do not** push the needle too far and **do not** point the needle down to avoid injecting into the subcutaneous or muscle layer.

Subcutaneous injection goes just below the skin.

- Pinch up the skin. The needle should go in sloping, not straight down.

Intra-muscular (IM) injection goes deeply into the muscle.

- Stretch the skin flat between your finger and thumb.
- Quickly push the needle straight down through the skin between your fingers.
- Go deep into the muscle.

See Table 3.4 below on how to administer the vaccine.

Inform the caretaker about the following possible reactions to the vaccine:

- BCG produces a local sore that heals without treatment in 2–3 months leaving a scar
- DPT may cause pain, redness, swelling, and fever that stops within one day
- The measles vaccine may cause a fever for 1 to 3 days, starting a week after vaccination. Sometimes there is a mild measles rash
- Reassure the caretaker that these reactions are not serious and need no treatment. If the caretaker prefers, s/he can give the child some paracetamol.

Table 3.4: How to Administer the Vaccines

Vaccine	Syringe	Needle	Dose	Route	Site
BCG	0.1ml 1.0ml for > 11 months	26 gauge 10 mm	0.05ml 1.0ml	Intra-dermal	upper outer aspect of the left forearm
DPT	2-5ml	22 gauge 25 mm	0.5ml	Intra-muscular (IM)	outer side of the middle of the thigh
Polio	–	–	2 drops	(in the mouth)	
Measles	2-5ml	22 gauge 25 mm	0.5ml	Sub-cutaneous (SC)	outer side of the upper arm

Record Keeping

- Issue an immunisation card to every child in the catchment area of your health centre.
- Check the immunisation cards of all children whenever they come to the health facility.
- If the immunisation card gets lost, issue a new one, fill in the information that the caretaker or the mother can remember about previous immunisations.
- Record every immunisation on the immunisation card

The Cold Chain

Cold chain refers to the care given to maintain the potency of the vaccine, up to the time it is given to a child. This includes manufacturing of the vaccine, transportation from a factory, storage – refrigeration and use of cold boxes, and distribution. It is important to maintain the cold chain from the time the drugs arrive in the country until they are given to children.

Refrigerator Maintenance

Daily:

- Check and record the temperature twice daily. The main compartment should have a temperature of between 2–8° C
- Put a small bottle or cup of water in the freezer and check daily to be sure it is solid ice
- For a paraffin refrigerator:
 - *Add fuel to the fuel tank to keep it ¾ full*
 - *Check the flame to be sure it is blue, burning evenly, and not smoking.*

Weekly:

- Defrost the refrigerator once a week, or whenever the ice has covered the metal and you cannot see it anymore. Never let the frost get so extensive and so hard that you cannot get out the vaccines easily
- First, move your vaccines into a cold box with ice-packs
- Then turn the refrigerator off
- Occasionally (for a paraffin refrigerator):
 - *Clean the chimney*
 - *Level the wick.*

For further instructions, refer to the Vaccination Manual.

- Storage of vaccines: whenever possible, measles, BCG, and polio vaccines should be stored frozen. Otherwise, these vaccines are still safe at 0–8° C.
- DPT and diluent should never be frozen. Store them at 0–8° C.
- New Hepatitis B and Hib vaccines should never be frozen. Store them at 0–8° C.
- Keep sealed bottles of water in the door and in unused spaces in the refrigerator to keep the refrigerator at a uniform temperature in case of power failure.

- Do not allow anyone to use the vaccine refrigerator to store food or drinks, or even water!

When the temperature in the refrigerator exceeds 8° C, take the following measures:

- Establish what went wrong in the refrigerator and reduce the temperature as soon as possible.
- Take the following actions regarding the vaccines:
 - *Polio vaccine: the current polio vaccine has a vaccine vial monitor (VVM) attached to it. This is a heat sensitive device that monitors the potency of the vaccine. If the monitor indicates that the vaccine is still good, you can use the vaccine. Otherwise, discard it*
 - *For non-reconstituted vaccines (DPT), use the shake test to confirm whether the vaccine has been frozen*
 - *BCG and measles can be sent to the laboratory to test the potency, if there has been a breakdown in the cold chain.*

Equipment Sterilisation

- Use disposable syringes and needles once only. Only reusable syringes should be cleaned, sterilised and reused.
- In order to avoid abscesses and spreading of infections such as HIV and hepatitis, make sure that the syringes and needles used are sterile.
- Clean the instruments before sterilising them. *Unless you clean them first, steaming and boiling may not kill the entire micro-organism.*
- Clean syringes and needles by drawing clean water in and out several times.
- Separate the needle, plunger, and barrel to soak in clean water.
- Check the needles for bluntness and barbs.
- Sharpen blunt needles and discard worn out needles.
- Sterilise the instruments in a steam steriliser:
 - *The recommended and best way to sterilise is with a steam steriliser. This is because the temperature inside a steam steriliser is higher than the temperature of boiling water*
 - *Heat the steam steriliser for a full 20 minutes after the steam starts coming*
 - *Separate the syringe plungers from the barrels and the needles before boiling them*

- *Open the steam steriliser only when you are ready to immunise*
- *There should be at least 2 cm of water covering the instruments*
- *Put the cover on the pan. Without a cover, the instruments will not be properly sterilised*
- *Boil the instruments for at least 20 minutes, otherwise they will not be properly sterilised*
- *Do not put any more instruments into the pan after it starts to boil. If you do, you must start counting the 20 minutes all over again.*

Planning Outreach Immunisation

Health Centre

- Outreach services are needed for those communities living more than 12 km from a health facility.
- Each health centre should plan outreach immunisation sessions in such a way as to provide reasonable access to immunisation services to all communities in their catchment area, at least once every 3 months.
- Use any available mode of transportation to conduct outreach activities.

Community Involvement in Planning Outreach

- Involve representatives from the target communities in planning the schedule and the location for outreach sessions.
- Try always to go to the same place at the same time and on the same day of the month/week, to help people remember to come.
- If an emergency arises, someone must go to inform the leaders and the communities why you cannot be there, apologise to them, and schedule for another time.

Equipment and Supplies to Take for an Outreach Session

- Injection equipment: steriliser with sterile syringes, needles, and forceps.
- Container for used syringes and needles.
- Plastic cup with ice in which to stand vaccines.
- Stationery: children's clinic cards, tally sheets, and immunisation registers.
- Cold box with ice-packs, thermometer, vaccine and diluent, and vaccine carrier.
- Vitamin A, ORS, iron tablets, weighing scales, contraceptives, and basic drugs to treat minor ailments.

Keeping Vaccines Cold during Outreach

- Pack cold boxes properly with ice-packs on the bottom, on the sides, and on top. At least 1/4 of what is in the cold box must be frozen ice-packs.
- Put the vaccines, diluent, and thermometer in the middle.
- If available, place a small plastic bag of ice on top of the vaccines.
- Put newspapers or cardboard around the DPT so that the vaccines do not freeze.
- Close the lid tightly and open the box as few times as possible.
- Keep the cold box in a shady place.
- Do not take vaccines from the cold box before children arrive at the outreach site.
- Do not mix dried vaccine with diluent before a child is ready for the vaccine.
- Stand opened vaccines in a cup with ice or on an ice-pack while you immunise.
- Once you have mixed your measles vaccine and have it in a syringe, you must use it within 6 hours, or it must be thrown away.
- Check the temperature in the cold box at the end of the outreach visit. If the cold box has become warm and the temperature is more than 8° C or the VVM has reached discard point, throw away the vaccine. For non-reconstituted vaccines, do a shake test and discard the vaccine if the test is positive.
- If you return vaccines to the refrigerator, place them in a special place marked "returns". Use the "returns" first during the next immunisation session for non-reconstituted vaccines.

Growth Monitoring and Promotion

Introduction

Growth Monitoring and Promotion (GMP) is a regular and systematic monitoring of growth that helps to detect malnutrition early in children, before they become severely malnourished. This is in order to provide information to caretakers on the growth and health of children, to help them make informed decisions. GMP activities take place in health centres and outreach points. As more health centre-community partnerships become operational, it is expected that more GMP activities will be implemented in the community.

Epidemiology

- Most children in Zambia become malnourished during the first two years of life. The 1996 Demographic and Health Survey shows that 4% of children aged 4 months, and 45% of children aged 18 months have low weight for age. About 53% of children under 5 year old are stunted, signifying chronic malnutrition.
- Recent information shows malnutrition in young children to be worsening.
- Most malnourished children do not have obvious signs of malnutrition, and are likely to be missed by caretakers and health workers relying only on the children's physical appearance, yet they are at increased risk of dying from the common childhood diseases.

Growth Promotion

Advise the caretaker to ensure that the child:

- Gets all the recommended immunisations on schedule
- Is taken for growth monitoring regularly at the health centre or in the community until the age of 5 years
- Receives nutritious foods in adequate amounts and frequently:
 - 0-6 months of age: *exclusive breastfeeding at least 6 times in 24 hours*
 - 6-12 months: *3 meals other than breast milk*
 - 12-24 months: *at least 5 meals a day.*

Growth Monitoring

- Growth monitoring should be carried out from birth to 5 years, as follows:
 - From birth to 24 months: *monthly*
 - 24-60 months: *every 3 months*
- Encourage monthly health centre visits from birth.
- Ask about child feeding at each visit.
- Reassure mothers that they will have enough breast milk if they breastfeed frequently, use both breasts, and breastfeed long enough at each feed.
- Explain growth curve to mothers, showing that the baby is growing well on breast milk only.
- Help mothers solve common breastfeeding problems.
- Show mothers how to express and store breast milk and how to use a cup for feeding expressed breast milk (if they must be away from their baby for prolonged periods), and explain the dangers of feeding bottles.
- *Advise breastfeeding mothers to eat more varied foods in order to improve the quality of their breast milk.*

Family Planning Services

- *Explain* lactational amenorrhoea method (LAM) for child spacing (*see Chapter 5: Maternal and Neonatal Health and Family Planning*).
- *Prescribe* only family planning methods that do not interfere with milk production (*see Chapter 5: Maternal and Neonatal Health and Family Planning*).

Community Outreach

- Discuss exclusive breastfeeding and appropriate complementary feeding and their role in reducing child malnutrition and infection.
- Encourage establishment of mothers' support groups and help arrange training for them.
- Arrange training for traditional birth attendants, community health workers, and others who counsel and support caretakers in the community.

Record Keeping

Ensure that growth monitoring promoters record and date the feeding status of the child on the growth card, indicating whether or not the child is exclusively breastfed.

Growth Monitoring and Promotion Package

The following are the main aspects of the Growth Monitoring and Promotion Package:

- Regular assessment of the child to determine weight gain
- Assessment of health and feeding
- Use of information on growth, health, and feeding to make decisions on what actions to take
- Actions consisting of counselling about feeding, medical care when needed, referral to other services when indicated, and promotion of health-enhancing behaviours
- Follow-up on the effects of the actions taken.

Regular Assessment of the Child's Growth

Assess children's growth monthly during the first two years of life, because large numbers of children become malnourished during this period.

Table 3.5: Weighing Schedule

Age in Months	Timeframe
All children under 24 months	Once a month
All children 24–36 months	Every two months
All children, including those between three and five years	Whenever they are brought in for health services and GMP in the community

Note: Plot the weight on the weight chart. If the child has already been weighed that month, write down the weight and the date weighed on the growth card.

Growth Monitoring Promotion Equipment:

- Weighing scale (the salter hanging scale is the most commonly used scale in Zambia)
- Weighing bags
- Other standing and baby weighing scales.

Weighing Procedure – Salter Scale

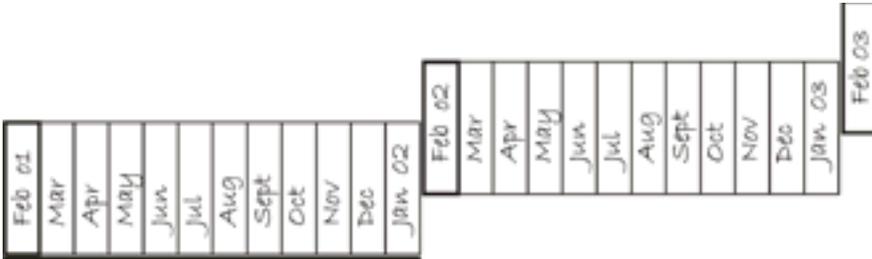
- Every day before each session, check the scale with an object of a known weight (it could be 1 kg of sand or sugar, a brick, or any other object) to determine whether the reading on the scale is correct. Write the weight down in a notebook for future reference.
- Before each session, adjust the scale to zero with the weighing bag attached to the scale.
- Hang the scale from a strong support with the dial at eye-level so that it can be accurately read.
- Weigh the child in minimum clothing, without shoes. Check to make sure there is nothing heavy in the child's pockets. If some caretakers are unwilling to remove some heavy clothing or objects because of cold weather or for cultural reasons, weigh similar clothing and subtract its weight from the weight of the child. If any child is weighed in heavy clothing, make a note of it on the card.
- Help the caretaker place the child in the weighing bag. The caretaker should face the child to keep the child calm.
- Children should hang freely without their hands and feet touching the walls or the floor.
- Wait until the pointer is steady, then read the weight to the nearest 100 gm. If the pointer continues to swing slightly, estimate the mid-point of the swing and use that number as the weight.
- Use a standing scale (bathroom type) to weigh children who are more than 2 years old.
- To plot the weight on the growth card, the month and the year of the child's birth must be known.
- If the child's age is unknown, use a local calendar to estimate the age. A local calendar may be based on events such as:
 - *The beginning, middle, or end of the rainy or dry season*
 - *Planting and harvesting periods*
 - *Other important local events*
 - *Review the calendar each year since the dates for events may change.*

Complete the Growth Card

- At the bottom of the growth card there is a row of boxes for each month in the child's life until the child reaches 5 years old. The first box of the first year has a thick line around it. Write the birth month and year in this box.
- At the beginning of every year on the growth card there is a box with a thick line around it. All these boxes should be filled in with the birth month next. Remember to put the correct year.

Integrated Technical Guidelines for Frontline Healthworkers

- After filling in the birth months in the thick boxes fill in the rest of the boxes. Use remaining months of the year in the correct order.
- Each time a new calendar year begins, put the New Year in the box as indicated by the arrow in the figure below.
- Remember to fill in the other blanks on the card such as the child's name, date of birth, and reasons for special care (i.e., low birth weight, sick mother, etc.).



Plot the Child's Weight

- On the child's card, follow the horizontal line corresponding to the child's weight across the card until it crosses the right month column. Put a dot in the middle of the column.
- Draw a line from dot to dot to make the growth curve.

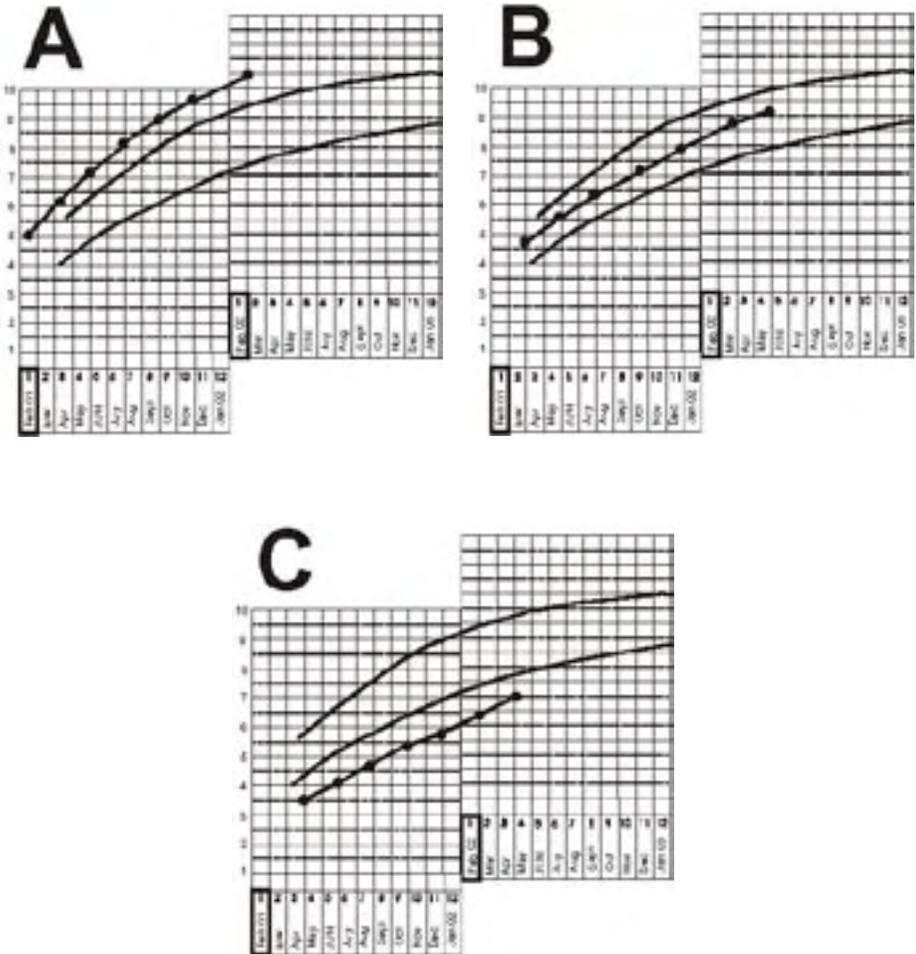
Determine Adequate Growth

- Compare the direction (or slope) of the child's curve to the two reference curves on the card that show how the growth curves of adequately fed children should look like.
- The child has *gained adequate weight* since last month if the child's curve is parallel or exceeds the slope of the reference curve. (All three children shown in graphs A, B and C are growing well: "A" is a big child and above the top reference line; "B" is of average weight and is between the two reference lines; and "C" is a small child with weight below the lower reference line, but is gaining weight well.
- If the child gained weight but the slope of the child's curve is less steep than the reference curve, the child's *growth is faltering*, or the *weight gain* is less than adequate. If that pattern continues for several months, growth might cease and the child becomes malnourished.
- When the child's growth is *static*, the curve will be flat showing that the child did not gain any weight in the last month.
- If the child's growth curve shows a downward direction, it means the child has *lost weight* and has *severe growth faltering*. Weight loss might be due to an illness or inadequate feeding, but whatever the cause it should be considered serious.

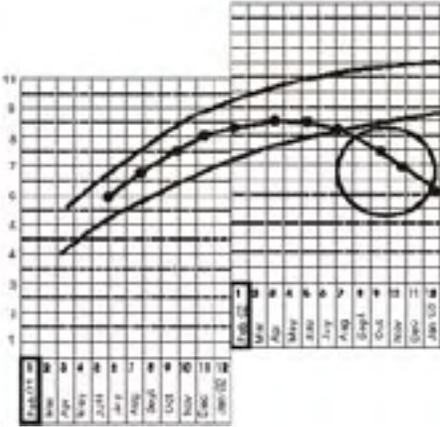
To monitor the monthly growth of children under the age of 2 years (2 years is targeted as this is the group that is supposed to be weighed monthly), a table of minimum weight gain has been established. It shows the “minimum” weight that should be gained in 30 and 60 days, calculated from the date of the last weighing (refer to Table 3.9 at the end of this chapter).

This can now exclusively tell the caretaker and the service provider how much each individual child should weigh; and help the caregiver work towards achieving that weight at its next visit.

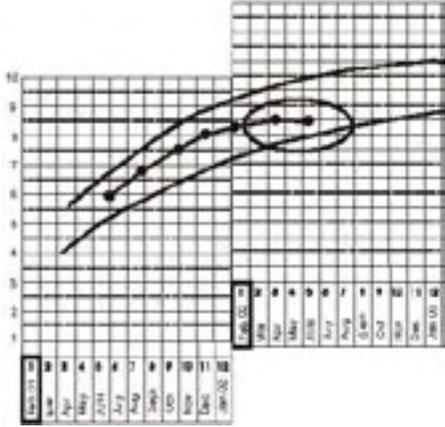
Graphs A, B, and C Showing Adequate Growth



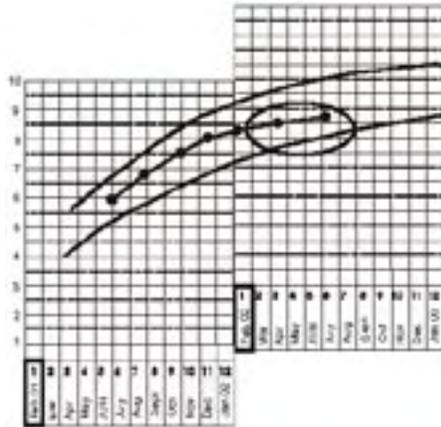
Graphs Showing Faltering, Static, and Loss of Weight Growth



Record Faltering



Record Static



Loss of Weight

Assessment of Health and Feeding

- Ask the caretaker about the child's health today and since the last visit.
- Ask about the child's feeding using the following tool:

Table 3.6: Feeding Assessment

Do you breastfeed your child?	<i>If yes, how many times during the day?</i>
Do you breastfeed at night?	<i>If yes, how many times during the night?</i>
Does the child take other food, water, or other fluids?	<i>If yes, what food or fluids?</i>
How many times a day is he fed?	
Who feeds the child and how?	
Is he served in a separate bowl or plate?	
<i>If the child is ill today, ask:</i> Has his feeding changed during this illness?	<i>If yes, how has it changed?</i>

Determine the interventions needed and advise the caretaker accordingly in relation to:

- Whether the child gained adequate weight
- The child's health and nutritional status
- The duration of growth faltering (whether recent or prolonged)
- Whether the weight loss is severe.

The caretaker is more likely to work with you if you talk to her/him with respect and dignity (*see Table 3.7 on next page*).

Table 3.7: Communication Skills for Effective Counselling

Ask and listen	Pay attention to what s/he is saying and appreciate her/his point of view.
Show respect	Respect the caretaker's assessment of the situation and empathise with her/his difficulties/experiences, such as the child being frequently sick or having poor appetite.
Praise appropriate practices	Praise appropriate behaviours <i>whether or not the child has gained adequate weight</i> . It will be easier to work with the caretaker to find additional appropriate behaviours if s/he is not condemned from the start.
Offer counselling	that is specific and relevant to the caretaker's/child's situation. Help her/him understand what needs to be improved and allow her/him to choose from among the available options.
Ask questions about the counsel	If there are doubts or resistance about the suggestions, discuss and provide explanations. For example, if the mother of a 2-month old feels the child needs to have water, explain that there is enough water in the breast milk, and that the extra water carries the risk of infection.
Check understanding of actions	to be taken. Have caretaker repeat what actions are to be taken to make sure s/he understands. A written reminder may be helpful.

Counselling, Treatment, and Follow-up

- Provide feedback to the caretaker on child's growth and health.
- Praise her/him for something s/he is doing right.
- Discuss with her/him how s/he is feeding her/his child in relation to the recommended feeding practices for her/his child's age. Use feeding recommendations, shown in *Table 3.8*, which were developed with the participation of Zambian caretakers.
- Explore with her/him what changes s/he can make to approach the feeding practices recommended for her/his child's age.
- Negotiate with her/him the *specific* feeding changes s/he can make, and come to an agreement on what s/he will do.
- Refer the child for other needed services, if available.
- Always check vitamin A supplementation and the child's immunisation records.
- Promote other behaviours that reduce diarrhoea, worm infestation, malaria, etc.
- Use good communication skills for effective counselling.

If the child has adequate weight gain and is healthy:

- Show the child's growth curve in relation to the reference curve
- Congratulate the caretaker on her/his child's good health and nutrition
- Talk with the caretaker about appropriate feeding practices for the child's age or the age-group the child is about to enter (see Table 3.8)
- Check on the card if vitamin A supplementation and immunisation is needed and administer them
- Ask if the caretaker has any questions
- Schedule the next appointment.

If the child has growth faltering or static growth for 1-2 months, but is otherwise healthy:

- Talk with the caretaker about the child's growth, health, and feeding
- Show the growth curve and explain that the child's growth is less than the reference curve
- Praise any appropriate behaviour
- Discuss with the caretaker the appropriate feeding practices for her/his child's age (see Table 3.8)
- Negotiate with the caretaker any improvements s/he can make in her/his child's feeding. Improvements should be specific, such as increasing breastfeeding or feeding thicker porridge
- Reach an agreement on what specific actions s/he will try
- Check on the child's record card if vitamin A supplementation and immunisation are needed and administer, if required
- Check the caretaker's understanding of the actions to be taken
- Refer to community services, such as caretakers' support group, or NHC if available
- Schedule the next meeting.

If the child's growth has faltered or been static for 1-2 months and the child is sick:

- Show the growth curve and explain that the child's growth is less than the reference curve
- Ask about the child's feeding
- Praise any appropriate behaviour, such as bringing the child to the health centre
- Refer for medical care if it is provided elsewhere in the health centre; otherwise
- Use the IMCI (Integrated Management of Childhood Illness) guidelines to evaluate and treat the child (*see Chapter 4: The Sick Child*)
- If the child has poor appetite, advise the caretaker to continue breastfeeding, and if the child is over 6 months of age offer small frequent feeds as recommended in the feeding recommendations in the next pages
- Advise extra meals or snacks during convalescence
- Check on the child's record card if vitamin A supplementation and immunisation are needed
- Check the caretaker's understanding of the actions to be taken
- Refer to community services, if available
- Schedule the next visit.

If there is growth faltering for three months or more, loss of weight, or low weight for age with growth faltering:

- Show the growth curve and explain the danger of the child's growth pattern
- Ask about the child's health and feeding
- Ask about the family situation to determine especially difficult circumstances
- Praise the caretaker for any appropriate behaviours, even if it is just breastfeeding
- Refer the child for medical attention if sick, severely malnourished, or if growth faltering has persisted in spite of earlier counselling and efforts by the caretaker
- Discuss and negotiate with the caretaker specific changes s/he can make to improve the child's feeding, using the feeding recommendations in the next pages
- Encourage frequent feeding, discuss with the caretaker how s/he can incorporate more frequent feeding into hers and other family members' daily routine
- Schedule a home visit from the health centre or through community programmes, if possible

- If appropriate and available provide supplementary feeding, discussing with the caretaker how to ensure that the child receives the supplementary food
- Check if vitamin A supplementation and immunisation are needed and administer them if required
- Check the caretaker's understanding of actions to be taken
- Schedule the next visit within two weeks.

Feedback and Follow-up

- Whether the child is referred to other services or not, remember to discuss the return visit. Write down the date for the return visit
- For the individual child, feedback helps to determine whether improvements are being made in the child's growth
- If the growth faltering or decline persists (say for three consecutive months), more in-depth assessment of health and the home situation is necessary to rule out an underlying illness or a household with special needs.

Record Keeping

- Keep a register of all children seen.
- Fill in a tally sheet for children gaining, not gaining, or losing weight for both those above the lower line on the growth curve and those below.
- In addition, record the percentage of children seen who are low weight for age.
- Monitor this information for your catchment area to determine if your programme is having any effect on the overall well being of the children in your community.
- If possible, determine whether there are pockets of your catchment area where the children's growth is worse than other areas, and work with the communities to solve any identified problems.

Table 3.8: Recommended Feeding of Young Children

Age in Months	Type of Feed
0-6 Months	<ul style="list-style-type: none"> - Breastfeed exclusively at least 8 times within 24 hours. - Do not give water, traditional medicines, glucose, gripe water, other milks, porridge, or any other liquids or foods unless medically indicated. - If the child is not gaining weight and is being breastfed properly, <i>refer for medical check up for any underlying illness.</i>
6-12 Months	<ul style="list-style-type: none"> - Continue breastfeeding <i>8-10 times within 24</i> hours. - Feed at least three times a day if breastfed, five times if not. - Give about half to three-quarter cup of food (150-180ml) per feeding of: <i>Thick</i> porridge enriched with sugar, oil, pounded groundnuts or kapenta, mashed beans or avocado, soya flour, oil, pounded dried caterpillars or green leafy vegetables, or Nshima with <i>mashed</i> relish of green leafy vegetables, beans, fish, or <i>pounded kapenta</i>, caterpillar, or meat cooked in oil or pounded groundnuts. - Between main meals, give other foods, such as fruits (banana, pawpaw, avocado), mango or orange juice, <i>chikanda</i>, <i>mashed</i> pumpkins, beans, groundnuts, cassava, boiled sweet potato, milk, or munkoyo. Enrich the cassava, sweet potatoes, and pumpkins with pounded groundnuts, sugar, milk, or oil, whenever possible. <i>Mash</i> these foods and feed to the child. - Serve and feed child separately in own dish.
12-24 Months	<ul style="list-style-type: none"> - Continue breastfeeding as much as child wants. - Feed at least five times a day about one to one and a half cups (200-250ml) of the following per feeding: <i>Nshima</i> with <i>mashed</i> or <i>pounded</i> relish. Do not feed only the soup <i>Thick</i> porridge enriched with one or more of the following: sugar, oil, <i>pounded kapenta</i>, groundnuts, dried caterpillars, mashed beans, egg, and milk. - In between main meals, give other foods such as fruit, samp, boiled cassava, mashed beans or groundnuts, porridge, bread, pumpkin, sweet potato, rice with sugar or oil. - Serve the child separately and <i>supervise</i> the eating.
24 Months or More	<ul style="list-style-type: none"> - Feed family meals at least three times a day. - Two times a day between family meals give fruit (such as banana, orange, mango, pawpaw, guava), samp, sweet potato, bread, rice with sugar or oil, egg or beans.

Health Centre Assistance to Community Based GMP Activities

- Participate in the discussion of the causes of malnutrition in the community.
- Help the community categorise the causes, and design a framework that is understandable to them. This will help analyse growth and health information and seek solutions.

Developing a Community Based GMP Programme with the Community

- Meet with the community and explain the objectives of GMP as a tool for preventing malnutrition.
- Encourage the community to design the programme, and develop guidelines for action.
- Identify suitable training materials, manuals, and IEC materials that will be needed.
- Help identify supervisory plans both within the community and at the health centre.
- Help develop and train community members in GMP and the use of a reporting system.
- Identify trainer(s) and supervisor(s).
- Arrange training for those who will conduct the GMP activities.
- Help procure the necessary equipment and supplies.
- Train and help the community to conduct a GMP baseline.
- Help the community to begin implementing the programme.
- Provide immunisation to the children during the GMP sessions.
- Provide regular supportive supervision.
- Support community discussions, analysis, and actions based on the growth information.

Control of Iodine Deficiency Disorders

Iodine is needed for proper growth and development, especially in children. Lack of iodine in the diet causes iodine deficiency disorders (IDD) which include goitre, miscarriages, and cretinism. IDD can be prevented by consuming iodated salt. It is important to:

- Include the use of iodated salt in health education at the health centre and in the community
- At least once a quarter test salt for iodine from the retail outlets in the community.

Table 3.9: Minimum Expected Weight Gain

Weight Today	Weight in 1 Month	Weight in 2 Months	Weight Today	Weight in 1 Month	Weight in 2 Months	Weight Today	Weight in 1 Month	Weight in 2 Months
1.8	2.3	2.9	6.0	6.5	6.9	10.2	10.4	10.6
1.9	2.4	3.0	6.1	6.5	6.9	10.3	10.5	10.7
2.0	2.5	3.3	6.2	6.6	7.0	10.4	10.6	10.8
2.1	2.6	3.4	6.3	6.7	7.1	10.5	10.7	10.9
2.2	2.7	3.5	6.4	6.8	7.2	10.6	10.8	11.0
2.3	2.8	3.6	6.5	6.9	7.2	10.7	10.9	11.1
2.4	2.9	3.7	6.6	7.0	7.3	10.8	11.0	11.2
2.5	3.0	3.8	6.7	7.1	7.4	10.9	11.1	11.3
2.6	3.1	3.9	6.8	7.2	7.5	11.0	11.2	11.3
2.7	3.2	4.0	6.9	7.3	7.6	11.1	11.3	11.4
2.8	3.3	4.1	7.0	7.3	7.7	11.2	11.4	11.5
2.9	3.4	4.2	7.1	7.4	7.8	11.3	11.5	11.6
3.0	3.5	4.3	7.2	7.5	7.9	11.4	11.6	11.7
3.1	3.6	4.4	7.3	7.6	7.9	11.5	11.7	11.8
3.2	3.7	4.5	7.4	7.7	8.0	11.6	11.8	11.9
3.3	3.8	4.6	7.5	7.8	8.1	11.7	11.8	12.0
3.4	3.9	4.7	7.6	7.9	8.2	11.8	11.9	12.1
3.5	4.0	4.8	7.7	8.0	8.3	11.9	12.0	12.2
3.6	4.1	4.9	7.8	8.1	8.4	12.0	12.1	12.3
3.7	4.2	5.0	7.9	8.2	8.5	12.1	12.2	12.3
3.8	4.3	5.1	8.0	8.3	8.6	12.2	12.3	12.4
3.9	4.4	5.2	8.1	8.4	8.7	12.3	12.4	12.5
4.0	4.5	5.2	8.2	8.5	8.8	12.4	12.5	12.6
4.1	4.6	5.3	8.3	8.6	8.9	12.5	12.6	12.7
4.2	4.7	5.4	8.4	8.7	8.9	12.6	12.7	12.8
4.3	4.8	5.5	8.5	8.8	9.0	12.7	12.8	12.9
4.4	4.9	5.6	8.6	8.9	9.1	12.8	12.9	13.0
4.5	5.0	5.6	8.7	8.9	9.2	12.9	13.0	13.1
4.6	5.1	5.7	8.8	9.0	9.3	13.0	13.1	13.2
4.7	5.2	5.8	8.9	9.1	9.4	13.1	13.2	13.3
4.8	5.3	5.9	9.0	9.2	9.5	13.2	13.3	13.4
4.9	5.4	6.0	9.1	9.3	9.6	13.3	13.4	13.5
5.0	5.5	6.0	9.2	9.4	9.7	13.4	13.5	13.6
5.1	5.6	6.1	9.3	9.5	9.8	13.5	13.6	13.7
5.2	5.7	6.2	9.4	9.6	9.8	13.6	13.7	13.8
5.3	5.8	6.3	9.5	9.7	9.9	13.7	13.8	13.9
5.4	5.9	6.4	9.6	9.8	10.0	13.8	13.9	14.0
5.5	6.0	6.5	9.7	9.9	10.1	13.9	14.0	14.1
5.6	6.1	6.5	9.8	10.0	10.2	14.0	14.1	14.2
5.7	.2	6.6	9.9	10.1	10.3	14.1	14.2	14.3
5.8	6.3	6.7	10.0	10.2	10.4	14.2	14.3	14.4
5.9	6.4	6.8	10.1	10.3	10.5	14.3	14.4	14.5

Chapter 4

Child Health: The Sick Child

Introduction

A caretaker may bring the sick child to the health centre for a particular problem or symptom. If you only assess the child for that particular problem or symptom, you might overlook other signs of disease. The child might have pneumonia, diarrhoea, malaria, measles, or malnutrition. These diseases can cause death or disability in young children if they are not treated.

Included in this chapter are tables describing how to assess and classify sick children so that signs of disease are not overlooked. The tables also include treatment and are for the management of the child who is 2 months up to 5 years of age. *Information on the management of the young infant aged 1 week to 2 months is given at the end of the chapter.* The approach illustrated in these tables is based upon the Integrated Management of Childhood Illness (IMCI) practices, which are now taught in Zambia. The approach in this chapter, however, has been simplified, compared to the IMCI approach. Health workers who have been taught the IMCI methods should continue to practice the full IMCI approach, as it is preferable.

The case management process is designed for children less than 5 years of age. Although much of the advice on treatment is applicable for a child aged 5 years or more, the process cannot be used for older children due to differences in clinical signs of older and younger children. This process is, therefore, not recommended for older children. For management of children aged 5 to 14 years, refer to Chapter 9: Common Medical and Surgical Conditions.

Epidemiology

- Child morbidity and mortality is a major public health concern in Zambia. The infant mortality rate (IMR) is 109 per 1,000 live births and the under 5 mortality rate is 197 per 1,000 live births (ZDHS, 1996)¹.
- About 75% of child mortality is due to preventable diseases/conditions, such as malaria, diarrhoea, pneumonia, malnutrition, and anaemia.
- Only 26% of children below 4 months are breastfed exclusively (ZDHS, 1996).

¹ Central Statistical Office (1997), *Zambia Demographic and Health Survey, 1996*.

Assessment, Classification, and Treatment of Illness for the Child Aged 2 Months to 5 Years

1. Communication: Greet the Caretaker

- *Ask* the caretaker what the child's problems are.
- *Listen* carefully to what the caretaker tells you.
- Take her/his concerns seriously.
- Use words the caretaker understands.
- Give the caretaker time to answer the questions.
- *Ask* additional questions when the caretaker is not sure about her/his answer. When you ask about a main symptom or related sign, the caretaker may not be sure if it is present. Ask her/him additional questions to help her/him give clearer answers.

2. Check for General Danger Signs

- Check *all* sick children for general danger signs. A child with a general danger sign has a serious problem. Most children with a general danger sign need urgent referral to the hospital.

Ask: Is the child able to drink or breastfeed?

- A child has the sign not able to drink or breastfeed if the child is too weak to drink, and is not able to suck or swallow when offered a drink or breast milk.
- If you are not sure about the caretaker's answer, ask her/him to offer the child a drink of clean water or breast milk.
- Look to see if the child is swallowing the water or breast milk.

Ask: Does the child vomit everything?

- A child who has this sign is not able to hold anything down at all. What goes down comes back up.
- A child who vomits everything will not be able to hold down food, fluids, or oral drugs.
- A child who vomits several times but is able to hold down some fluids does not have this general danger sign.

Ask: Has the child had convulsions?

- A child who convulsed during this illness has this general danger sign.
- If the child is convulsing now, manage the airway and treat the child with diazepam (see Table 4.16).

Look: See if the child is lethargic or unconscious.

- A lethargic child is not awake and alert when s/he should be. Often the lethargic child does not look at her/his caretaker or watch your face when you talk.

- The child may stare blankly and appear not to notice what is going on around him. An unconscious child cannot be wakened. S/he does not respond when s/he is touched, shaken, or spoken to.
- Ask the caretaker if the child seems unusually sleepy or if s/he cannot wake the child. Look to see if the child awakens when the caretaker talks or shakes the child, or when you clap your hands.
- Ask the caretaker if the child has had diarrhoea; the lethargy could be due to dehydration.

If the child has a general danger sign, complete the rest of the assessment **IMMEDIATELY** and **RAPIDLY**. This child has a severe problem. There must be no delay in her/his immediate treatment.

You should take note that a child that has a danger sign and is to be referred to a hospital may require some initial treatment before referral. This information is provided in the “Signs, Classification, and Treatment” tables in the following pages. Also provided in the following pages are treatment Plans A, B, and C.

For children not showing any of the general danger signs above, assess for the four main symptoms below.

a. Cough or Difficult Breathing

A child with a cough or difficult breathing may have pneumonia or another severe respiratory infection. On the other hand, there are many children who come to the health centre with less serious respiratory infections. Most children with a cough or difficult breathing have only a mild infection.

- Most coughs are caused by viral infection, which may lead to bronchitis. These children are not seriously ill. They do not need treatment with antibiotics. Their families can treat them at home.
- Health workers need to identify the few, very sick children with a cough or difficult breathing who need treatment with antibiotics.

Assess

Ask about cough and difficult breathing in *all* children.

- **Ask:** Does the child have a cough or difficult breathing?
- If the child does not have a cough or difficult breathing, ask about the next main symptom, diarrhoea. Do not assess the child further for signs related to cough or difficult breathing.

- If the caretaker answers **YES**, ask the next question.
- **Ask:** For how long? A child who has had a cough or difficult breathing for more than 3 weeks has a chronic cough. This may be a sign of tuberculosis, asthma, whooping cough, or another problem.
- **Count** how many breaths in one minute. The child must be quiet and calm when you look and listen to his breathing. If the child is frightened, crying, or angry, you will not be able to obtain an accurate count of the child's breaths. If the child is sleeping, do not wake the child. As noted below, the cut-off point for fast breathing depends on the child's age.

Cut-off Points for Fast Breathing

- If a child is 2 months up to 12 months, fast breathing is 50 breaths per minute or more.
- If a child is 12 months up to 5 years, fast breathing is 40 breaths per minute or more.
- **Look** for chest indrawing.
 - *If you did not lift the child's shirt when you counted the child's breaths, ask the caretaker to lift it now.*
 - **Look** for chest indrawing when the child breathes **in**.
 - **Look** at the lower chest wall (lower ribs). The child has chest indrawing if the lower chest wall goes **in** when the child breathes **in**. In normal breathing, the whole chest wall (upper and lower) and the abdomen move **out** when the child breathes **in**.
 - For chest indrawing to be present, it must be clearly visible and present all the time.
 - If you only see chest indrawing when the child is crying or feeding, the child **does not have** chest indrawing.
 - If only the soft tissue between the ribs goes in when the child breathes in (also called intercostal indrawing or intercostal retractions), the child **does not have** chest indrawing.
- **Look, listen** for stridor or wheezing. Stridor is a harsh noise made when the child breathes in. A child who has stridor when calm has a dangerous condition.
 - To look and listen for stridor:
 - Look to see when the child breathes in, then listen for stridor
 - Put your ear near the child's mouth while looking at the chest to time the phase of breathing
 - Be sure to look and listen for stridor when the child is calm.
 - **Wheezing** is a whistling sound made when the child breathes **out**. (If a child produces a wet noise, which is heard when breathing in and out, then the child has a blocked nose.)

Classify

After you assess for the main symptoms and related signs, classify the child's illness. Refer to the table below to classify a cough or difficult breathing:

- Look at the top row of Table 4.1 below. Does the child have a general danger sign? Does the child have chest indrawing or stridor when calm?
- If the child has a general danger sign or any of the other signs listed in the top row, select the severe classification SEVERE PNEUMONIA or VERY SEVERE DISEASE
- If the child does not have the severe classification, look at the second row. Does the child have fast breathing? If YES, select the classification in the second row, PNEUMONIA
- If the child does not have the severe classification in the first row or the classification in the second row, select the classification in the bottom row, NO PNEUMONIA: COUGH or COLD.

Table 4.1: Classification and Treatment of the Child's Cough or Difficult Breathing (Child Aged 2 Months to 5 Years)

Signs	Classification	Treatment
-Any danger general sign, or -Chest indrawing, or -Stridor in calm child	SEVERE PNEUMONIA or VERY SEVERE DISEASE	-Give first dose of benzyl penicillin or chloramphenicol (<i>see Table 4.18</i>) -Treat low blood sugar (<i>see Box 4.1 and Box 4.2</i>) -Refer <i>urgently</i> to the hospital
-Fast breathing	PNEUMONIA	-Give cotrimoxazole or amoxicillin for 5 days (<i>see Table 4.10</i>) -Follow-up in 2 days
-No sign of severe disease or pneumonia	NO PNEUMONIA: COUGH or COLD	-If coughing more than 3 weeks, refer for assessment -Advise the caretaker on a safe remedy for cough and sore throat -Follow-up in 5 days if not improving

Note: Whenever you use a classification table, start with the top row. This is to avoid missing the very sick child and sending the child home, most likely to die. In the classification table, a child should receive only one classification. If the child has signs from more than one row, always select the more serious classification.

b. Diarrhoea

Diarrhoea is defined as three or more loose or watery stools in a 24-hour period. Caretakers usually know when their children have diarrhoea. They may say that the child's stools are loose or watery.

Assess

Ask about diarrhoea in *all* children.

Does the child have diarrhoea?

- If the caretaker answers **NO**, ask about the next main symptom, fever. You do not need to assess the child further for signs related to diarrhoea.
- If the caretaker answers **YES**, then assess the child for signs of dehydration, persistent diarrhoea, and dysentery.

Ask: For how long?

- Diarrhoea which lasts 14 days or more is persistent diarrhoea.
- Ask the caretaker if s/he has seen blood in the stools at any time during this episode of diarrhoea.

Next, check for signs of dehydration.

Look and feel for the following signs:

- **Look** at the child's general condition
- Is the child lethargic or unconscious?
- Is the child restless and irritable?
 - *If a child is calm when breastfeeding but restless and irritable when s/he stops breastfeeding, then the child has the sign "restless and irritable"*
 - *Many children are upset just because they are in the health centre. Usually these children can be consoled and calmed. They do not have the sign "restless and irritable".*
- **Look for sunken eyes.** Decide if you think the eyes are sunken. Then ask the caretaker if s/he thinks her/his child's eyes look unusual. Her/his opinion helps you confirm that the child's eyes are sunken.
- **Offer the child fluid.** *Is the child not able to drink, or drinks poorly? Drinks eagerly? Is thirsty?*
- Ask the caretaker to:
 - *Offer the child some water in a cup or spoon*
 - *Watch the child drink. A child is not able to drink if he is not able to take fluid in his mouth and swallow it, or the child is not able to suck or swallow*

- A child is drinking poorly if the child is weak and cannot drink without help. He may be able to swallow only if fluid is put in his mouth
- A child has the sign “drinking eagerly, thirsty” if it is clear that the child wants to drink. Look to see if the child reaches out for the cup or spoon when you offer her/him water. When the water is taken away, see if the child is unhappy because s/he wants to drink more
- If the child takes a drink only with encouragement and does not want to drink more, s/he does not have the sign “drinking eagerly, thirsty”.
- **Pinch the skin of the abdomen:**
 - Locate the area on the child's abdomen halfway between the umbilicus and the side of the abdomen
 - To do the skin pinch, use your thumb and first finger. Do not use your fingertips because this will cause pain
 - Place your hand so that when you pinch the skin, the fold of skin will be in a line up and down the child's body, and not across the child's body
 - Firmly pick up all the layers of skin and the tissue under them. Pinch the skin for one second and then release it
 - Does it go back:
 - Very Slowly (longer than 2 seconds)?
 - Slowly?
 - Immediately?

Classify Dehydration

To classify the child's dehydration, refer to Table 4.2 below and follow these steps:

- If two or more of the signs in the top row are present, classify the child as having SEVERE DEHYDRATION
- If *fewer than two* of the signs in the top row are present, look at the middle row
- If *two or more* of the signs in this middle row are present, classify the child as having SOME DEHYDRATION
- If *fewer than two* of the signs from the middle row are present, classify the child as having NO DEHYDRATION.

Classify Persistent Diarrhoea

- A child who has had diarrhoea for 14 days or more has PERSISTENT DIARRHOEA.
- If the child has any form of dehydration, then this child is classified as having SEVERE PERSISTENT DIARRHOEA.

Classify Dysentery

If the caretaker reports that there is blood in the stool, classify the child as having DYSENTERY.

Note: A child with diarrhoea has to be classified according to three classifications for dehydration, the duration of the diarrhoea, and for blood in the stool. It is important that the dehydration status of the child is known so that *the treatment can be started promptly*. Most children who die from diarrhoea do so due to dehydration (e.g. a child with diarrhoea might be classified as having no dehydration and dysentery).

Table 4.2: Classification and Treatment of the Child’s Diarrhoea and Dehydration (Child Aged 2 Months to 5 Years)

Signs	Classification	Treatment
Any <i>two</i> of the following: -Lethargic or unconscious -Sunken eyes -Not able to drink or drinks poorly -Skin pinch goes back very slowly	SEVERE DEHYDRATION	-If the child has no other severe classification, give fluids for severe dehydration (<i>see Plan C</i>) -If the child has another severe classification, refer <i>urgently</i> to the hospital, with the caretaker giving frequent sips of ORS on the way. Advise the caretaker to continue breastfeeding -If the child is 2 years or older and there is cholera in your area, give antibiotic for cholera (<i>see Table 4.12</i>)
Any <i>two</i> of the following: -Restless, irritable -Sunken eyes -Drinks eagerly, thirsty -Skin pinch goes back slowly	SOME DEHYDRATION	-If the child has no severe classification, give fluids and food for some dehydration (<i>see Plan B</i>) -If the child has a severe classification, refer <i>urgently</i> to the hospital, with the caretaker giving frequent sips of ORS on the way. Advise the caretaker to continue breastfeeding
Not enough signs to classify as SOME or SEVERE DEHYDRATION	NO DEHYDRATION	-Give fluid and food to treat diarrhoea at home -Advise the caretaker on when to return (<i>see Plan A</i>)
Dehydration present, and diarrhoea for 14 days or more	SEVERE PERSISTENT DIARRHOEA	-If the child has no other severe classification, treat the dehydration before referral (<i>see Plan B</i>) -Refer to the hospital
No dehydration, and diarrhoea for 14 days or more	PERSISTENT DIARRHOEA	-Advise the caretaker on feeding a child who has PERSISTENT DIARRHOEA (<i>see Plan A</i>) -Follow-up in 5 days
Blood in the stool	DYSENTERY	-Treat for 5 days with an appropriate oral antibiotic (<i>see Table 4.11</i>) -Follow-up in 2 days

c. Fever

A child with fever may have malaria, measles, or another severe disease.

Assess

- Ask the caretaker for a history of fever or if the child's body feels hot. The child has a history of fever if the child has had any fever with this illness.
- Measure the body temperature of *all* sick children.
- Ask: Does the child have fever?
 - Check to see if the child:
 - Has a history of fever
 - Feels hot. Feel the child's stomach or underarm and determine if the child feels hot
 - Has a temperature of 37.5°C or above.
- *If the child does not have fever* (by history, does not feel hot, or temperature is not 37.5°C or above), *do not assess* the child for signs related to fever.
- *If the caretaker reports that the child has had fever* with this illness, *then assess* the child for signs related to fever, even if the child does not have a temperature of 37.5°C or above, or does not feel hot.
- Ask: For how long has the child had fever?
 - *If more than 7 days*
 - *Has fever been present every day? (Most fevers due to viral illnesses go away within a few days.)*

A fever which has been present every day for more than 7 days can mean that the child has a more severe disease, such as typhoid fever. Refer this child for further assessment.

- **Look** or **feel** for stiff neck:
 - Draw the child's attention to his umbilicus or toes. For example, you can tickle his toes to encourage the child to look down
 - Look to see if the child can bend his neck when he looks down at his umbilicus or toes
 - If you still have not seen the child bend his neck himself, ask the caretaker to help you lay the child on her/his back. Lean over the child, gently support his back and shoulders with one hand. With the other hand, hold his head. Then carefully bend the head forward towards his chest
 - If the neck bends easily, the child **does not have** a stiff neck
 - If the neck feels stiff and there is resistance to bending, the child **does have** a stiff neck.

A child with fever and a stiff neck may have meningitis.
A child with meningitis needs urgent treatment with injectable antibiotics (see Table 4.17) and referral to a hospital.

- **Look** for signs suggesting **measles**:
 - *Look for a generalised rash and for one of the following signs:*
 - cough
 - runny nose
 - red eyes.
 - *Generalised rash:*
 - In measles, a red rash begins behind the ears and on the neck and spreads to the rest of the body, arms, and legs
 - After 4 to 5 days, the rash starts to fade and the skin may peel
 - A measles rash does not have vesicles (blisters) or pustules
 - The rash does not itch
 - Do not confuse measles with other common childhood rashes like chicken pox, scabies, or heat rash.
 - *Cough, runny nose, or red eyes:*
 - The child has red eyes if there is redness in the white part of the eye.

To classify a child as having measles, the child with fever must have a generalised rash *and one* of the following signs: cough, runny nose, or red eyes. Also, ask the caretaker if the child has had measles within the past three months.

Classify

Fever

There are two possible classifications of fever:

- Very severe febrile disease
- Malaria.

Measles

A child who has the main symptom “fever and measles” is classified both for fever and for measles.

Table 4.3: Classification and Treatment of the Child's Fever and Measles (Child Aged 2 Months to 5 Years)

Signs	Classification	Treatment
-Any general danger sign or -Stiff neck	VERY SEVERE FEBRILE DISEASE	-Give a first dose of injectable quinine (see Table 4.19) -Treat the child to prevent low blood sugar (see Box 4.1 and Box 4.2) -Give a first dose of an appropriate antibiotic (see Table 4.10) -Do tepid sponging -Give one dose of paracetamol for fever of 38.5° C* or above (see Table 4.15) -Refer urgently to the hospital
-Fever (by history or temperature 37.5° C or above)	MALARIA	-Treat with Fansidar (SP). Please also refer to Malaria Chapter for new policy guidelines. -If the child has already been appropriately treated with SP during this episode of fever, treat with oral quinine. -Do tepid sponging -Give one dose of paracetamol for fever of 38.5° C or above (see Table 4.15) -Advise the caretaker when to return immediately -Ask the caretaker to return in 2 days if fever persists -If fever is present every day for 7 days, refer for assessment
-Any general danger sign, or -clouding of the cornea, or -deep or extensive mouth ulcers	SEVERE COMPLICATED MEASLES	-Give vitamin A -Give first dose of an appropriate antibiotic (see Table 4.10) -If clouding of the cornea or pus draining from the eye, apply tetracycline eye ointment -Refer urgently to the hospital
-Pus draining from the eyes, or -mouth complications	MEASLES WITH EYE or MOUTH COMPLICATIONS	-Give vitamin A -If pus draining from the eye, treat eye infection with tetracycline eye ointment -If mouth ulcers, treat with gentian violet -Follow-up in 2 days
-Measles now or within the past 3 months	MEASLES	-If the child has any general danger sign, severe pneumonia, severe malnutrition, clouding of the cornea, or deep or extensive mouth ulcers, refer the child to the hospital -First, treat the child with vitamin A (see Vitamin A Schedule at the end of this chapter) -Also, give the first dose of an appropriate antibiotic (see Table 4.10) -If referral is not necessary, teach the caretaker to treat any eye infection or mouth ulcers at home -Treat the child with vitamin A (see Vitamin A Schedule at the end of this chapter)

d. Ear Problems

When a child has an ear infection, pus collects behind the eardrum and causes pain and often fever. If the infection is not treated, the eardrum may burst. The pus discharges, and the child feels less pain. The fever and other symptoms may stop, but the child may suffer from poor hearing because the eardrum has a hole in it. Usually the eardrum heals by itself. At other times the discharge continues, the eardrum does not heal, and the child becomes deaf in that ear.

Ear infections rarely cause death. However, they cause many days of illness in children. Ear infections are the main cause of deafness in developing countries, and deafness causes learning problems in school.

Assess

Ask about ear problems in *all* sick children.

- Does the child have an ear problem?
 - *If the caretaker answers NO, do not assess the child for ear problem.*
 - *If the caretaker answers YES, ask the next question:*
- Does the child have ear pain?
 - *Ear pain can mean that the child has an ear infection. If the caretaker is **not sure** that the child has ear pain*
 - *Ask if the child has been irritable and rubbing his ear.*
- Is there ear discharge?
 - *If YES, for how long?*
 - *An ear discharge that has been present for 2 weeks or more is treated as a chronic ear infection*
 - *An ear discharge that has been present for less than 2 weeks is treated as an acute ear infection.*
- **Look** for pus draining from the ear:
 - *Pus draining from the ear is a sign of infection, even if the child no longer has any pain*
 - *Look inside the child's ear to see if pus is draining from the ear.*

Classify

There are four classifications for an ear problem:

- Mastoiditis
- Acute ear infection
- Chronic ear infection
- No ear infection.

**Table 4.4: Classification and Treatment of the Child’s Ear Problems
(Child Aged 2 Months to 5 Years)**

Signs	Classification	Treatment
-Tender swelling behind the ear	MASTOIDITIS	-Give first dose of an appropriate antibiotic (<i>see Table 4.10</i>) -Give paracetamol for pain (<i>see Table 4.15</i>) -Refer urgently to the hospital
-Pus is seen draining from the ear, and discharge is reported for less than 14 days, or -Ear pain	ACUTE EAR INFECTION	-Give an appropriate antibiotic for 5 days (<i>see Table 4.10</i>) -Give paracetamol for pain (<i>see Table 4.15</i>) -Dry the ear by wicking -Follow-up in 5 days
-Pus is seen draining from the ear, and discharge is reported for 14 days or more	CHRONIC EAR INFECTION	-Dry the ear by wicking (antibiotics will not help) -Follow-up in 5 days
-No ear pain -No pus seen draining from the ear	NO EAR INFECTION	-Advise the caretaker to return if s/he observes that the child has developed any of the signs above

Malnutrition and Anaemia

In addition to the four main symptoms above, you should also assess for *malnutrition* and *anaemia*.

- Check **all** sick children for signs suggesting malnutrition and anaemia.
- Identifying and treating children with malnutrition can help prevent many severe diseases and death.

Assess

Check **all** sick children for malnutrition and anaemia.

- **Look** for visible severe wasting:
 - A child with visible severe wasting has **marasmus**, a form of severe malnutrition.
 - A child has this sign if s/he is very thin, has no fat, and looks like skin and bones. (Some children are thin but do not have visible severe wasting.)
 - To look for visible severe wasting:
 - Remove the child's clothes
 - Look for severe wasting of the muscles, of the shoulders, arms, buttocks, and legs
 - Look to see if the outline of the child's ribs is easily seen
 - Look at the child's hips. They may look small when you compare them with the chest and abdomen

Look at the child from the side to see if the fat of the buttocks is missing

When wasting is extreme, there are many folds of skin on the buttocks and thigh. It looks as if the child is wearing baggy pants

The face of a child with visible severe wasting may still look normal

The child's abdomen may be large or distended.

- **Look** for *palmar pallor*. Pallor is unusual paleness of the skin. It is a sign of anaemia.

- *To see if the child has palmar pallor:*

- Look at the skin of the child's palm

- Hold the child's palm open by grasping it gently from the side

- Do not stretch the fingers backward. This may cause pallor by blocking the blood supply

- Compare the colour of the child's palm with your own palm and with the palms of the caretaker:

- *The child has some palmar pallor if the skin of the child's palm is pale*

- *The child has severe palmar pallor if the skin of the palm is very pale or so pale that it looks white.*

- **Look** and **feel** for oedema of both feet:

- *A child with oedema of both feet may have kwashiorkor, another form of severe malnutrition*

- *Oedema is when an unusually large amount of fluid gathers in the child's tissues. The tissues become filled with the fluid and look swollen or puffed up*

- **Look** and **feel** to determine if the child has oedema of both feet

- *Use your thumb to press gently for a few seconds on the top side of each foot. The child has oedema if a dent remains in the child's foot when you lift your thumb.*

Determine Weight for Age

- Weight for age compares the child's weight with the age on the weight for age chart, or the child's health centre card (*for the weight for age chart, refer to Chapter 3: The Well Child*).
- You will identify children whose weight for age is below the bottom curve of the weight for age chart. These are children who are very low weight for age.
- These children need special attention on how they should be fed.

Assess for Growth Faltering

- Growth faltering is slow, static, or loss of weight in a child in a period of a month.
- Compare the weight of the child now to the weight of the child that was recorded one month ago.
- If the weight now has not increased compared to the weight of the previous month, then the child has growth faltering.

Classify

There are three classifications for a child's nutritional status. They are:

- Severe malnutrition or severe anaemia
- Anaemia, or very low weight for age, or growth faltering
- No anaemia and growth not faltering, and not very low weight for age.

Table 4.5: Classification and Treatment of the Child's Nutritional Status and Anaemia (Child Aged 2 Months to 5 Years)

Signs	Classification	Treatment
-Severe palmar pallor, or -Visible severe wasting, or -Oedema of both feet	SEVERE MALNUTRITION or SEVERE ANAEMIA	-Give a dose of vitamin A (see Vitamin A Schedule at the end of this chapter) -Refer <i>urgently</i> to the hospital
-Some palmar pallor, or -Growth faltering, or -Very low weight for age	ANAEMIA, or VERY LOW WEIGHT FOR AGE, or GROWTH FALTERING	-Treat with iron (see Table 4.16) -Treat with an anti-malarial (see Tables 4.13 and 4.14) -Give mebendazole if the child has not had any in the last 6 months (see section on mebendazole at the end of this chapter) -Assess the child's feeding and counsel the caretaker about feeding her/his child -Advise the caretaker to return in 14 days
-No palmar pallor, and -Not very low weight for age, and -No growth faltering, and -No signs of malnutrition	NO ANAEMIA AND NOT VERY LOW WEIGHT FOR AGE, AND NO GROWTH FALTERING	-Assess the child's feeding and counsel the caretaker about feeding her/his child -If feeding problems persist, return in 5 days

Note: A child may be classified either as severe anaemia if the child has severe palmar pallor, or as severe malnutrition when all signs of malnutrition are present.

Most of the information on when the caretaker should return to the health centre is given in the tables above. In certain situations, however, the caretaker should return to the health centre *immediately*, as indicated below.

Table 4.6: When to Return Immediately

<i>Advise the caretaker to return immediately if the child has any of these signs:</i>	
Any sick child	-Not able to drink or breastfeed -Becomes sicker -Develops a fever
If child has NO PNEUMONIA: COUGH or COLD, also return if:	-Fast breathing -Difficult breathing
If child has diarrhoea, also return if:	-Blood in stool -Drinking poorly

Immunisation Status

- Check the immunisation status for *all* sick children, and when due immunise the child.
- A child who needs urgent referral need not be delayed for the sake of receiving immunisations. These can be postponed and made at the referral point.
- The immunisation schedule is shown in *Chapter 3: The Well Child*.

Vitamin A Supplementation Status

- When vitamin A supplies are adequate, *all children aged 6 months up to 6 years* should receive vitamin A every 6 months.
- Visits to the health centre for illness are one opportunity to check when the child last received vitamin A.
- When giving vitamin A as a supplement, you need to be sure it is not given more often than every 6 months.
- Record the vitamin A dose on the child's immunisation and growth card, with the date given.

Check for Other Problems

- The tables above do not address all of a sick child's problems.
- You should assess other problems the caretaker has told you about. For example, s/he may have said the child has a skin infection, is itching, or has swollen neck glands. Alternatively, you may have observed another problem during the assessment.

- Identify and treat any other problems according to your training, experience, and health centre policy.
- Refer the child for any other problem you cannot manage in the health centre.

Management of the Sick Child at Home

You should also teach families the following, concerning management of the sick child at home:

Acute Respiratory Infections:

- Soothe the throat and relieve the cough with a safe and inexpensive remedy
- Seek help from a trained health worker if the child develops fast or difficult breathing.

Malaria:

- Treat children appropriately with an anti-malaria drug as soon as they develop fever
- Seek help from a trained health worker if the fever persists one day after treatment, or if the fever returns.

Any Sick Child:

- Breastfeed more frequently and for longer at each feed
- Feed solid food and liquids (*i.e.* porridge, tea, rice water) more frequently if the child is above 6 months
- Seek help from a trained health worker if the child is not able to drink, or breastfeed, or becomes sicker.

On the following pages are treatment Plans A, B, and C.

Plan A: Treat Diarrhoea at Home

Use this plan to teach the caretaker to:

- Continue to treat her/his child's current episode of diarrhoea at home
- Give early treatment for future episodes of diarrhoea.

Explain the three rules of treatment of diarrhoea at home:

1. Give the child more fluids than usual to prevent dehydration:

- Use recommended home fluids, including: salt and sugar solution, ORS solution, food based fluids (such as soup, rice water, and yoghurt drinks) and plain water
- Use ORS solutions for children described below.

Note: If the child is under 6 months old and is not yet taking solid food, give ORS solution rather than a food based fluid

- Give as much of these fluids as the child will take. Use the amount below for ORS as a guide
- Continue giving these fluids until the diarrhoea stops.

2. Give the child plenty of food to prevent malnutrition:

- Continue to breastfeed frequently
- If the child is not breastfed, give the usual milk
- If the child is 6 months or older, or already taking solid foods:
 - *In addition, give cereal or another starchy food mixed, if possible, with pulses, vegetables, and meat or fish:*
 - Add 1 or 2 teaspoonfuls of vegetable oil to each serving
 - Give fresh fruit juice or mashed banana, to provide potassium
 - Give freshly prepared foods
 - Cook and mash or grind food well
 - Encourage the child to eat; offer food at least 5-6 times a day
 - Give the same food after diarrhoea stops, and give an extra meal each day for two weeks.

3. Take the child to the health worker if the child does not get better in five days, or develops any of the following:

- many watery stools
- eating or drinking poorly
- repeated vomiting
- fever
- marked thirst
- blood in stool.

Children should be given ORS at home, if:

- They have been on treatment Plan B or C
- They cannot return to the health worker if the diarrhoea gets worse.

It is especially important to give ORS to all children who see a health worker for diarrhoea.

If the child will be given ORS solution at home:

- Show the caretaker how much to give after each loose stool
- Give enough packets for 2 days:

Table 4.7: Amount of ORS to Provide

Age	After Each Loose Stool	For Use at Home
< 24 months	50-100ml	500ml/day
2-10 years	100-200ml	1,000ml/day
> 10 years	As much as wanted	2,000ml/day

- Describe and show the amount to be given after each stool, using a local measure.
- Show the caretaker how to mix ORS.
- Show her/him how to give ORS:
 - *A teaspoonful every 1-2 minutes for a child under 2 years*
 - *Frequent sips from a cup for an older child*
 - *If the child vomits, wait 10 minutes. Then give the solution more slowly (i.e. a spoonful every 2-3 minutes)*
 - *If diarrhoea continues after the ORS packets are used up, tell the caretaker to give other fluids as described in the first rule above, or return for more ORS.*

Plan B: Treat Dehydration

Table 4.8: Approximate Amount of ORS Solution to Give in the First 4 Hours

Age*	<4 Months	4-11 Months	12-23 Months	2-4 Years	5-14 Years	15 Years
Weight	< 5kg	5-7.9kg	8-10.9kg	11-15.9kg	16-29.9kg	> 30kg
ml	200-400	400-600	600-800	800-1,200	1,200-2,200	2,200-4,000

**Use the patient's age only when you do not know the weight. The approximate amount of ORS required (ml) can also be calculated by multiplying the patient's weight (kg) by 75.*

- If the child wants more ORS than shown, give more.
- Encourage the caretaker to continue breastfeeding.
- For infants under 6 months who are not breastfed, also give 100-200ml of clean water during this period.

Observe the child carefully and help the caretaker give ORS solution:

- Show her/him how much solution to give the child
- Show her/him how to give it: a teaspoon every 1-2 minutes for a child under 2 years; frequent sips from a cup for an older child
- Check from time to time if there are problems
- If the child vomits, wait 10 minutes. Then give the solution more slowly (*i.e.* a spoonful every 2-3 minutes)
- If the child's eyelids become puffy, stop ORS and give plain water or breast milk. Give ORS according to Plan A when the puffiness is gone.

After 4 hours, re-assess the child using the assessment table, then select Plan A, B, or C to continue treatment. If signs indicating severe dehydration have appeared, shift to Plan C.

If the caretaker must leave before completing Plan B:

- Show her/him how much ORS to give to finish the 4-hour treatment at home
- Give her/him enough ORS packets to complete rehydration, and for two more days, as shown in Plan A
- Show her/him how to prepare the ORS solution
- Explain to her/him the three rules in Plan A for treating her/his child at home.

Plan C: Treat Severe Dehydration Quickly

Can you give intravenous (IV) fluids immediately?

- Start IV fluids immediately
- If the patient can drink, give ORS by mouth while the drip is set up
- Give 100ml/kg Ringer's lactate solution (or, if not available, normal saline) divided as shown in the table below.

Table 4.9: Ringer's Lactate Solution Dosage

Age	First Give 30ml/kg in:	Then Give 70ml/kg in:
Infants < 1 yr	1 hour*	5 hours
Older	30 minutes*	2 ½ hours

**Repeat once if radial pulse is still very weak or not detectable.*

- Re-assess the patient every 1-2 hours. If hydration is not improving, give the IV drip more rapidly.
- Also, give ORS (about 5ml/kg/hour) as soon as the patient can drink; usually after 3-4 hours (infants) or 1-2 hours (older).
- After 6 hrs (infants) or 3 hrs (older), evaluate the patient using the assessment table. Then choose the appropriate Plan (A, B, or C) to continue treatment.

Is IV treatment available nearby (within 30 minutes)?

- Send the patient immediately for IV treatment
- If the patient can drink, provide the caretaker with ORS, and show her/him how to give it.

Are you trained to use a naso-gastric (NG) tube for rehydration?

- Start rehydration by tube with ORS solution; give 20ml/kg/hour for 6 hours (total of 120 ml/kg)
- Re-assess the patient every 1-2 hours:
 - If there is repeated vomiting or increased abdominal distention, give fluid more slowly
 - If dehydration has not improved > 3 hrs, send the patient for IV therapy
 - After 6 hours, re-assess the patient and choose the appropriate Plan.

Can the patient drink?

- Start rehydration by mouth with ORS solution, giving 20ml/kg/hour for 6 hours (total of 120 ml/kg)
- Re-assess the patient every 1-2 hours:
 - *If there is repeated vomiting or increased abdominal distention, give fluid more slowly*
 - *If dehydration has not improved > 3 hours, send the patient for IV therapy*
 - *After 6 hours, re-assess the patient and choose the appropriate Plan.*

URGENT: Send the patient for IV or NG treatment.

Note: Try to observe the patient at least 6 hrs after rehydration, to be sure the caretaker can maintain hydration-giving ORS by mouth. If the patient is > 2 years and there is cholera in the area, give an appropriate oral antibiotic (*see Table 4.10*) after the patient is alert.

Note: • First line oral antibiotic: cotrimoxazole
• Second line antibiotic: amoxicillin.

Treatment with Oral Drugs at Home

Follow the instructions below for every oral drug to be given at home. Also, follow the instructions listed with each drug dosage table:

- Determine the appropriate drugs and dosage for the child's age or weight
- Tell the caretaker the reason for giving the drug to the child
- Demonstrate how to measure a dose
- Watch the caretaker practice measuring a dose by her/himself
- Ask the caretaker to give the first dose to the child
- Explain carefully how to give the drug, then label and package the drug
- If more than one drug will be given, collect, count, and package each drug separately
- Explain that all the oral drug tablets or syrups must be used to finish the course of treatment, even if the child gets better
- Check the caretaker's understanding before s/he leaves the health centre.

Vitamin A Schedule

- For all children with signs and symptoms of cloudiness of the cornea, measles, or severe protein energy malnutrition, give vitamin A as follows:
 - For children between 6 months and 11 months, give:
 - 100,000 IU immediately
 - 100,000 IU on the following day.
 - If a child is over 12 months old, but less than 8kg, treat as above.
 - For children 12 months to 71 months, give:
 - 200,000 IU immediately
 - 200,000 IU on the following day.

Oral Antibiotic

Give an appropriate oral antibiotic for pneumonia, ear infection, or very severe disease (*see Table 4.10*):

- First line antibiotic: cotrimoxazole
- Second line antibiotic: amoxicillin.

Table 4.10: Recommended Oral Antibiotic for Pneumonia, Ear Infection, or Very Severe Disease

Age or Weight	Cotrimoxazole (trimethoprim + sulphamethoxazole) Give two times daily for 5 days (12 hourly)			Amoxycillin Give three times daily for 5 days	
	Adult tablet 80mg trimethoprim + 400mg sulphamethoxazole	Paediatric tablet 20mg trimethoprim + 100mg sulphamethoxazole	Syrup	Tablet 250mg	Syrup 125mg per 5ml
2 < 12 months (4 < 10kg)	2	2	5.0ml	½	5ml
12 months-5 years (10-19kg)	1	3	7.5ml	1	10ml

Dysentery

Table 4.11: Recommended Antibiotic for Shigella: Nalidixic Acid

Age or Weight	Nalidixic Acid Tablet (250mg) Give 4 times daily for 5 days
2 < 4 months (4 < 6kg)	¼
4 < 12 months (6 < 10kg)	½
12 months-5 years (10 - 19kg)	1

Cholera

Table 4.12: Recommended Antibiotic for Cholera: Erythromycin

Age or Weight	Erythromycin Tablet (250mg) give 4 times daily for 3 days
2 < 4 months (4 < 6kg)	¼
4 < 12 months (6 < 10kg)	½
12 months-5 years (10 - 19kg)	1

Oral Anti-malarial

- As the Government considers policy change in treatment of malaria, both Chloroquine or sulfadoxine-pyrimethamine are the first line drugs for treatment of uncomplicated malaria at all levels.
- Administer treatment dose at the health centre to ensure compliance.
- Advise caretaker that the fever may take up to 48 hours to go away. In the meantime, s/he should give paracetamol (*see below*) or do tepid sponging.
- If the child vomits within 30 minutes, repeat the dose.
- If the patient does not respond to treatment with Chloroquine or SP within 48 hours, give quinine (*see Chapter 2: Malaria*).
- If the patient does not respond to quinine within 48 hours, refer to hospital.

Table 4.13: Dosages for Sulfadoxine-pyrimethamine

Age Group	Under 1 Year	1 to 3 Years	4 to 6 Years	7 to 11 Years	12 to 15 Years	Over 15 Years
No. of tablets	¼ tablet	½ tablet	1 tablet	1 ½ tablets	2 tablets	3 tablets

Table 4.14 Dosages for Chloroquine

Age Group	Day 1	Day 2	Day 3
< 6 months	5 mls: 1 teaspoon/ ½ crushed tablet	5 mls: 1 teaspoon/ ½ crushed tablet	2.5 mls: ½ teaspoon/ ¼ crushed tablet
6-12 months	7.5 mls: 1½ teaspoons/ ¾ crushed tablet	7.5 mls: 1 ½ teaspoons/ ¾ crushed tablet	2.5 mls: ½ teaspoon/ ¼ crushed tablet
1-3 years	10 mls: 2 teaspoons/ 1 crushed tablet	10 mls: 2 teaspoons/ 1 crushed tablet	5 mls: 1 teaspoons/ ½ crushed tablet
4-5 years	15 mls: 3 teaspoons/ 1 ½ crushed tablets	15 mls: 3 teaspoons/ 1 ½ crushed tablets	7.5 mls: 1 ½ teaspoons/ ¾ crushed tablet
5-9 years	2 tablets	2 tablets	1 tablet
10-15 years	3 tablets	3 tablets	1 ½ tablets
> 15 years	4 tablets	4 tablets	2 tablets

Paracetamol

Give paracetamol with SP for malaria treatment, if high fever is present (> 38.5° C) or ear pain, every 6 hours until high fever or ear pain is gone.

Table 4.15: Dosages for Paracetamol

Age or Weight	Paracetamol Tablet PAED. (100mg)	Paracetamol Tablet (500mg)
2 months-3 years (4-14kg)	1	¼
3-5 years (14 - 19kg)	1½	½

Mebendazole

Give 500mg mebendazole as a single dose in the health centre if child is pale. Give 500mg mebendazole to a child 2 years of age or older, and has not had a dose within the last 6 months.

Iron for Pallor

Unless the child is severely ill or is known to have sickle cell anaemia, give one dose daily for 14 days.

Table 4.16: Iron Dosages

Age or Weight	Iron Tablet ferrous sulfate 200mg (60mg elemental iron)	Iron Tablet ferrous sulfate 50mg (10mg elemental iron)
2 < 4 months (4 < 6kg)		2 tablets
4 < 12 months (6 < 10kg)		2 tablets
12 months < 3 years (10-14kg)	½ tablet	4 tablets
3-5 years (14-19kg)	½ tablet	5 tablets

Give These Treatments in the Health Facility

Convulsions

Treat ongoing convulsions:

- Turn the child on her/his side
- Avoid putting things into her/his mouth while s/he is convulsing.
- Insert the syringe into the rectum and give 5mg (= 1 ml) diazepam solution intrarectally, according to the table below. Hold buttocks together for a few minutes. If convulsions have not stopped after 10 minutes, repeat diazepam dose.

Table 4.17: Diazepam Dosages

Age or Weight	Intrarectal Diazepam (0.5mg/kg) 10 mg/2ml solution
1 week < 2 months (2.5 < 4 kg)	0.25 ml
2 < 4 months (4 < 6kg)	0.5 ml
4 < 12 months (6 < 10kg)	1.0 ml
12 months < 3 years (10 < 14kg)	1.25 ml
3 -5 years (14 < 19kg)	1.5 ml

Intramuscular Antibiotic

For children being referred urgently who cannot take an oral antibiotic:

- Give first dose intramuscular chloramphenicol and refer the child **urgently** to the hospital
- If chloramphenicol is not available, give first dose IM benzyl penicillin and refer **urgently**.

If referral is not possible:

- Repeat the chloramphenicol injection every 12 hours for 5 days
- Then change to an appropriate oral antibiotic (*see Table 4.10*) to complete 10 days of treatment
- Do not attempt to treat with benzyl penicillin alone.

Table 4.18: Recommended Intramuscular Antibiotic

Age or Weight	Chloramphenicol Dose: 40mg/kg Add 5.0ml sterile water to vial containing 1000mg = 5.6ml at 180mg/ml	Benzyl Penicillin To a vial of 600mg (1,000, 000 units): Add 2.1ml sterile water = 2.5ml at 400 000 units/ml; give 50 000 units/kg exactly or
2 < 4 months (4 < 6 kg)	1.0 ml = 180mg	0.8ml
4 < 9 months (6 < 8 kg)	1.5ml = 270mg	1.0ml
9 < 12 months (8 < 10 kg)	2.0ml = 360mg	1.2ml
12 months < 3 yrs (10 < 14 kg)	2.5ml = 450mg	1.5ml
3-5 years (14-19kg)	3.5ml = 630mg	2.0ml

Quinine by Infusion/Injection for Severe Malaria

For children with very severe febrile disease:

- Quinine should be administered immediately (do not wait for laboratory results)
- Check to see what quinine formulation is available in your health centre (the most common form available in Zambia is quinine dihydrochloride 300mg/2ml amp)

Note that it is *safer to give quinine by infusion* than by intramuscular injection.

Intravenous Infusion:

In the following conditions, give loading dose of quinine by *infusion*:

1. You expect *not* to be able to arrange rapid transfer to a higher-level facility *and*
2. You have the necessary supplies:
 - The *loading dose* of quinine is 20mg/kg (see dosage table below). It should be diluted in 10 ml isotonic solution/kg body weight (5% dextrose, if available) and infused over 4 hours
 - *Maintenance doses* (10 mg/kg) should continue every 12 hours (to a maximum of 7 days)
 - As soon as the child can swallow, switch to oral quinine (or give a single dose of sulfadoxine-pyrimethamine).

Intramuscular Injection:

In the following conditions, give quinine by *intramuscular injection*, using the same dosing as for intravenous infusion:

1. You expect urgent transfer, *or*
2. Necessary supplies for infusion are not available:
 - Quinine should be diluted in normal saline to a concentration of 60-100mg/ml and given with half the dose injected in each anterior thigh (not the buttock)
 - *Maintenance doses* should continue every 12 hours until the patient can take medication by mouth.

Table 4.19: Dosage Schedule (IV/IM) Using Quinine Dihydrochloride (2ml ampoule – 300mg)

Age	0–2 months	1 year	5 years	15 years
Weight	4 kg	8 kg	15 kg	35 kg
Loading dose	0.15 ml	0.8 ml	2.4 ml	5.0 ml
Maintenance dose	0.1 ml	0.4 ml	1.2 ml	2.5 ml
<i>Repeat maintenance dose every 12 hours</i>				

Treat the child to prevent low blood sugar

- Preventing low blood sugar is an *urgent* pre-referral treatment for children with VERY SEVERE FEBRILE DISEASE.
- Giving some breast milk, breast milk substitutes, or sugar water provides some glucose to treat and prevent low blood sugar.
- This treatment is given once, before the child is referred to the hospital.

Box 4.1: Prevention of Low Blood Sugar

If the child is able to breastfeed:	* Ask the caretaker to breastfeed the child
If the child is not able to breastfeed but is able to swallow:	* Give 30-50 ml of: expressed breast milk or sugar water or milk substitute <i>before departure</i>

Box 4.2: How to Make Sugar Water

Dissolve 4 level teaspoons sugar (20 gm) in a 200 ml cup of clean water

Note: Refer to *Chapter 7: HIV/AIDS* for information on symptomatic HIV infection in children.

Assessment, Classification, and Treatment of Illness for Young Infant, Aged 1 Week to 2 Months

1. Check for Bacterial Infection

Assess and classify *all* young infants.

Ask the caretaker what the young infant's problems are.

Ask: Has the infant had convulsions?

Assess

Look, Listen, Feel:

- See if the young infant is convulsing now
- See if the young infant is lethargic or unconscious
- Look at the young infant's movements:
 - *Are they less than normal?*
- Count the breaths in one minute (infant must be calm!)
 - *Repeat the count if elevated*
i.e. 60 breaths per minute or more
- Look for severe chest indrawing (infant must be calm!)
- Look for nasal flaring (infant must be calm!)
- Look and listen for grunting
- Look for bulging fontanelle
- Look for pus draining from the ear.

Classify Possible Serious Bacterial Infection

Assess

- Look at the umbilicus:
 - *Is it red or draining pus?*
 - *Does the redness extend to the skin?*
- Measure temperature (or feel for fever or low body temperature).
- Look for skin pustules:
 - *Are there many or severe pustules?*

Classify Local Bacterial Infection (*see Table 4.20 below*).

Teach the caretaker to treat local infections at home:

- Explain how the treatment is given
- Watch as s/he gives the first treatment in the health centre
- Tell her/him to do the treatment twice daily. Inform her/him to return to the health centre if the infection worsens.

To treat skin pustules or umbilical infection:

- The caretaker should:
 - Wash hands
 - Gently wash off pus and crusts with soap and water
 - Dry the area
 - Paint with gentian violet
 - Wash hands.

To treat thrush (ulcers or white patches in mouth):

- The caretaker should:
 - Wash hands
 - Wash mouth with clean soft cloth wrapped around the finger and wet with salt water
 - Paint the mouth with half strength gentian violet
 - Wash hands.

Table 4.20: Classification and Treatment of Infant’s Bacterial Infection (Young Infant Aged 1 Week to 2 Months)

Signs	Classification	Treatment
- Convulsions or - Lethargic or unconscious or - Less than normal movement - Fast breathing (60 breaths per minute or more) or - Severe chest indrawing or - Nasal flaring or - Grunting or - Bulging fontanelle or - Pus draining from ear or - Umbilical redness extending to the skin or - Fever (37.5° C or above or feels hot) or - Low body temperature (less than 35.5° C or feels cold) or - Many or severe skin pustules	POSSIBLE SERIOUS BACTERIAL INFECTION	-Give first dose of intramuscular antibiotics (<i>see Table 4.24</i>) -If child is convulsing now give diazepam (<i>see Table 4.17</i>) -Treat to prevent low blood sugar (<i>see Box 4.1 and Box 4.2</i>) -Advise caretaker how to keep the infant warm on the way to the hospital -Refer <i>urgently</i> to the hospital
- Red umbilicus or - Draining pus or - Skin pustules	LOCAL BACTERIAL INFECTION	-Give an appropriate oral antibiotic (<i>see Table 4.23</i>) -Teach the caretaker to treat local infections at home (<i>see instructions above</i>) -Advise the caretaker to give home care for the young infant -Follow-up in 2 days

2. Then Ask:

Does the young infant have diarrhoea?

If YES, Ask: For how long?

- Diarrhoea which lasts 14 days or more is persistent diarrhoea
- Is there blood in the stool?
- Ask the caretaker if s/he has seen blood in the stool at any time during this episode of diarrhoea.

Look and Feel:

- Look at the young infant's general condition.
- Is the infant:
 - *Lethargic or unconscious?*
 - *Restless and irritable?*
- Look for sunken eyes.
- Pinch the skin of the abdomen.
- Does it go back:
 - *Very slowly (longer than 2 seconds)?*
 - *Slowly?*

Classify Dehydration

To classify the young infant's dehydration refer to Table 4.21 and follow these steps:

- If two of the signs in the first row are present, classify the young infant as having SEVERE DEHYDRATION
- If two of the signs in the second row are present, classify the young infant as having SOME DEHYDRATION
- If there are not enough signs to classify as SOME or SEVERE DEHYDRATION, classify the young infant as having NO DEHYDRATION

Classify Severe Persistent Diarrhoea

A young infant who has had diarrhoea for 14 days or more, and has any form of dehydration is classified as having SEVERE PERSISTENT DIARRHOEA.

Classify Blood in Stool

If the caretaker reports that there is blood in the stool, classify the infant as having BLOOD IN STOOL.

Table 4.21: Classification and Treatment of Infant's Diarrhoea and Dehydration (Young Infant Aged 1 Week to 2 Months)

Signs	Classification	Treatment
<p>Any <i>two</i> of the following:</p> <ul style="list-style-type: none"> - Lethargic or unconscious - Sunken eyes - Skin pinch goes back very slowly 	SEVERE DEHYDRATION	<p>-If the infant does not have POSSIBLE SERIOUS BACTERIAL INFECTION: Give fluid for severe dehydration (<i>see Plan C</i>) OR</p> <p>-If the infant also has POSSIBLE SERIOUS BACTERIAL INFECTION: Refer <i>urgently</i> to the hospital, with the caretaker giving frequent sips of ORS on the way. Advise the caretaker to continue breastfeeding</p>
<p>Any <i>two</i> of the following:</p> <ul style="list-style-type: none"> - Restless, irritable - Sunken eyes - Skin pinch goes back slowly 	SOME DEHYDRATION	<p>-Give fluids and food (breast milk) for some dehydration (<i>see Plan B</i>)</p> <p>-If the infant also has POSSIBLE SERIOUS BACTERIAL INFECTION: Refer <i>urgently</i> to the hospital, with the caretaker giving frequent sips of ORS on the way. Advise the caretaker to continue breastfeeding</p>
Not enough signs to classify as SOME or SEVERE DEHYDRATION	NO DEHYDRATION	<p>-Give fluids to treat diarrhoea at home (<i>see Plan A</i>)</p> <p>-Advise the caretaker on when to return</p>
Diarrhoea lasting 14 days or more	SEVERE PERSISTENT DIARRHOEA	<p>-If the young infant is dehydrated, treat dehydration (<i>see Plan B</i>) before referral, unless the infant has also POSSIBLE SERIOUS BACTERIAL INFECTION</p> <p>-Refer to the hospital</p>
Blood in the stool	BLOOD IN STOOL	<p>-If the young infant is dehydrated, treat dehydration (<i>see Plan B</i>) before referral, unless the infant has also POSSIBLE SERIOUS BACTERIAL INFECTION</p> <p>-Treat to prevent low blood sugar (<i>see Box 4.1 and Box 4.2</i>)</p> <p>-Advise the caretaker to keep the infant warm on the way to the hospital</p> <p>-Refer <i>urgently</i> to the hospital</p>

3. Then Check for Breastfeeding Problem or Low Weight:

Ask:

- Is there any difficulty in breastfeeding?
- Is the infant breastfed? If **YES**:
 - *How many times in 24 hours?*
- Does the infant usually receive any other foods or drinks? If **YES**:
 - *How often?*
- What do you use to feed the infant?

Look:

- Determine weight for age.

If the infant:

- Has any difficulty in breastfeeding
- Is breastfeeding less than 8 times in 24 hours
- Is taking any other foods or drinks, or
- Is low weight for age

And

- Has no indication for referral urgently to the hospital:

Assess Breastfeeding:

- Has the infant breastfed in the previous hour?
 - *If the infant has not fed in the previous hour, ask the caretaker to put the infant to the breast. Observe the breastfeed for 4 minutes. (If the infant was fed during the last hour, ask the caretaker if s/he can wait and tell you when the infant is willing to feed again.)*
 - *Is the infant able to attach?*
 - no attachment at all
 - not well attached
 - good attachment*(See the Breastfeeding section in Chapter 3: The Well Child.)*
 - *Is the infant suckling effectively (that is, slow deep sucks, sometimes pausing)?*
 - not suckling at all
 - not suckling effectively
 - suckling effectively
 - *Clear a blocked nose if it interferes with breastfeeding.*
 - *Look for ulcers or white patches in the mouth (thrush).*

Classify Breastfeeding

Table 4.22: Classification and Management of Infant’s Breastfeeding Problem or Low Weight (Young Infant Aged 1 Week to 2 Months)

Signs	Classification	Treatment
<ul style="list-style-type: none"> - Not able to feed or - No attachment at all or - Not suckling at all 	<p>NOT ABLE TO FEED</p> <ul style="list-style-type: none"> - POSSIBLE SERIOUS BACTERIAL INFECTION 	<ul style="list-style-type: none"> -Give first dose of intramuscular antibiotics (see Table 4.24) -Treat to prevent low blood sugar (see Box 4.1 and Box 4.2) -Advise caretaker how to keep the infant warm on the way to the hospital -Refer <i>urgently</i> to the hospital
<ul style="list-style-type: none"> - Not well attached to breast or - Not suckling effectively or - Less than 8 breastfeeds in 24 hours or - Receives other foods or drinks or - Low weight for age or - Thrush (ulcers or white patches in the mouth) 	<p>FEEDING PROBLEM</p> <p>or</p> <p>LOW WEIGHT</p>	<ul style="list-style-type: none"> -Advise the caretaker to breastfeed as often and for as long as the infant wants, day and night <li style="padding-left: 20px;">If not well attached or not suckling effectively, teach the correct positioning and attachment <li style="padding-left: 20px;">If breastfeeding less than 8 times in 24 hours, advise the caretaker to increase frequency of feeding <li style="padding-left: 20px;">If receiving other foods or drinks, counsel the caretaker about breastfeeding more, reducing other foods or drinks, and using a cup -If not breastfeeding at all: <ul style="list-style-type: none"> Refer for breastfeeding counselling and possible <i>relactation</i>* Advise about correctly preparing breast milk substitutes and using a cup -If thrush, teach the caretaker to treat thrush at home -Advise the caretaker to give home care for the young infant -Follow-up any feeding problem or thrush in 2 days
<ul style="list-style-type: none"> -Not low weight for age and no other signs of inadequate feeding 	<p>NO FEEDING PROBLEM</p>	<ul style="list-style-type: none"> -Advise the caretaker to give home care for the young infant -Praise the caretaker for feeding the infant well

* *Relactation: getting the mother who has prematurely taken the infant off the breast back to breastfeeding.*

Advise the caretaker to return immediately if the young infant has any of these signs:

- Breastfeeding or drinking poorly
- Becomes sicker
- Develops a fever
- Has fast breathing
- Has difficult breathing
- Has blood in stool.

**Table 4.23: Oral Antibiotics for Infant’s Local Bacterial Infection
(Young Infant Aged 1 Week to 2 Months)**

Age or Weight	Cotrimoxazole (trimethoprim + sulphamethoxale) Give two times daily for 5 days			Amoxycillin Give three times daily for 5 days	
	Adult tablet single strength 80mg trimethoprim + 400mg sulphamethoxazole	Paediatric tablet 20mg trimethoprim + 100mg sulphamethoxazole	Syrup 40mg trimethoprim + 200mg sulphamethoxazole	Tablet 250mg	Syrup 125mg per 5ml
Birth up to 1 month (< 3 kg)		½*	1.25ml*		1.25ml
1 month up to 2 months (3-4 kg)	¼	1	2.5ml	¼	2.5ml

* Avoid cotrimoxazole in infants less than one month of age who are premature or jaundiced.

Note: First line antibiotic: amoxycillin
Second line antibiotic: cotrimoxazole

**Table 4.24: Intramuscular Antibiotics for Infant
(Young Infant Aged 1 Week to 2 Months)**

Weight	Gentamycin Dose: 2.5 mg per kg	Benzyl Penicillin Dose: 50,000 units per kg
		Add 6 ml sterile water to undiluted 2 ml vial containing 20 mg = 2 ml at 10 mg/ml OR 2 ml vial containing 80 mg* = 8 ml at 10 mg/ml
1 kg	0.25 ml*	0.1 ml 0.2 ml
2 kg	0.50 ml*	0.2 ml 0.4 ml
3 kg	0.75 ml*	0.4 ml 0.6 ml
4 kg	1.00 ml*	0.5 ml 0.8 ml
5 kg	1.25 ml*	0.6 ml 1.0 ml

* Avoid using undiluted 40 mg/ml gentamycin. The dose is ¼ of that listed.

Please refer to information below for further treatment instructions.

- Give first dose of both benzyl penicillin *and* gentamycin intramuscular.
- If gentamycin is not available, give oral cotrimoxazole.
- If infant cannot take any medicine by mouth and gentamycin is unavailable, give benzyl penicillin IM before *urgently* referring.

Referral is the best option for a young infant classified with POSSIBLE SERIOUS BACTERIAL INFECTION. If referral is not possible, give benzyl penicillin and gentamycin for at least 5 days. Give benzyl penicillin every 6 hours *plus* gentamycin every 8 hours. For infants in the first week of life, give gentamycin every 12 hours.

Chapter 5

Maternal and Neonatal Health and Family Planning

Introduction

It is estimated that around 4,000 women die each year in Zambia from complications of pregnancy and childbirth. Many of these deaths could be avoided if service providers recognised the danger signs and took prompt and effective action. Family planning is important because it provides women and couples with the ability to choose how and when they wish to have children, in order to promote the health and the financial security of the mother, the children, and the family.

This chapter covers the following topics:

Section 1: Maternal and Neonatal Health

A. "Normal" Maternal and Neonatal Health Care

A.1. Antenatal Care

A.2. Clean and Safe Delivery

A.3. Postnatal Care

B. Management of Complications

B.1. Essential Obstetric care

B.2. Essential Care of the Newborn

Section 2: Family Planning

Section 1: Maternal and Neonatal Health

Introduction

Epidemiology

- High maternal mortality rate (MMR) – last estimated at 649 per 100,000 live births.
- Low contraceptive prevalence rate – 26% for modern and traditional methods (15% for modern methods and 9% for traditional methods).
- High fertility rate – 6.1.
- High infant mortality rate (IMR) – 109 per 1,000 live births.
- High child mortality – 197 per 1,000 live births (ZDHS, 1996).

The high IMR and MMR have been worsened by the HIV/AIDS epidemic and increasing incidence of TB.

Policy Statements

The following services are to be provided free of charge:

- Family planning, antenatal care, postnatal care and delivery
- Youth friendly services, including family planning
- Antenatal screening for syphilis, once in each trimester
- Management and treatment of sexually transmitted infections (STIs), TB, malaria, anaemia, including micronutrient supplementation and preventive treatment for malaria.

Major Causes of Maternal Morbidity and Mortality

- Eclampsia
- Sepsis
- Haemorrhage
- Ruptured uterus
- Complications of abortions.

As many as 15% of all pregnancies may develop a life threatening complication for the mother or baby, which cannot be reliably predicted.

Conditions Affecting Pregnancy Outcomes

- Anaemia
- Malaria
- HIV/AIDS/STIs
- TB
- Vitamin A deficiency
- Poor nutrition.

A. “Normal” Maternal and Neonatal Health Care

Safe motherhood means creating the circumstances within which a woman can choose to become pregnant, and if she does, ensuring that she receives care for the prevention and treatment of pregnancy complications, has access to trained birth assistance, essential obstetric care, and care after birth, including information about family planning.

A.1 Antenatal Care

Antenatal care is provided to women from conception through labour. The aim is to prepare the pregnant woman and her family for pregnancy, labour, puerperium, lactation, and care of the newborn.

Promotion

In a normal pregnancy, each antenatal visit should have a clearly defined purpose and objective, as shown in the table below.

Table 5.1: Specific Promotive and Preventive Activities at Each Antenatal Visit

Antenatal Care Matrix	Weeks of Gestation			
	1 st visit or < 16 wks	2 nd Visit 20–24 wks	3 rd Visit 28–32 wks	4 th Visit 36 wks
Registration/Booking	✓			
Client education and counselling (for the couple or the woman and her support group – family, friends)				
Process of pregnancy and its complications	✓	✓	✓	✓
Danger signs, e.g. bleeding during pregnancy	✓	✓	✓	✓
Effects of STI/HIV/AIDS, including the risks of transmission to the newborn	✓	✓	✓	✓
Confidential Voluntary Counselling and Testing (VCT) for HIV (as early as possible)	✓	✓	✓	✓
Malaria (high risk to pregnant women, schedule of intermittent presumptive treatment, <i>even in the absence of symptoms</i> of malaria, and importance of preventive measures such as using insecticide treated nets)	✓	✓	✓	✓
Use of drugs in pregnancy	✓	✓	✓	✓
Rest and exercise	✓	✓	✓	✓
Harmful habits (smoking, drug abuse, alcohol, etc.)	✓	✓	✓	✓
Develop a birth plan: - <i>For delivery</i> (place and time of delivery, what to bring, skilled attendant, transport, finances, person to support the woman), and - <i>For emergencies</i> (where to go, transport, finances, what to bring, person to accompany and support the woman)	✓	✓	✓	✓
Personal hygiene	✓	✓	✓	✓
Care of breasts and breastfeeding	✓	✓	✓	✓
Schedule return visits	✓	✓	✓	✓
Answer any questions the woman may have	✓	✓	✓	✓
Symptoms/signs of labour			✓	✓
Danger signs during labour and postpartum			✓	✓
Plans for postpartum care			✓	✓
Family planning			✓	✓

Note: All ticked activities in the 1st column should be carried out at first antenatal visit at any gestation

Table 5.1: Specific Promotive and Preventive Activities at Each Antenatal Visit (continued)

Antenatal Care Matrix	Weeks of Gestation			
	1 st visit or < 16 wks	2 nd Visit 20–24 wks	3 rd Visit 28–32 wks	4 th Visit 36 wks
Comprehensive history taking				
Personal history				
Family history				
Social history				
Past medical/surgical history	✓			
Past obstetric history				
History of current pregnancy				
<i>History of complaints in current pregnancy</i>	✓	✓	✓	✓
Physical examination				
Pallor, jaundice, oedema				
Breasts, lungs, heart, and abdomen				
Blood pressure, pulse, weight temperature (when indicated)	✓	✓	✓	✓
Gait				
Obstetric/pelvic examination				
Fundal height (in weeks)	✓	✓	✓	✓
Foetal poles/lie				
Foetal presentation			✓	✓
Engagement of presenting part				✓
Foetal heart sounds		✓	✓	✓
Digital examination to confirm pregnancy				
Uterine enlargement/position, adnexal masses	✓			
Speculum examination (genital ulcers, vaginal discharge, cervix)	✓			✓
Laboratory investigations				
Blood: Haemoglobin				
Group and rhesus factor				
HIV testing (at the earliest opportunity, with VCT)	✓			✓
Laboratory tests for other STIs where available				
RPR test for syphilis (refer to the hospital if unavailable)	✓	✓	✓	✓
Urine: Urinalysis (protein, sugar, acetone, etc.)				

Note: All ticked activities in the 1st column should be carried out at first antenatal visit at any gestation

Table 5.1: Specific Promotive and Preventive Activities at Each Antenatal Visit (continued)				
Antenatal Care Matrix	Weeks of Gestation			
Parameter	1 st visit or < 16 wks	2 nd Visit 20–24 wks	3 rd Visit 28–32 wks	4 th Visit 36 wks
Drug administration and immunisation				
Folic acid: 5 mg daily prior to conception or from earliest contact	✓	✓	✓	✓
Iron: 200 mg daily from earliest contact (provide counselling on the side effects as well as the dangers of overdose <i>especially to children</i>). Treatment dose if anaemic 200 mg t.i.d.	✓	✓	✓	✓
Sulfadoxine-pyrimethamine (SP, also known as Fansidar): Intermittent presumptive treatment for malaria should be given to <i>all</i> pregnant women, even without symptoms, three times during pregnancy: 3 tablets taken at one time, <i>after</i> the first trimester and at least one month apart, treatment to be given and observed during antenatal visits. This approach will be accompanied by the provision of ITNs at highly subsidized prices through the ANCs and the voucher system.		✓	✓	✓
Tetanus toxoid (see Table 5.2)		✓	✓	

Note: All ticked activities in the 1st column should be carried out at first antenatal visit *at any gestation*

Table 5.2: Schedule for Immunisation of Women with Tetanus Toxoid (TT)

TT1	At First Contact
TT2	At least 4 weeks after TT1
TT3	At least 6 months after TT2
TT4	At least one year after TT3
TT5	At least one year after TT4

As a health worker, in the event of unscheduled antenatal visits, review activities in the table above and implement appropriately. During regular antenatal visits, encourage every woman to deliver with the assistance of a skilled attendant who can manage complications.

History taking at the first antenatal visit may indicate a co-existing condition which should influence the action taken by the service provider, as shown in Table 5.3.

Table 5.3: Management of Co-Existing Conditions in Pregnancy

Co-Existing Condition	Action
Poor obstetric history, such as 3 or more consecutive abortions, previous stillbirth	Refer to hospital for ANC check-up and delivery
History of Polio (<i>e.g.</i> , mother is lame)	Refer to hospital for ANC and delivery, if needed
Very short stature < 150 cm	Refer to hospital for delivery
Very young maternal age (< 15)	Provide counselling and emotional support during pregnancy Refer to hospital for delivery
Elderly primigravida (> 35)	Careful monitoring during pregnancy Refer to hospital for delivery
Primigravida	Careful monitoring during pregnancy and delivery
Grand multipara	Refer woman to hospital for ANC and delivery
Major discrepancy between the size of the uterus and gestational age (too large or small for dates)	Refer to hospital for investigation and further management
Extreme social disruption or deprivation	Provide counselling and support Careful monitoring of the pregnancy
Pre-term labour in previous pregnancy	Careful monitoring of the pregnancy
Unwanted pregnancy, Failed method	Provide counselling and support Careful monitoring of the pregnancy Refer to hospital for further management
Pre-existing medical conditions, such as Diabetes Mellitus, Hypertension, Cardiac Disease	Refer to hospital for specialist care and delivery, as needed
Tuberculosis	Refer to hospital for specialist care and prompt treatment
Multiple gestation	Careful monitoring of pregnancy Refer to hospital for delivery
Abnormal lie/presentation	Refer to hospital for delivery
History of prolonged or difficult delivery in previous pregnancies	Refer to hospital for delivery
Vaginal bleeding	Refer to hospital for investigation
Previous operative delivery	Refer to hospital for delivery

The antenatal check up may also reveal other conditions upon which action needs to be taken. These conditions and the recommended treatment or referral are shown in Table 5.4.

Table 5.4: Management of Selected Conditions in Pregnancy

Condition	Action	Dosage
Active urinary tract infection	Amoxicillin If allergic to penicillin, give Erythromycin from 1 st trimester <i>or</i> septrin after 1 st trimester	500 mg orally t.i.d. x 5 days 500 mg t.i.d. x 5 days 2 tablets b.i.d. x 7 days
Recurrent urinary tract infection	Refer for further investigation	
Gonorrhoea and chlamydia infections	Treat as per STI guidelines (see Chapter 8, Flowcharts 1, 2, 3, and 4)	
Positive RPR test	Treat woman and her partner as per STI guidelines: - Benzathine penicillin, or - Procaine penicillin - if allergic to penicillin, erythromycin (do not give tetracycline or doxycycline to pregnant women, but can use for the partner) <i>Remember to address infant assessment and treatment after delivery (see Section B.2: Essential Care of the Newborn)</i>	- 2.4 mega units stat IM - 600,000 units daily for 10 days - 500 mg 4 times a day x 15 days
Genital warts: - If small and unlikely to interfere with delivery - If large enough to obstruct labour or interfere with delivery	- Treat after delivery - Refer to hospital for specialist care and Possible caesarean section	
Pre-term labour	Refer to hospital	
Malaria in pregnancy	A single dose of 3 tablets stat. of SP (Fansidar) or, if severe, treat with quinine.	
Intestinal worms	Mebendazole	1 tablet of 100 mg twice a day for 3 consecutive days
General medical conditions, such as asthma, tuberculosis, diabetes, and rheumatic heart disease	Refer for specialist care	

Note: Monitor and manage pregnancy-related complications (see *Essential Obstetric Care*).

A.2 Clean and Safe Delivery

Cleanliness during labour and delivery is essential to protect mother and baby from *infection*.

Promotion

- Encourage development of individualised birth plan (*see Table 5.1*).
- Promote skilled attendance at delivery.
- Encourage high standard of hygiene and proper infection control.
- Facilitate linkages with community based health volunteers, such as TBAs and CBDs.

Prevention

Ensure clean delivery practices with:

- **Clean environment:** clean the delivery room daily – sweeping, mopping, damp dusting of all surfaces, furniture, walls and windows with 0.5% chlorine (1 part Jik to 6 parts water; *see Chapter 1*)
- **Clean hands:** wash hands before and after each contact with the client. Wear high-level disinfected (HLD) or sterile gloves
- **Clean delivery surface:** use clean linen on the delivery table/bed and change between deliveries. After each delivery, thoroughly clean the delivery table/bed and mackintosh and any surface that came in contact with blood or body fluids with a 0.5% chlorine solution to kill viruses, such as HIV or Hepatitis
- **Clean perineum:** clean the perineum with soap and water
- **Cord cutting instruments:** use the sterile cord cutting scissors and cord tie clamps contained in the sterile delivery pack
- Ensure that there are clean wrappers for the baby and mother
- Encourage all pregnant women to deliver in health facilities. In case of home deliveries, educate the community to use new, unused razor blades to cut the cord and clean wrappers for both mother and baby, to avoid infection.

Admission Procedure

1. Assess the condition of the patient to identify and address any urgent needs (e.g. whether already in advanced labour and whether there is active bleeding).
2. Review obstetric records and individualised birth plan, where available.
3. Take the history of labour, including the time of onset of contractions, history of show, and time of rupture of membranes.
4. Determine HIV status, if possible, and review any decision of whether to breastfeed or not.
5. Provide counselling accordingly or refer.
6. Empty bladder and perform urinalysis for proteinuria, ketones, and sugar, where possible.
7. Check vital signs and carry out physical examination.
8. Carry out obstetric examination, including abdominal and vaginal examination (see *Antenatal Care*).
9. Assess stage of labour (see *below*).

First Stage of Labour: Latent Phase

Less than 4 cm cervical dilatation

- Monitor maternal and foetal condition.

Duration of contractions

- Mild, 0-20 seconds
- Moderate, 20-40 seconds
- Strong, 40 or more seconds.

- Monitor the cervical dilatation and check vital signs (BP, temperature, and pulse) every 4 hours.
- Test urine for protein, acetone, and volume each time urine has been passed.
- If latent phase lasts more than 8 hours, refer patient for further management.

First Stage of Labour: Active Phase

Cervical dilatation 4 cm or more

- Use partograph (see *next page*) to monitor maternal and foetal condition to identify complications early. Instructions on how to use the partograph are given in Table 5.5.

Table 5.5: Details on the Partograph

Patient Information	File number, name, gravida, parity, date and time of admission, time of rupture of membranes
Foetal monitoring	
Foetal heart rate	Record half hourly. <i>Note:</i> >160: listen every 15 minutes immediately after contraction. If the heart rate remains abnormal for 3 observations or drops below 120, <i>urgently</i> refer patient to hospital unless delivery is very close
State of liquor	Record 4-hourly at the time of each vaginal examination <i>Note:</i> Meconium stained liquor in cephalic presentation may indicate foetal distress and requires referral
Moulding of the foetal skull bones	Record 4-hourly on vaginal examination <i>Note:</i> Increasing moulding reaching 2+ to 3+ is a critical sign of cephalopelvic disproportion and requires referral
Monitoring progress of labour	
Cervical dilatation	To assess cervical dilatation and descent of the presenting part, conduct vaginal examination on admission; repeat after 2 hours and thereafter every 4 hours
Descent of the head	Assess descent of the presentation part hourly (abdominal examination)
Contraction	Record half-hourly the frequency, duration, and intensity of contraction
Drug therapy and fluid intake	
Drugs	Record drugs given
Fluids	Record IV fluids given as well as other fluid intake (the woman should be <i>encouraged</i> to drink water or juice)
Monitoring maternal condition	
Temperature, pulse, and blood pressure	Record temperature and blood pressure 4-hourly, pulse half hourly, unless otherwise indicated. <i>Note:</i> Refer when the diastolic blood pressure is 90 mm Hg or above
Urinalysis	Test, if possible, each specimen of urine for protein and acetone. The woman should be encouraged to empty the bladder every 3-4 hours

In both latent and active phases of labour, allow the woman to eat and drink as she wishes, to keep up her strength during labour.

Second Stage of Labour

(from full dilation of cervix to delivery of the baby)

- Allow the mother to make herself comfortable, in any position she chooses (on her side, squatting, kneeling, etc.), during labour.
- Monitor and record foetal heart rate after each contraction for 1 full minute, using a watch or clock.
- Monitor and record length, strength, and frequency of each contraction.
- Mother-to-child transmission of HIV can occur during pregnancy (in utero infection), during birth (intrapartum infection) or shortly afterwards (postpartum infection). In relation to HIV transmission, health care workers who attend deliveries should wear gloves, even though the risk of an infected mother transmitting HIV to a person who assists at delivery is very low.

Avoid artificial rupture of membranes as long as possible to reduce risk of HIV transmission and sepsis.

Indications for episiotomy:

- Complicated vaginal delivery (breech, shoulder dystocia, forceps, vacuum)
- Scarring from genital mutilation or poorly healed third or fourth degree tears
- Foetal distress.

Perform episiotomy, *only if indicated*, when perineum is thin and bulging and about 4-5 cm of the baby's head is visible, 2-4 minutes after infiltration of the perineum with xylocaine 1%.

Partograph

Name	Gravida	Para	Hospital Number
Date of Admission	Time of Admission	Ruptured Membranes	Hours

Fetal heart rate 200 190 180 170 160 150 140 130 120 110 100 90 80	
Amniotic fluid Moulding	
Cervix (cm) (Plot X) Hours Descent of head (Plot O)	Alert Action
Hours 10 9 8 7 6 5 4 3 2 1 0	1 2 3 4 5 6 7 8 9 10 11 12 Time
Contractions per 10 mins 5 4 3 2 1	
Oxytocin U/L drops/min	
Drugs given and IV fluids	
Pulse ● and ▲ BP ▼ 180 170 160 150 140 130 120 110 100 90 80 70 60	
Temp °C	
Urine { protein acetone volume	

Third Stage of Labour

(from delivery of baby to expulsion of placenta and membranes)

Delivery

- Deliver baby on mother’s abdomen, dry baby gently and thoroughly, and wrap in dry warm cloth to prevent hypothermia.
- Promote skin-to-skin contact between the mother and the baby whenever the mother’s condition allows.

Note: If HIV positive (HIV+) and the mother has decided *not* to breastfeed, encourage skin-to-skin contact and bonding, but ensure that the baby is not able to latch on to the breast.

Immediate Care of the Newborn

- Ensure airway is clear and respiration is established. Clear gently to avoid trauma. Start resuscitation immediately if necessary.
- Assess apgar score (*see table below*).
- Clamp/tie the cord and cut with sterile blade or scissors.

Table 5.6: Apgar Score

Sign	0	1	2
Heart rate	Absent	<100	>100
Respiratory effort	Absent	Slow-irregular	Good cry
Colour: presence or absence of central and periphera Cyanosis	All blue or white	Pink body with blue extremities	All pink
Muscle tone	Nil	Some motion	Cry
Reflex: response to stimulation	Limp	Some flexion	Active

Note: infants who do not breathe well by 1 minute after delivery or have a 1 minute Apgar score < 7 need resuscitation. Clear airway and administer oxygen by bag and mask. If no response or if grunting respiration develops, transfer, if possible.

Management of the Third Stage of Labour

(helps to prevent postpartum haemorrhage)

- Within 1 minute of delivery of the baby, palpate the abdomen to rule out the presence of an additional baby(s) and give oxytocin (10 units IM) or ergometrine (0.2mg IM).

- Once you have administered oxytocin, with the next contraction attempt to deliver the placenta by controlled cord traction. In the absence of oxytocin or ergometrine or if not trained in controlled cord traction, use passive method of delivery of the placenta. Observe signs of placental separation:
 - *Uterus rises above the umbilicus and becomes hard and ballotable*
 - *Elongation of the cord*
 - *Trickle of blood*
 - *Cord does not recede when suprapubic pressure is applied.*

After delivery of the placenta:

- Gently massage the fundus of the uterus through the woman's abdomen until it is contracted. Repeat every 15 minutes for the first 2 hours, and ensure that the uterus does not become relaxed (soft) after you stop the massage
- Examine the genital tract carefully for tears and lacerations and repair 1st and 2nd degree tears. If unable to do so, or in cases of 3rd degree tears, high vaginal and cervical tears, refer to hospital
- Examine the placenta and membranes. If the placenta is incomplete, observe for bleeding and **urgently** transfer to hospital for evacuation. If delay in transport, start IV fluids (normal saline or Ringer's Lactate) and antibiotic coverage (amoxicillin 500 mg or ampicillin 500 mg stat. orally or IM depending on the condition of the patient).

Immediate Postpartum Care

- Record the mother's temperature, pulse, and blood pressure.
- Make the mother comfortable.
- Weigh and label the baby.
- Apply antimicrobial drops (1% silver nitrate solution) or ointment (1% tetracycline ointment) to the baby's eyes within one hour of birth.
- If the mother has decided to breastfeed, encourage immediate breastfeeding within one hour of birth, as soon as the baby appears ready (begin "rooting"). This will help both stimulate uterine contraction and enhance bonding.
- To prevent hypothermia, keep the delivery room warm, dry the baby immediately after delivery, give the baby to the mother, and advise her on the importance of skin-to-skin contact to prevent loss of body warmth.

Note: If HIV positive (HIV+) and the mother has decided not to breastfeed, encourage skin-to-skin contact and bonding, but ensure that the baby is not able to latch on to the breast.

- During the first postnatal hour, observe the amount of blood loss and contraction of the uterus (perform uterine massage). **If bleeding continues:**
 - Empty the bladder
 - If uterus has not contracted, check for retained products of conception. Transfer **urgently** for evacuation
 - If uterus has contracted, re-examine for other causes (cervical, vaginal, perineal tears, etc.) – refer to section on Postpartum Haemorrhage
- Give the mother one dose of Vitamin A (one capsule of 200,000 IU)
- Keep the mother and the baby at the facility for a minimum of 6 hours
- Check if the baby has passed urine and/or meconium before discharging the mother.

A.3 Postnatal Care

- Give the first immunisations (BCG, OPV-0) at birth or at least within the first two weeks of life at first contact for those delivered at home (see Immunisation in Chapter 3: The Well Child).

Advise the mother on:

- **The danger signs**, such as:
 - Cord stump red or draining pus
 - Vomiting
 - Loose stools
 - Baby is cold to touch in spite of efforts to re-warm, or is hot to touch in spite of undressing
 - Sucking is weak or baby does not wake for feeding
 - Excessive crying
 - Eyes become swollen, sticky, or are draining pus
 - Baby has difficulty breathing
 - Baby has pustules on skin, jaundice on palms and on feet
 - Abnormal movements
 - Convulsions, or lethargy.

In all these cases, the mother should be told to bring the infant back to the health centre for assessment and treatment.

- The need to plan for, or how to get transport in case of emergency.
- The normal care of the newborn:
 - *Keep the cord stump dry and clean*
 - *Do not apply anything to the cord stump*
 - *Protect the baby from cold/heat by ensuring appropriate dressing, wrapping, and using bedding according to the climate*
 - *If the baby's skin is cold to touch, rewarm using skin-to-skin contact, clothing, and bedding*
 - *If baby is too warm, remove some clothing*
 - *Encourage frequent early breastfeeding during the day and at night on demand. No other food or fluid should be given*
 - *Do not apply anything to the baby's eyes, following initial prophylaxis.*
- The importance of early and exclusive **breastfeeding** to prevent hypoglycaemia. Breastfeeding should be started within one hour of birth, and feeding should be not less than 8 times in 24 hours. Other fluids or food should not be given. Advise women who do not know their HIV status to breastfeed. Counsel women who know their HIV status on the best feeding method for the survival of their babies. (*See also the section on Infant Feeding Options for an HIV Positive Mother in Chapter 7: HIV/AIDS.*)
- The importance of immunisation, growth monitoring, and balanced nutrition during weaning.

Prevention

During the postnatal period (the first 6 weeks after birth) care should be provided to the woman and her newborn after six hours (*i.e.*, before discharge or – if the mother has delivered outside of the health centre, as soon as possible after delivery), six days, and six weeks.

Guidance on what the health worker should do during postnatal visits is given in *Table 5.7* in the next pages.

Postpartum Danger Signs for the Mother and the Newborn

If any of the following danger signs are observed, then the mother or the infant (as appropriate) should immediately be taken to the nearest health facility for assessment and treatment.

Mother:

- Abnormal vaginal bleeding
- Fever
- Headache
- Puffiness
- Swelling of feet
- Foul smelling vaginal discharge (lochia).

Newborn:

- Cord stump red or draining pus
- Vomiting; diarrhoea
- Baby is cold or hot to touch despite appropriate clothing
- Sucking is weak or baby does not wake to feed
- Excessive crying
- Eyes become swollen, sticky or are draining pus
- Difficult breathing
- Pustules of the skin
- Jaundice of conjunctivae, hands or feet
- Abnormal movements
- Convulsions or lethargy.

Feeding of the Newborn

Whether a mother decides to breastfeed or to use replacement foods, she needs support and advice. Either exclusive breastfeeding or exclusive replacement feeding during the first 6 months can reduce the risk of HIV infection passing from an HIV + mother to her baby. For more information on breastfeeding for mothers with or without HIV/AIDS, refer to the *Breastfeeding* section of Chapter 3.

Table 5.7: Postnatal Care Matrix

Management Parameter	Postnatal Review Schedule		
	6 hours*	6 days	6 weeks
Registration	✓		
Client education and counselling (for the couple or the woman and her support group – family, friends)			
Danger signs for the mother and newborn (see detailed note on Postpartum Danger Signs above)	✓	✓	✓
Recommendations for rest and exercise	✓	✓	✓
Nutritional advice for the mother	✓	✓	✓
Infant feeding practices (exclusive breastfeeding, or exclusive replacement feeding, for 6 months) (See the Breastfeeding section of Chapter 3)	✓	✓	✓
Breast care, proper breastfeeding practices, milk supply	✓	✓	✓
Perineal hygiene: - Sitz baths with cool water 2-3 times per day - Daily body baths - Use of clean material or pads, if available	✓	✓	✓
Care of the newborn (e.g., bathing, warmth, etc.)	✓	✓	✓
Child immunisation and growth monitoring schedule	✓	✓	✓
Prevention of STI/HIV/AIDS	✓	✓	✓
Family planning	✓	✓	✓
Resumption of sexual relations	✓	✓	✓
Answer any questions the woman may have	✓	✓	✓
Development of a plan for emergencies (transport, finance, etc.)	✓		
Comprehensive history taking (if mother has delivered outside of the health centre)			
Personal and social history	✓	✓	✓
Obstetric history: - Review ANC and delivery records - Parity - Date of delivery - Details of delivery - Condition of baby at birth	✓		
History of any specific complaints, problems, or complications	✓		

Note: Carry out all ticked activities in the first column (6 hours) at first postnatal assessment, whenever that occurs.

Table 5.7: Postnatal Care Matrix (continued)			
Management	Postnatal Review Schedule		
Parameter	6 hours*	6 days	6 weeks
Physical examination of the mother			
Head to-toe (whole body)	✓	✓	✓
Pallor – particularly of tongue, conjunctiva, and palms	✓	✓	✓
Oedema	✓	✓	✓
Legs (varicose veins, inflammation, tenderness)	✓	✓	✓
Temperature, pulse, blood pressure, weight	✓	✓	✓
Abdominal examination: • Fundal height • Uterine contraction/involution • Tenderness, masses	✓	✓	✓
Breast examination: • Lactation • Engorgement • Cracked or bleeding nipples • Lumps or masses	✓	✓	✓
Perineal examination • Lochia (colour, amount, odour) • Lacerations, tears, episiotomy (haematoma, healing, signs of infection) • Haemorrhoids	✓	✓	✓
Examination of the newborn			
General appearance (colour/jaundice, rashes, etc.)	✓	✓	✓
Weight	✓	✓	✓
Eyes for purulent discharge (signs of ophthalmia neonatorum)	✓	✓	✓
Signs and symptoms of congenital syphilis (see <i>Essential Care of the Newborn</i>)	✓	✓	✓
Breathing	✓		
Sucking and swallowing reflexes	✓		
Rectal temperature	✓		
Passed urine	✓		
Cord – bleeding, signs of infection	✓	✓	
Passed meconium	✓	✓	
Feeding practices		✓	✓
Head circumference		✓	

Note: Carry out all ticked activities in the first column (6 hours) at first postnatal assessment, whenever that occurs.

Table 5.7: Postnatal Care Matrix (continued)			
Management	Postnatal Review Schedule		
Parameter	6 hours*	6 days	6 weeks
Supplements, family planning, and immunisation			
Mother: Vitamin A (200,000 IU): should be given at birth or within 1 month	✓		
Family planning method, if desired	✓	✓	✓
Newborn: BCG, OPV-0	✓		
OPV-1			✓
Hib and HepB, when available			✓

Note: Carry out all ticked activities in the first column (6 hours) at first postnatal assessment, whenever that occurs.

B. Management of Complications and Special Conditions

B.1 Essential Obstetric Care

Many obstetric complications can be prevented, as long as they are detected early and dealt with promptly and effectively. This section deals with the essential obstetric care for the common *complications* arising during pregnancy, labour, and the postpartum period.

Promotion

Educate the community on early recognition of complications and quick referral or transfer, from the community to the health centre or to a higher level.

Prevention

- Assist pregnant women to develop individualised birth plans and involve husbands/partners, and/or family, in planning and organising transportation and finances.
- Ensure early antenatal care, clean and safe delivery, and postpartum care to help prevent complications arising during pregnancy, labour, and postpartum period.

Specific Complications in Pregnancy

1. Ruptured Ectopic Pregnancy

Definition: A condition where the fertilised ovum fails to reach the uterus and pregnancy develops in a fallopian tube, or, in rare occasions, in the abdomen.

Clinical features: Amenorrhoea, lower abdominal pain (in most cases severe), vaginal bleeding.

Assessment: History of amenorrhoea, abdominal pain, backache, nausea, vomiting, vaginal bleeding, abdomen distended, possible collection of fluid in the abdomen.

Exclude: salpingitis, abortion, appendicitis, ruptured ovarian cyst.

Management: Treat for shock, commence IV infusion with normal saline, and *urgently* transfer to hospital.

2. Anaemia in Pregnancy

Definition: A haemoglobin concentration less than 11g/dl.

Table 5.8: Management of Anaemia in Pregnancy

Anaemia	< 34 Weeks	34 Weeks or More
Mild* (8.0-10.9g/dl)	Increase iron supplementation to 200 mg ferrous sulphate t.i.d.; give folic acid 5 mg daily; give dietary advice and treat infections (<i>see below</i>)	
Moderate* (6.0-7.9g/dl)	Treat the same as for mild anaemia, above	<i>Refer urgently</i> to hospital at 34 weeks or more
Severe (< 6.0g/dl)	<i>Refer urgently</i> to hospital	<i>Refer urgently</i> to hospital

* In the presence of other complications (e.g., sickle cell, cardiac disease, severe malaria, etc.), refer *urgently* to hospital even for mild or moderate anaemia.

Dietary advice: Food rich in protein, iron, and vitamins

Treat infections:

- Malaria (intermittent presumptive treatment with SP to all pregnant women (see Antenatal Care)
- Worms (mebendazole, 2 tablets twice a day for three days, after the first trimester)
- Check for UTI and treat if indicated (*see Antenatal Care section or Chapter 8: Sexually Transmitted Infections*).

3. Sexually Transmitted Infections

- Refer to *Chapter 8: Sexually Transmitted Infections*.
- Treat all RPR positive women and their partners.
- Assess newborn and treat if signs and symptoms are present (see *Postpartum Care and Chapter 8: Sexually Transmitted Infections*).

4. Hypertensive Disorders in Pregnancy

Definition: Hypertension in pregnancy is diagnosed if the diastolic blood pressure is 90mm HG or more on two consecutive readings, taken 4 hours or more apart, or if there is a sharp increase of 30mm Hg systolic or 15mm Hg diastolic over the same period (if the diastolic BP is 110 mm HG or more, a time interval of less than 4 hours is acceptable).

Types of hypertension in pregnancy:

- Chronic hypertension: Hypertension prior to 20 weeks gestation, without proteinuria
- Pregnancy-induced hypertension: Hypertension after 20 weeks gestation and/or within 48 hours of delivery
- Pre-eclampsia/Eclampsia: Hypertension with proteinuria:
 - **Mild pre-eclampsia:** Diastolic BP 90-110mm Hg 4 hours apart, after 20 weeks gestation with proteinuria up to 1+
 - **Severe pre-eclampsia:** Diastolic BP 110mm Hg or higher, 4 hours apart with proteinuria 2+ or more
 - **Eclampsia:** Convulsions with diastolic BP 90-110mm Hg 4 hours apart, with proteinuria up to 1+

Clinical signs: Pedal oedema, proteinuria, raised BP, excessive weight gain, convulsions (eclampsia).

Assessment: Physical examination, including weight, BP, and oedema and urinalysis for protein.

Exclude: Essential hypertension and renal diseases. If fits or convulsions are present, also exclude hypoglycaemia, epilepsy, severe/complicated malaria, meningitis, or encephalitis, tetanus.

5. Antepartum Haemorrhage

Definition: Bleeding from the genital tract after 28 weeks of pregnancy, but before the birth of the baby. Bleeding may be incidental (e.g., genital tract lesions), or may indicate placenta previa (when the placenta becomes implanted at or near the cervix) or placenta abruptio (when the placenta becomes detached from the uterus before delivery).

Clinical features: vaginal bleeding, repeated spotting. *Refer to Table 5.9.*

Table 5.9: Signs and Symptoms of Antepartum Haemorrhage

Assess	Incidental	Previa	Abruptio
Bleeding	Spotting	Spotting or heavy bleeding	None, spotting, or heavy bleeding; history of clots, painful bleeding
Presentation	Normal	Possible malpresentation	Uterus tense, unable to determine
Uterine size	= dates	= dates	May be larger
Foetal heart	Normal	Normal	May not exist
Foetal head	Normal	High	Uterus tense, unable to determine
Shock	No	Possibly	Usually
Abdominal pain	No	No	Yes
Contractions	No	No	Sustained (hard uterus)

Assessment: Do not perform a vaginal examination.

Management

- Refer all cases for further investigation.
- If bleeding is profuse or clots passed, painful vaginal bleeding, abdominal pain, tense (*'hardwood'*) uterus, and/or no foetal heart, commence IV infusion, treat for shock as necessary, and transfer *urgently* to hospital.

6. Postpartum Haemorrhage

Definition: Loss of 500 ml or more of blood from the genital tract after the delivery of the baby, or any amount that brings about sudden deterioration in the mother's condition.

Types

- *Primary postpartum haemorrhage* (PPH) occurs within the first 24 hours of delivery, which is the most critical period.
- *Secondary PPH* occurs anywhere from 24 hours to 6 weeks postpartum.

Clinical features: Blood loss of more than 500 ml, or presence of shock, placenta retained more than one hour, uterus not contracted, lacerations.

Assessment: Blood loss, general condition (BP, pulse, etc.), uterine condition, complete placenta delivered, presence of genital tract trauma.

Differential diagnoses: PPH due to uterine hypotonia, PPH due to retained placenta, PPH due to genital trauma.

Management

Standard: Administer oxytocyn at delivery to all women and uterine massage to stimulate contraction of the uterus (*see Section A.2, Active Management of the Third Stage of Labour*).

Uterine Hypotonia (see Table 5.10 below)

Retained Placenta (see Table 5.10 below)

Genital Trauma (see Table 5.10 below)

Table 5.10: Management of Postpartum Haemorrhage

Diagnosis	Management
<p>Uterine Hypotonia (<i>Uterus fails to contract after delivery</i>)</p>	<p>Retained placenta:</p> <ul style="list-style-type: none"> - Empty bladder - Attempt controlled cord traction. If this fails, then - Give IV fluids (normal saline or Ringer's lactate solution or haemacel) - Attempt manual removal if trained - Urgently transfer to hospital. <p>Placenta out:</p> <ul style="list-style-type: none"> - Check the delivered placenta to be sure it is complete - Continue uterine massage - Administer oxytocic - Empty bladder - Give IV fluids. <p><i>If bleeding continues:</i></p> <ul style="list-style-type: none"> - Perform bimanual compression - Urgently transfer to hospital.
<p>Genital Trauma</p>	<ul style="list-style-type: none"> - Identify bleeding site, clamp and suture if possible and give IV fluid. <p><i>If suturing not possible or bleeding continues:</i></p> <ul style="list-style-type: none"> - Urgently transfer to hospital. - Organise blood donor, if needed.
<p>Retained Placenta (<i>Placenta not delivered one hour after delivery, with or without bleeding</i>)</p>	<ul style="list-style-type: none"> - Assess for signs of placental separation (<i>see Third Stage of Labour</i>). <p><i>If there is no sign of placental separation and no bleeding:</i></p> <ul style="list-style-type: none"> - Refer urgently to hospital. Do not attempt to do manual removal of the placenta and be alert to placenta accreta. <p><i>If there is no sign of placental separation and there is bleeding:</i></p> <ul style="list-style-type: none"> - Empty bladder - Attempt controlled cord traction. If this fails, then - Give IV fluids (normal saline or Ringers lactate solution or haemacel) - Attempt manual removal if trained - Urgently transfer to hospital.

7. Obstructed Labour

Definition: Labour in which progress is obstructed by mechanical factors.

Clinical features: Dehydration, ketoacidosis, frequent strong contractions or contractions may have stopped, Bandl's ring, descent arrested.

Assessment: Foul smelling liquor (may or may not be stained with meconium), highly concentrated urine on catheterisation, oedema of vulva, oedematous cervix, large caput, excessive moulding, presenting part high, foetal distress

Diagnose underlying causes: Malpresentation, cephalo-pelvic disproportion.

Management: Give IV fluids (normal saline or dextrose), antibiotics (IV antibiotics are preferable if available – gentamycin 800 mg t.i.d. with crystalline penicillin 2 mega units every 4-6 hours; if IV antibiotics not available, give available oral antibiotics amoxicillin 1g stat., followed by 500 mg t.i.d. x 7 days + metronidazole (Flagyl) 500 mg t.i.d. x 7 days); transfer *urgently* to hospital.

8. Puerperal Sepsis

Definition: Infection of the genital tract occurring at any time between delivery and 42 days (6 weeks) postpartum in which fever is present.

Clinical features: Chills, fever 24 hours after delivery, sub-involution of uterus (flabby and un-contracted uterus), fast pulse, vomiting, abdominal pain, foul smelling lochia, wound infection.

Assessment: History of labour (length, trauma, duration of rupture of membranes), fever, throat or chest infection, offensive lochia, UTI, abdominal pain or tenderness, physical examination of sub-involution of uterus, pelvic pain, breast pain, leg pain.

Management: If stable, give antibiotics (amoxicillin 1g stat., followed by 500mg t.i.d. x 7 days + metronidazole (Flagyl) 400mg t.i.d. x 7 days), give IV fluid (normal saline), refer to hospital if no improvement in 24 hours.

If temperature $>38^{\circ}$, very rapid pulse ($>120/\text{min}$): give IV fluids (normal saline or dextrose), start IV antibiotics if available – gentamycin 800 mg t.i.d. with crystalline penicillin 2 mega units every 4-6 hours; if IV antibiotics not available, give available oral antibiotics amoxicillin 1g stat., followed by 500 mg t.i.d. x 7 days + metronidazole 400 mg t.i.d. x 7 days); transfer *urgently* to hospital.

9. Post Abortion Care

Definition: Abortion is the termination of pregnancy (expulsion or extraction of foetus) before 28 weeks of gestation.

Abortions are classified as follows:

Threatened: although there are signs of an abortion, the pregnancy may continue

Incomplete: products of conception are partially expelled

Inevitable: pregnancy will not continue and will proceed to incomplete or complete abortion

Septic: an abortion complicated by infection. Sepsis may result from infection if organisms rise from the lower genital tract following either spontaneous or unsafe abortion. An unsafe abortion is a procedure carried out by persons lacking the necessary skills, or a procedure carried out in an environment lacking minimal medical standards, or both.

Complete: products of abortion are completely expelled.

Post abortion care is to be given to any woman post abortion and has 3 elements, as follows:

1. Emergency treatment of incomplete abortion and potentially life-threatening complications
2. Post abortion family planning counselling and services
3. Links between post abortion emergency services and the reproductive health care system.

Post abortion family planning should be started immediately, as there is increased risk of repeat pregnancy because:

- Ovulation may occur as early as day 11 post abortion
- 75% of women will have ovulated within 6 weeks post abortion.

Clinical features: PV bleeding, history of amenorrhoea, abdominal pain, and/or backache.

Assessment: Abdominal examination and vaginal examination, verify signs of pregnancy.

Exclude: Ectopic pregnancy, incidental bleeding.

Table 5.11: Classification of Abortion

Type of Abortion	Amenorrhoea	Abdominal Pain	PV Bleeding	Status of Os	Uterine Size
Threatened	+	+ or -	+	Closed	= dates
Incomplete	+	+	+	Open	< dates
Inevitable	+	+	+	Open, POC evident	= dates
Septic	+	+	++ foul smelling discharge	Open	< dates
Complete	+	-	Minimal	Closed	< dates

Management of Abortions

Threatened abortion. Bed rest, counselling, sedation if needed, observe in health centre for 24 hours, refer patient if no improvement, or gets worse.

Incomplete abortion. Treat shock (keep warm, elevate foot of bed, put up IV of normal saline (or Ringer's lactate) – not dextrose), syntometrine 1ml IM or ergometrine 0.2mg IM (repeat after 15 minutes if necessary), transfer **urgently** to the hospital.

Inevitable abortion. Establish IV line, treat for shock, transfer **urgently** to the hospital.

Septic abortion. IV fluids; antibiotics (IV antibiotics are preferable, if available – gentamycin 800 mg t.i.d. with crystalline penicillin 2 mega units every 4-6 hours; if IV antibiotics not available and transfer will take 24 hours or more, give available oral antibiotics amoxicillin 1g stat., followed by 500 mg t.i.d. x 7 days + metronidazole 400 mg t.i.d. x 7 days); transfer **urgently** to hospital.

Complete abortion. If stable, counsel for, and provide family planning or other reproductive health services as appropriate. If blood loss significant, refer, or treat for anaemia as appropriate.

B.2 Essential Care of the Newborn

The essential interventions described below should be possible in relation to both home and institutional deliveries.

Specific Conditions

1. Birth Asphyxia

Definition: Birth asphyxia is defined as absent or depressed breathing at birth.

Clinical features: Respiratory effort is depressed or absent, heart rate <100 or absent, limp muscle tone, poor response to stimulation, colour pale or very blue.

Assessment: Apgar Score (see section on Clean and Safe Delivery).

Exclude: cardiac anomaly, other chest abnormalities.

Management: Clear airway, dry baby, provide warm environment, positive pressure ventilation with bag and mask.

2. Neonatal Hypothermia

Definition: The body temperature (rectally) drops to 36.0°C or below.

Clinical features: Temperature 35.0°C or below, body feels cold to touch, blue extremities, poor sucking, lethargy.

Assessment: Rectal temperature, physical examination (as above).

Exclude: infections, cerebral injury, hypoxia, hypoglycaemia.

Management: Dry the baby well immediately after birth, provide warm environment, skin-to-skin contact (kangaroo mothering), frequent breastfeeding, delay bathing, use incubator if necessary and available, if infection or cerebral injury suspected refer to the hospital.

3. Ophthalmia Neonatorum

Definition: Purulent discharge from the eyes of the baby within the first 28 days of life.

Management

- a. Kanamycin 125 mg IM as a single dose; *or* Gentamycin 8 mg/kg in 2 divided doses for 10 days.
- b. Irrigate the eyes with saline *or* clean water every hour for 8 hours, then 3 times per day for 2 days. 1% tetracycline eye ointment every 8 hours after irrigation; *or* povidine iodine 2.5% solution.
 - *Re-examine the infant after 48 hours. Treat parents for STI (see Chapter 8: Sexually Transmitted Infections).*

4. Congenital Syphilis

Definition: Syphilis which has been passed from the mother to the child while in utero.

Clinical features

- Skin rash – various appearances (*i.e.*, macular, papular, bullous, squamous).
- Distended abdomen due to liver and spleen enlargement.
- Blood-stained nasal discharge with nasal obstruction (“nasal snuffles”).
- Joint swelling.
- Various non-specific signs (anaemia, jaundice, etc.).

The baby may appear completely normal at birth or, if severely infected, may have the above signs. Any system of the body could be infected. If the mother had a positive RPR, the child should be treated at birth.

Assessment: Diagnosis is usually made based on a laboratory test of the mother and/or the infant.

Management: Benzathine penicillin 50,000 IU/kg IM as a single dose; *or* procaine penicillin 50,000 IU/kg IM daily once a day for 10 days. Treat parents together with baby (*see Chapter 8: Sexually Transmitted Infections*).

5. Preterm and/or Low Birth Weight Babies

Definition: Delivery before 37 weeks of gestation (from the 1st day of the last menstrual period) or weighing less than 2.5kg.

Clinical features

- Preterm: temperature 36°C or below, body feels cold to touch, pink, shiny skin, lack of subcutaneous fat, presence of excessive lanugo and vernix caseosa, poor sucking reflex, prone to hypothermia, asphyxia.
- Low birth weight: weight less than 2.5 kg, loose and wrinkled skin (appearance of little old man).

Assessment: Weight, physical examination.

Management: Establish respiration, keep warm, refer to the hospital.

Section 2: Family Planning

Introduction

Family planning is a voluntary decision made by an individual or a couple on the appropriate number of children they wish to have, and when to have the children. This implies that men and women have the right to be informed and to have access to safe, effective, affordable, and acceptable methods of their choice for fertility regulation, which are not against the law, as well as the right of access to health care for safe pregnancy and childbirth. Family planning has many benefits for men, women, children, families, and society at large.

For those service providers who have been trained to use the Family Planning Counselling Kit, this section refers to how you can use these materials in your counselling.

Family Planning Counselling

Counselling is a vital part of family planning. It helps the client to arrive at an informed decision of reproductive options and to use the chosen method safely and effectively. Good counselling should focus on the individual client's needs and situation because every client is different and has different needs. During counselling, the provider should assess the needs of each client by asking profiling questions. Profiling is a way of grouping clients according to their reproductive needs during a counselling session, in order to meet each individual client's specific needs. Profiling also helps providers to integrate information on other reproductive health issues such as breastfeeding, STIs, and especially HIV/AIDS, as the needs are identified.

Types of Client Profiles

There are 4 categories of clients or profiles:

1. Spacers/Delayers: these are clients who want to wait before having a first or another baby
2. Limiters: those clients who do not wish to have any more children
3. Breastfeeders: those clients with a baby less than 6 months postpartum
4. Multiple partners: those clients who have multiple partners or who suspect that their partners have multiple partners.

Counselling Skills

When counselling clients, the provider needs to:

- Understand and respect the client's rights (*see paragraph below*)
- Earn the client's trust
- Understand the benefits and limitations of all contraceptive methods
- Understand the cultural and emotional factors that affect a woman's (or couple's) decision to use a particular contraceptive method
- Encourage the client to ask questions
- Use a non-judgmental approach which shows respect and kindness towards the client
- Present complete and accurate information in an unbiased, client sensitive manner
- Actively listen to the client's concerns
- Understand the effect of non-verbal communication
- Recognise when s/he cannot sufficiently help a client and refer the client to someone who can.

In serving clients, it is important to remember that they have:

- The right to decide whether or not to practice family planning
- The freedom to choose which method to use
- The right to privacy and confidentiality
- The right to refuse any type of examination.

In addition, while many contraceptive methods are highly effective, method failure can occur. In the case of method failure, the client should be counselled, informed about the available options, and referred for appropriate services.

Steps in Counselling

The acronym **GATHER** is used to guide the providers in their family planning counselling. The letters stand for *Greet, Ask, Tell, Help, Explain,* and *Return*.

Greet

Introduce yourself by name. Find a private, calm environment where you can talk. Promise confidentiality and keep this promise at all times. Identify any special needs of the client. *If you have the Family Planning Counselling Kit, refer to the supplementary counselling cards, i.e. men, youth, post abortion care, emergency contraception, or double protection.*

Ask

Ask the client what s/he knows about family planning and whether s/he has ever used a method. Ask about her/his current situation. Ask about her/his concerns about her/his current situation. *If you have the Family Planning Counselling Kit, ask the client profiling questions (use the client's family planning card and profiling flowchart).*

Tell

Tell the client about the various family planning methods, relating them to the client's particular situation and needs. *If you have the Family Planning Counselling Kit, use the profiling boxes to help you.*

Help

Help the client make a choice of method that will be appropriate and effective. *If you have the Family Planning Counselling Kit, use the front of the relevant cards, including the use of screening questions from the method card and medical history on the family planning card, to determine eligibility.*

Explain

Explain in detail how the client should use the method of choice. *If you have the Family Planning Counselling Kit, use the back of the cue cards. Give the client relevant single method leaflet(s) if s/he has narrowed her/his choices, or the all method leaflet if s/he is still undecided.*

Return

A return visit should be scheduled before the client leaves. *If you have the Family Planning Counselling Kit, use the family planning card or write the date of the return visit on the leaflet you gave her/him. Service providers at all sites should know exactly where to refer clients who choose a contraceptive method not available at their site so that they can receive this method.*

Family Planning Protection Following Rape, Incest, or Defilement

Where a client or her guardian/family reports that she has been a victim of rape, incest, or defilement, the health worker should provide the following services:

1. Do a high vaginal swab to detect the presence of semen. Evidence can then be provided to the family who wishes to take legal action on the case
2. Offer emergency contraception
(see appropriate section of Table 5.12 below)
3. Provide psychosocial counselling to the victim
4. Advise the victim and her family to take precautions to avoid any repeat of the incident.

Confidentiality in relation to such cases must be absolute. The official report of the case should use the victim's identification number and not the name. As is normal practice, the client register, which links the client names with their identification numbers, should be stored in a locked cupboard.

For protection against STIs following rape or incest, please refer to *Chapter 8: Sexually Transmitted Infections*.

In locations where there is a high incidence of rape, incest, or defilement, the health centre staff should educate the community on the steps that should be taken following an incident of this nature: the victim should not wash herself, should not change her clothes, and should try not to urinate prior to going to the health centre or hospital.

A summary of the different modern methods of contraception available in Zambia is given in Table 5.12 below.

Note: Given the prevalence of STIs and HIV/AIDS in Zambia, health workers should promote the use of condoms, in addition to any other family planning method that the client may choose. This is called “dual protection”.

Table 5.12: Contraceptive Methods								
Method	Type/Description	Effectiveness/ Mechanism of Action	Eligibility	Client Instructions	Benefits	Precautions	Side Effects	Management of Side Effects
Condom	<p>The male condom is a latex sheath that fits over a man's erect penis.</p> <p>The female condom is made of synthetic material and is inserted into the vagina.</p>	<p>Must be used correctly every time to be effective as a family planning method.</p> <p>Both male and female condoms protect against STIs and HIV/AIDS.</p>	<p>Can be used by men and women of any age and any parity.</p>	<p>The client must be told why using a condom every time is important - just one unprotected act of sexual intercourse can lead to pregnancy, STI, or HIV/AIDS transmission.</p> <p>Male condom</p> <ul style="list-style-type: none"> - The client should be given specific instructions to put the condom on an erect penis before sex: - Open pack - Pull the foreskin back - Place the condom on the tip of the penis - Unroll the condom all the way to the base of the penis - After ejaculation, hold the rim to the base of the penis so that it will not slip off - Slide off the condom without spilling semen - Tie off the open end of the condom - Throw the condom away (in a pit latrine, burn it, or bury it) - <i>Never</i> use a condom twice <p>Female condom</p> <ul style="list-style-type: none"> - Before sex, open the packet - Place the closed end of the condom high in the vagina (if the female condom is placed over the cervix, then the man's penis can be used to push the condom into the vagina) - After ejaculation, hold the outer rim firmly and remove the condom carefully, taking care not to spill the semen - Throw the condom away out of the reach of children - May be worn up to 8 hours before sex - <i>Never</i> use a condom twice 	<p>Prevents the transmission of STIs, especially HIV/AIDS, as well as pregnancy. Can be used immediately after childbirth.</p> <p>No side effects.</p>	<p>Never use any oil or oil-based lubricants (such as petroleum jelly or skin cream) with the condom. This may cause the condom to break.</p> <p>Keep condoms on hand always.</p>	<p>Some men may react to rubber.</p>	

Table 5.12: Contraceptive Methods (continued)							
Method	Type/Description	Effectiveness/ Mechanism of Action	Eligibility	Client Instructions	Benefits	Precautions	Side Effects
Combined oral contraceptives (COC) <i>e.g.</i> Microgynon	Hormonal pills containing both estrogen and progesterone	<ul style="list-style-type: none"> - Suppresses ovulation - Thickens cervical mucus, so preventing sperm penetration - Changes endometrium, making implantation less likely - 99% effective. 	Women of any reproductive age or parity, including: <ul style="list-style-type: none"> - Breastfeeding mothers - 6 months or more post partum mothers - Women with severe menstrual cramping and irregular menstrual cycles. 	<p><i>Postpartum if breastfeeding</i> After she stops breastfeeding or 6 months after delivery.</p> <p><i>Postpartum if not breastfeeding</i> 3 weeks after delivery.</p> <p><i>Post abortion</i> Immediately or within 7 days</p> <p><i>All other women</i> Start any time when the client is sure that she is not pregnant. Best to start in days 1-7 of the menstrual cycle. If more than 7 days since menstrual bleeding started, she should also use condoms for the next 7 days.</p>	Highly effective and immediate, no interference with intercourse, can be provided by CBDs. Non-contraceptive benefits: <ul style="list-style-type: none"> - Decrease of menstrual flow and cramps - Protects against ovarian and endometrial cancer. - May improve anaemia. 	<p><i>Women who should not use COC</i></p> <p>Those with:</p> <ul style="list-style-type: none"> - Arterial vascular disease - Jaundice - Blood clotting disorder - Diabetes - Breast cancer - Liver tumors - High blood pressure over 160/110. <p><i>Does not protect against STIs and HIV/AIDS</i></p> <p>Women who are taking drugs for TB, tetracycline, or anticonvulsants should use condoms as well as the COC.</p>	<ul style="list-style-type: none"> - Nausea, dizziness - Mild breast tenderness, or headaches - Spotting or light bleeding. - Usually decreases after 2-3 cycles - Can delay return to fertility - Serious but rare side effects, such as heart attack, stroke, blood clots in lung or brain. - <i>Does not protect against STIs HIV/AIDS.</i>
							Advise the client to take pill with evening meal or before bedtime. Assess for pregnancy and if present stop the pill. The client should have regular checkups that will include full physical examination at least once a year.

Table 5.12: Contraceptive Methods (continued)

Method	Type/Description	Effectiveness/Mechanism of Action	Eligibility	Client Instructions	Benefits	Precautions	Side Effects	Management of Side Effects
Progestin only pills (POPs), e.g. microлют, Norplant*, Noristerat, and Depo provera	Progestin only pills; subdermal implants; and Progestin only injectable containing progestin hormone.	<ul style="list-style-type: none"> - Inhibits ovulation - Thickens cervical mucus, preventing sperm penetration - Changes endometrium, making implantation less likely - Suppresses ovulation. 	<p>Women of any reproductive age or parity, including:</p> <ul style="list-style-type: none"> - Breastfeeding mothers > 6 wks postpartum - Severe menstrual cramping - B/P below 160/110 <p>Women with clotting problems or sickle cell disease, or who should not use estrogen <i>can</i> use POPs.</p>	<p>May start any time if sure that the client is not pregnant, 1-5 days of menstrual cycle.</p> <p><i>Postpartum if breast feeding</i> After 6 months if using LAM.</p> <p><i>Postpartum if not breastfeeding</i> 3 weeks after delivery.</p> <p><i>Post abortion</i> Immediately or within 7 days</p>	<p>Norplant is effective within 24 hours.</p> <p>Injectables are effective immediately if within 5 days of beginning of menses, otherwise need other protection for 2 weeks.</p> <p>No interference with intercourse.</p> <p>PO pills can be provided by CBDs.</p> <p>Non-contraceptive benefits:</p> <ul style="list-style-type: none"> - Over time, decrease in flow protects against endometrial and ovarian cancer - No effect on breast cancer risk - May improve anaemia. 	<p><i>Women who should not use</i> POCs:</p> <p>Those with:</p> <ul style="list-style-type: none"> - Arterial vascular disease - Jaundice - Liver infection or tumour - Diabetes - Breast cancer - High blood pressure > than 180/110. <p>Women on anticonvulsants and rifampin should use a different method, because these drugs make their contraception less reliable.</p>	<p><i>Does not protect against STIs and HIV/AIDS.</i></p> <p>Weight gain and amenorrhoea or irregular bleeding are predictable effects of these methods affecting most users.</p> <p>Delayed return to fertility for injectables.</p>	<p>Advise regular checkups for full physical examination at least once a year.</p> <p>If heavy bleeding occurs soon after injection, give COC for 5 days. This may be repeated, if necessary.</p>

* Norplant is only available at certain hospitals

Table 5.12: Contraceptive Methods (continued)

Method	Type/Description	Effectiveness/Mechanism of Action	Eligibility	Client Instructions	Benefits	Precautions	Side Effects	Management of Side Effects
Intra-uterine devices	Small flexible devices inserted into the uterine cavity. These may be medicated with progesterin or copper. In Zambia the copper T 380 A is commonly used.	Effective immediately. Prevents fertilisation. Interferes with the ability of sperm to pass through the uterine cavity. Interferes with the reproductive process before ova reach the uterine cavity.	Women of any reproductive age or parity (breastfeeding or not) who want highly effective, long term contraception that does not require daily action. Women who have used an IUD successfully before. Post abortion clients who do not show signs of infection (may be inserted immediately or within 7 days). Women who prefer not to use hormonal methods of contraception or should not use them. Recommended for women who are at low risk for GTIs and other STIs.	IUDs can be inserted any time you are reasonably sure that the client is not pregnant. Days 1-7 of the menstrual cycle may facilitate insertion. Post partum Immediately following delivery, during the first 48 hours postpartum or after 4-6 weeks. Post abortion Immediately, if no infection is present.	- Long term method (up to 10 years protection). - Does not interfere with intercourse. - Does not affect breastfeeding. - Immediate return of fertility upon removal of the device. - After initial follow-up visit, clients do not need to return to the health centre unless they experience problems. - No supplies needed by the client.	Requires trained provider to insert and remove the device. Pelvic examination required, and screening for STIs recommended before insertion.	- Increased menstrual bleeding and cramping during the first few months following insertion. - May be spontaneously expelled. - May increase risk of PID and subsequent infertility if genital tract infection is present at the time of insertion. - May increase risk of HIV. - Perforation of the uterus may occur during insertion, but very rarely. Does not protect against STIs and HIV/AIDS.	- Counsel the client to be certain she understands potential problems with having an IUD. - If mild vaginal infection is present, treat and recheck before insertion of IUD. For cramping, perform abdominal and bi-manual examination to check for PID and other causes of cramping, such as partial expulsion of the device, cervical or uterine perforation, or ectopic pregnancy.

Note: Only service providers who have been trained in IUD insertion may offer this method. Where a service provider who has not been trained in IUD insertion has a client who wishes to use an IUD, the client should be referred to the nearest location where there is a trained service provider.

Table 5.12: Contraceptive Methods (continued)

Method	Type/Description	Effectiveness/Mechanism of Action	Eligibility	Client Instructions	Benefits	Precautions	Side Effects	Management of Side Effects
Lactational Amenorrhoea Method	Method that utilises temporary infertility that occurs during breastfeeding.	Suppresses ovulation.	LAM is effective for women who: - Are fully or nearly fully breastfeeding - Have not had return of menses and are less than 6 months postpartum.	Fully breastfeeding is characterised by: breastfeeding whenever the baby desires (or at least every 3 hours during the day), and at least every 6 hours during the night; not substituting other food or liquids for breast milk meal.	Effective immediately, no interference with intercourse, no medical supervision, supplies, or cost required For the mother: - Decrease in postpartum bleeding. - Protection against ovarian and endometrial cancer. For the child: - Passive immunisation (transfer of protective antibodies) - Best source of nutrition - Decreased exposure to contaminants in water, other milk formulas, or utensils	User dependant (requires following instructions regarding breastfeeding practices). May be difficult to practice due to social circumstances, e.g. working mothers. Highly effective only up to the time menses return, or up to the time baby is given other foodstuffs, or even water.	<i>Does not protect against STIs and HIV/AIDS</i>	If any of the 3 criteria are broken (menses return, baby introduced to other foodstuffs, even water, or does not suckle frequently, or baby is over six months) then advise the client to use another method of contraception.

Table 5.12: Contraceptive Methods (continued)

Method	Type/Description	Effectiveness/ Mechanism of Action	Eligibility	Client Instructions	Benefits	Precautions	Side Effects	Management of Side Effects
Female Sterilisation	A permanent surgical method, which can be done at certain hospitals.	Very effective. Involves the closing off of the 2 fallopian tubes, which carry eggs from the ovaries to the uterus.	Any woman who is not pregnant and who is certain that she will never wish to have any more children.	A woman who is sure that she will never wish to have any more children should be referred to the nearest appropriate hospital for further counselling and, if appropriate, for the surgery. If a woman has surgery, she must return for follow-up within 2 weeks for removal of stitches and to ensure there is no infection.	<ul style="list-style-type: none"> - Very effective and permanent (no need to remember supplies or to visit the health centre). - Permanent. - Does not affect breastfeeding. - Does not interfere with intercourse. - No long-term side effects. 	<p><i>Does not protect against STIs and HIV/AIDS.</i></p> <p>Is not reversible, so the woman (or couple) must be sure that they do not want further children.</p>	Usually none. Post-operative infection is possible, if the procedure is not properly carried out.	Post-operative infection requires attention by a health care provider.
Male Sterilisation - vasectomy	A voluntary surgical procedure for permanently terminating fertility in men.	Very effective. Involves blocking of the vas deferens (the ejaculatory duct) so that sperm are not present in the ejaculate.	Men of reproductive age.	A man who is sure that he will never wish to have any more children should be referred to the nearest appropriate hospital for further counselling and, if appropriate, for the surgery. If a man has surgery, he must return for follow-up within 2 weeks for removal of stitches and to ensure that there is no infection.	<ul style="list-style-type: none"> - Highly effective. - Permanent. - Does not interfere with intercourse. - No long-term side effects. 	<p><i>Does not protect against STIs and HIV/AIDS.</i></p> <p>Is not reversible, so the couple must be sure that they do not want any further children.</p>	Usually none. Post-operative infection is possible if the procedure is not properly carried out.	Post-operative infection requires attention by a health care provider.

Table 5. 12: Contraceptive Methods (continued)

Method	Type/Description	Effectiveness/ Mechanism of Action	Eligibility	Client Instructions	Benefits	Precautions	Side Effects	Management of Side Effects
Natural Family Planning	Abstinence. Fertility awareness methods, which are based on avoidance of intercourse at times when the woman is in the fertile time of her menstrual cycle.	Moderately effective when consistently used by experienced couples.	All women who have regular menses.	Refer the clients to trained Natural Family Planning counsellors.	- No health risks - No side effects - Promotes male involvement - Improves woman's knowledge of her reproductive system.	None	None	
Emergency contraception	Both COCs and POPs can be used for emergency contraception following intercourse without contraceptive protection.	More than 90% effective if taken within 72 hours following unprotected intercourse.	Women who are at increased risk of vascular problems should be advised of the slight additional risk of a serious complication in they use COC.	High dose COCs (e.g. PC4): 4 tablets of a COC to be taken at one time within 72 hours of unprotected intercourse. Alternatively, 2 tablets can be taken first, then a further 2 tablets after 12 hours. The client should take the COCs with food to reduce the possibility of nausea. POPs: One pill to be taken within 72 hours of unprotected intercourse, followed by a second pill 12 hours later.	Effective prevention of an unwanted pregnancy.	If no menses within 3 weeks, the client should visit a service provider to check for pregnancy.	Possible nausea, vomiting, or breast tenderness.	Should be very short lived and no additional treatment is required.

Chapter 6 – Tuberculosis

Introduction

Tuberculosis (TB) is a major and growing public health problem in Zambia; it is caused by the *Tubercle bacillus* bacteria, which forms lesions called tubercles. The *Tubercle bacilli* remain dormant in tissues and persist for many years.

Epidemiology

- Tuberculosis accounts for about one out of every six adult deaths in Zambian hospitals.
- One third or more of Zambians carry TB bacteria in their bodies, but it is inactive until immunity is compromised.
- As many as 100,000 Zambians have active TB.
- The number of cases of TB reported each year has more than tripled in the last 10 to 15 years, largely as a result of the HIV epidemic.

Policy Statements

- TB diagnosis and treatment is free.
- TB is a notifiable disease.

Key Facts

- Transmission is person-to-person by air (micro-droplets); therefore confined spaces and poor ventilation increase risk of exposure. Direct sunlight kills the bacteria.
- Once infected, a person remains infected for life and can develop the active TB disease at any time.
- HIV infection facilitates progression to the active TB disease.
- Treatment of TB is essentially the same, regardless of HIV status.
- For the affected individual and for the community, it is essential that TB treatments are taken properly and completed.
- Tuberculosis is curable, provided that treatment is begun early and the patient takes all the prescribed drugs as per regimen; if untreated, about 50% of TB patients will die within 2 years.
- The disease affects mostly the lungs, but can affect any part of the body. Pulmonary TB accounts for 80% of cases, Extra-pulmonary TB (TB outside the lungs) is more common in children.

Health Promotion

- Tuberculosis is a community disease and needs community action to fight it.
- Find out what the community already knows about TB. This helps the health team's understanding of community views on TB.
- Ask them to help you identify possible cases, and to ensure that people take their drugs regularly and complete their treatment.
- Advise them to help look after those very sick with TB.
- Help them to find ways of improving their nutrition and housing.
- Help them understand how it is transmitted, what the symptoms are, and how drugs treat it.
- Strengthen partnership with the community to control the spread of TB.
- Motivate the community to advise anyone with a chronic cough to seek help from a health facility.
- TB patients and their families require considerable support to assure compliance with the prolonged drug therapy.
- HIV/AIDS patients and malnourished children easily get TB.
- It is essential that TB patients take all their medication and complete treatment. For patients living near health facilities, all doses are dispensed to the patient by a health worker (directly observed treatment short-course – DOTS). For those living farther away, a responsible community member can be designated to supervise the taking of the medication.
- All close contacts of the sputum positive TB patient need to be assessed for TB.
- Overcrowding, poor ventilation, and low-lighting contribute to transmission.

Counselling of TB Patients

- Patients may, after completing treatment, develop signs of TB again.
- Advise clients with TB to eat a healthy diet to help with recovery.
- The patient must not stop the TB drugs on his own even if he feels well. The drugs must be stopped only when the healthcare provider determines that the treatment course is complete.
- No alcohol or smoking during the treatment period.
- Advise patients to cover the mouth when coughing.

Prevention

- Control the spread of TB by treating people with the disease in earlier stages.
- Improvements in nutrition and housing reduce the prevalence of TB.

BCG Immunisation

- Immunise infants with BCG (0.05ml intra-dermally) as soon as possible after birth. This partial protection lasts only for the first 10 to 15 years of life.
- BCG does not prevent infection, but rather acts by preventing the rapid spread of TB bacteria to other parts of the body. In this way, BCG helps to prevent TB meningitis and some other serious forms of TB in children.

Management

A case of active TB *disease* should be clearly distinguished from TB *infection* in a person without signs or symptoms of the disease. Although such persons may have positive tuberculin reactions, they do not require TB treatment.

Table 6.1: Types of Tuberculosis (for purposes of treatment)

Types of Tuberculosis	Characteristics
Sputum-smear positive pulmonary tuberculosis present	- At least 2 sputum specimens positive for AFB <i>or</i> - 1 specimen positive and either consistent x-ray findings or a sputum culture positive for TB
TB relapses and treatment failures	- <i>TB relapse</i> - symptomatic TB that has been successfully treated but later recurs - <i>TB treatment failure</i> - patient remains smear positive at 5 or more months after the start of treatment
Extra-pulmonary tuberculosis	- TB in which tissue samples or clinical signs are consistent with active TB at a site other than the lungs
Paediatric tuberculosis	- TB in children aged 12 years or below

Diagnosis

Signs and Symptoms

- Cough for longer than 3 weeks
- Weight loss
- Loss of appetite

- Tiredness, general weakness
- Family history of TB, or history of contact with active case
- Sputum longer than 3 weeks (often yellow or bloody)
- Chest pain
- Night sweats and night fever
- On physical examination, large lymph nodes (often in the neck) for more than 3 weeks.

See TB diagnosis flow chart below.

Sputum Collection Procedure

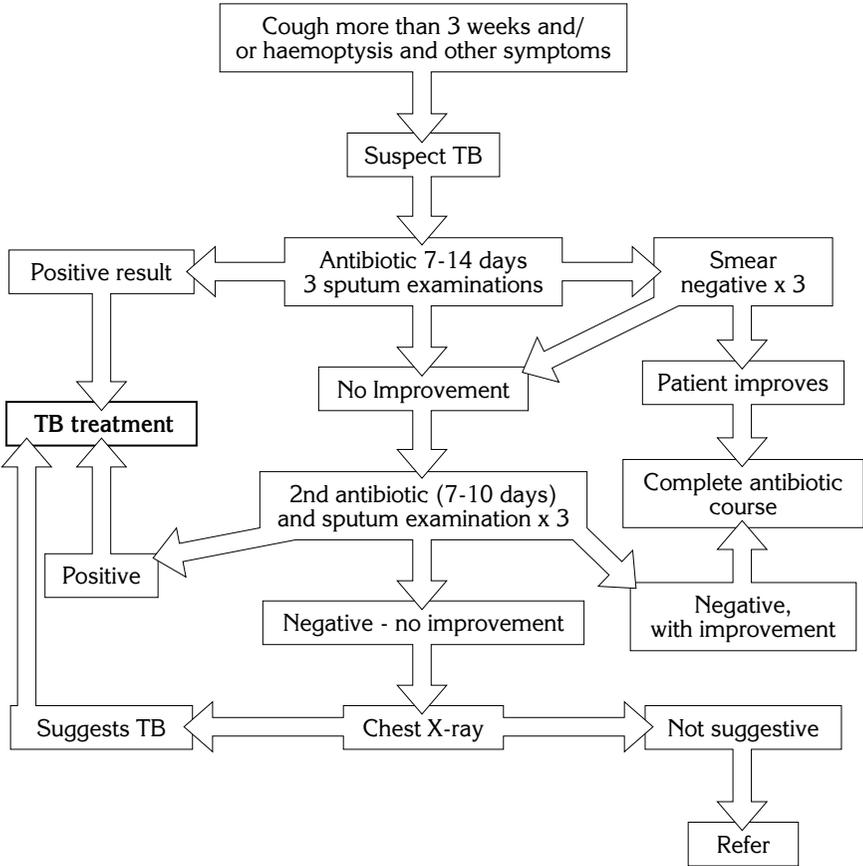
- Collect sputum from the patient on admission.
- Explain to the patient why you need to collect sputum.
- Explain to the patient that saliva is not the same as sputum.
- Fill out an AFB (acid-fast bacillus) laboratory request form.
- Write the patient's name and other details, and label on the container.
- Ask the patient to cough deeply and to repeat coughing into the container until 3 to 5ml of sputum has been obtained.
- Advise patient to close the lid tightly.
- Ensure that the lid on the container is tightly closed and store it in a cool dark place until it can be sent to the laboratory.
- Collect the 1st specimen on the spot. Give the patient a specimen container and ask the patient to collect a 2nd specimen at home the following morning. Collect a 3rd specimen when the patient returns (preferably the following day).
- Collect subsequent sputum specimens in the morning for both in and outpatients.
- Each specimen should be sent to a laboratory for testing within 5 days after collection.

Note: It is preferable to do the 3 AFB tests within 24 hours.

- If patient is not seriously ill, repeat AFB x 3 in 1 month.
- Sputum for AFB may be refrigerated up to 1 week.

Any health facility with a microscope and laboratory staff should be able to examine the sputum for TB.

TB Diagnosis Process in Adults: Flow Chart



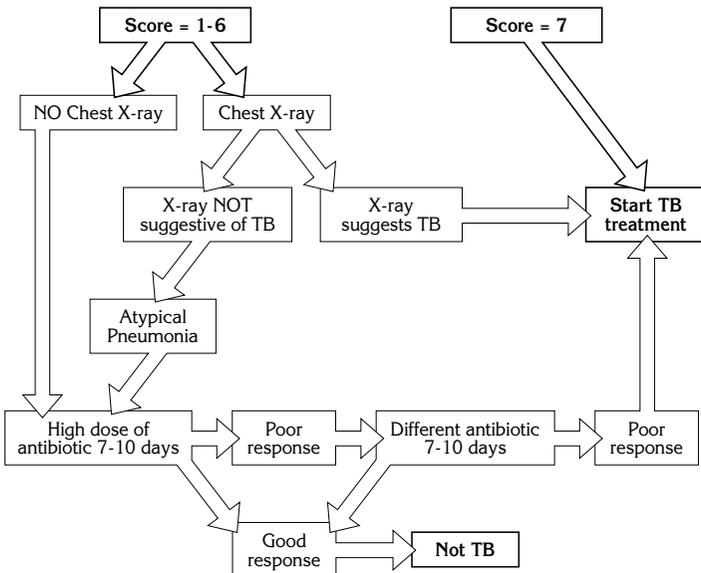
Diagnosis of Tuberculosis in Children Aged 12 Years and Below

Table 6.2: Tuberculosis Diagnosis Score Chart

Feature	0	1	3	Score
Length of Illness	< 2 Weeks	2-4 Weeks	> 4 Weeks	0, 1 or 3
Nutrition (Weight)	> 80% For Age	60-80 % For Age	< 60 %	0, 1 or 3
Past or Present Close Tb Contact	None	Reported by Family	Proved Sputum Positive	0, 1 or 3
- Large painless lymph nodes; firm, soft, sinus in neck, axilla, groin			3	
- Unexplained fever, night sweats, no response to malaria treatment and/or antibiotic			2	
- Angle deformity of spine			4	
- Joint swelling, bone swelling, or sinuses			3	
- Unexplained abdominal mass or ascites			3	
- Fits or change in level of consciousness			3	
TOTAL SCORE				

Note: For children below 24 months of age, consult a Paediatrician.

When score is 7 or more, treat for TB:



Treatment

Anti-TB Drugs

Isoniazid (H), Rifampicin(R), Pyrazinamide (Z), Ethambutol (E), and Streptomycin (S).

TB Treatment Phases

- Intensive phase: daily, directly observed treatment at the health centre or instructed designated observer.
- Continuation phase: patient visits the health centre once every 4 weeks to collect drugs.

Daily Observed Treatment

- The health worker or designated instructed observer should administer the anti-TB drugs and observe the patient take them.
- Record drug intake daily, immediately after each intake.
- Record patient's identity and address accurately.
- Educate the patient and his/her relatives on the importance of DOTS for the sake of the patient's own health.
- Ensure that you trace defaulters. Work with community based agents *e.g.* community health workers (CHWs) and community based organisations (CBOs) in tracing defaulters.

Table 6.3: Tuberculosis Treatment Regimens

		I	II	III	Paediatric
Intensive phase	Duration	2 months	3 months	2 months	2 months
	Drugs	HRZE	2HRZES/ 1HRZE*	HRZ	HRZ
Continuation phase	Duration	6 months*	5 months	6 months	4 months*
	Drugs	HE	HRE	HE	HR
Follow-up sputum smears for AFB (months after beginning treatment)		2, 5, and 8	3, 5, and 8	2, 5, and 8	2, 4, and 6

Give vitamin B6 for full duration of all treatment regimens.

Table 6.4: Daily Dosages of Anti-Tuberculosis Drugs

Drug	Dosage	Pre-Treatment Weight		
		> 50kg	49-33kg	< 33kg
Isoniazid	300mg	1 tab	1 tab	–
Rifinah	Rifampicin 450mg/isoniazid 300mg	1 tab	1 tab	–
Rifinah	Rifampicin 150mg/isoniazid 100mg	4 tabs	3 tabs	2 tabs
Ethambutol	400mg	2-3 tabs	1-2 tabs	1 tab
Ethambutol	400mg/isoniazid 150mg	2 tabs	2 tabs	–
Pyrazinamide	500mg	4 tabs	3 tabs	2 tabs
Streptomycin	IM injection*	1 g	0.75 g	0.5 g
* For children weighing 20kg or less: streptomycin 20mg/kg; rifampicin 10mg/kg; pyrazinamide 30mg/kg; isoniazid 10mg/kg.				
All drugs are administered once daily, in the morning before eating.				

Patient Education

- It is the task of health care providers to educate TB patients about their disease.
- Education is essential for obtaining the patient's co-operation with the required treatment.
- TB patients must take drugs on a strict and regular basis; it is difficult to comply with medical treatments of such a long duration..
- TB patients need much support from medical staff and their families throughout their treatment course. Keep in mind that patient education is a dialogue, not a lecture.

Treatment in Women

- Pregnant women with active TB should continue anti-TB treatment.
- Do not use streptomycin in pregnant women because of risk of toxicity to the unborn child. Give pregnant women with relapses TB Category II anti-TB drugs, without streptomycin.
- Women on TB treatment should avoid pregnancy because of the potential risk of damage to the fetus.
- Women on oral contraceptives and taking rifampicin should use alternative methods of contraception, such as condoms, or consult a healthcare provider.
- Women on anti-TB drugs may breastfeed; however, the baby should be monitored for side effects related to drugs passed through breast milk.

Table 6.5: Symptom Based Approach to Management of Anti-TB Drug Side Effects

Side Effects	Probable Drug Responsible	Management
Minor		Continue anti-TB drugs
Anorexia, Nausea, Abdominal pain	Rifampicin	Give tablets last thing at night
Joint pains	Pyrazinamide	Asprin
Burning sensation in the feet	Isoniazid	Pyridoxine 100mg daily
Orange/red urine	Rifampicin	Reassurance
Major		Stop drugs responsible
Skin itching/rash	Streptomycin	Stop anti-TB drugs
Deafness (no wax on auroscopy)	Streptomycin	Stop Streptomycin, use ethambutol instead
Dizziness (vetigo and nystagmus)	Streptomycin	Stop Streptomycin, use ethambutol instead
Jaundice (other causes excluded)	Most anti-Tb drugs	Stop all anti-TB drugs until jaundice resolves
Vomiting and confusion (suspected drug induced pre-icteric hepatitis)	Most anti-Tb drugs	Stop all anti-TB drugs, refer immediately for urgent liver function tests
Visual impairment	Ethambutol	Stop Ethambutol
Generalised, including shock and purpura	Ethambutol	Stop Ethambutol

HIV-Related TB

Be aware that:

- HIV + TB patients present more frequently with extra-pulmonary and smear-negative TB than patients who are HIV negative
- Over 50% of TB patients in Zambia are HIV +
- TB treatment is the same in both HIV + and HIV negative cases
- 10-20% of HIV + TB patients can be expected to die during treatment from other conditions related to the HIV, such as chronic diarrhoea, as compared to only about 3-4% in HIV negative cases
- HIV + tuberculosis patients have a high risk (up to 20%) of developing a hypersensitivity reaction while on anti-TB treatment.

See also Chapter 7: HIV/AIDS.

Follow-up and Defaulter Tracing

Remember:

- Defaulting and poor compliance are the *major reasons* for the low success rate of TB treatment
- Patients should attend the health centre *daily* during the intensive phase, and *monthly* during the continuation phase. For those unable to come daily, provisions need to be made to ensure follow-up in the community
- Failure to attend the health centre may lead to treatment failures and development of drug resistance. Consequently, *follow-up is as important as the selection and supply of drugs*
- At week's end, a clerk or health worker should review the health centre TB treatment register to identify defaulters
- Follow-up at home is needed for any TB patient who fails to attend at least 14 consecutive days during the intensive phase, or who fails to attend 2 consecutive months during the continuation phase
- It is your responsibility as a health worker to trace defaulters. Work with home based care teams, community health workers, and/or neighbourhood health committees (NHCs) in defaulter tracing and care of TB patients
- To check patient compliance, review and consult the DOTS register and count the number of tablets remaining from the previous drug supply.

Reporting

Good record keeping is essential to the success of TB control efforts. Health care providers involved in TB care are responsible for completing several forms:

- The AFB request form: care should be taken that the address is sufficiently complete to facilitate patient tracing in the community (**may need proxy name** – the name known in the community) in case the result is positive and the patient has not returned
- Individual patient record
- Tuberculosis diagnostic/treatment register: this register must be maintained at each health centre where treatment is administered. Each patient using TB drugs at the health centre must be recorded on the register. Tracing of defaulters should be recorded in the register by writing “DT” and the date of the tracing in the “remarks” column of the register
- Complete the health institution aggregation form (HIA 1) especially the laboratory in diagnostic centres.

Reporting form 1: Completed by District TB Control Officer and health institutions with diagnostic capacities in TB

TB Diagnoses		Age Group		
		Up to 12 years	Over 12 years	Total
New TB Extrapulmonary	TB.1			
New TB Pulmonary (sputum positive)	TB.2			
New TB Pulmonary (sputum negative)	TB.3			
New TB Relapse (old) (smear positive)	TB.4			
TB Relapse (old) (smear negative)	TB.5			
Total				

Reporting form 2: Completed by District TB Control Officer for Cases up to 12 years

Analysis _____ quarter ending 200_____ Smear Conversion at 2 months (2/12)

	Number enrolled	Smear negative	Smear positive	Smear not done	Died	Defaulted	Trans-out	Total
New smear positive								
Smear positive re-treatment								
Total								

Reporting form 3: Completed by District TB Control Officer for Cases over 12 Years

Cohort Analysis Smear Positive TB Cases registered in quarter ending 12-15 months earlier

RESULTS AT THE END OF 8 MONTHS OF TB TREATMENT								
	Number enrolled	Smear negative (cured-1)	Smear positive (treatment failure-2)	Smear not done (treatment completed-3)	Died	Defaulter	Trans-out	Total
New smear positive								
Smear positive re-treatment								
Total								

Note: Facilities which have laboratory capability to undertake these tests, should complete the TB cohort component, which is Part 3 of the disease aggregation form (HIA 1).

Table 6.6: How to Calculate Programme Performance Indicators

	Numerator	Denominator
TB Cure Rate:	The number of new sputum positive patients in a given period of time, who completed treatment and had at least 2 negative sputum smear results, one of which was at completion of treatment.	Total number of new smear positive cases registered for treatment during the same period
TB Failure Rate:	The number of new sputum positive patients in a given period of time, who still remain smear positive 5 or more months after the start of treatment.	Total number of new smear positive cases registered for treatment during the same period
TB Treatment Completion Rate:	The number of new sputum positive patients in a given period of time, who completed treatment with negative smears at the end of the initial phase but with no or only one negative sputum examination in the continuation phase, and none at the end of treatment.	Total number of new smear positive cases registered for treatment during the same period

Chapter 7

Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS)

Introduction

Human Immunodeficiency Virus (HIV) is the virus that causes the Acquired Immunodeficiency Syndrome (AIDS). The virus rapidly multiplies in the blood, stimulating the development of antibodies, hence a person is said to be antibody positive. Although the person may have no symptoms or signs of the disease, they can infect others. Risk of transmission is highest early in the infection and later on, once a person becomes symptomatic. With time, HIV destroys the body's immune system, leaving the body susceptible to infections that a healthy person would normally fight. At present there is no known cure, however there are drugs that can improve the quality of life of an individual and prolong life.

AIDS is a complex of different kinds of diseases in an individual whose immune system has been severely weakened by HIV.

The health sector is only one of the players caring for those infected by HIV/AIDS. It is essential that health centre workers find out what support services are available to their communities (home based care, support to orphans and vulnerable children, legal advice, etc.) so that they make informed referrals.

Policy Statements

- Treatment of TB and other opportunistic infections is free.
- Voluntary Counselling and Testing (VCT) is an integral part of HIV prevention and care.
- HIV positive (HIV +) mothers have the right to decide how they will feed their infants (breastfeeding or formula feeding).

Epidemiology

The first case of AIDS was diagnosed in 1984. HIV/AIDS is now Zambia's major developmental problem. It has a tremendous negative impact on the economy and on the ability of households to cope. The estimated prevalence rate in 1998 was 20 per cent, with more than 1 million people living with HIV/AIDS. AIDS is now a major contributor to under 5 mortality.

Factors Contributing to the Spread of HIV in Zambia

- **High prevalence levels of sexually transmitted infections (STIs)** – persons with STIs are 2-5 times more likely to become infected with HIV.
- **Multiple sexual partners** – increase the risk of contracting STIs and HIV.
- **Unprotected sex and low rates of condom use** – increase the risk of STIs and HIV infection.
- **Poverty and poor overall health** – put individuals at higher risk for high-risk sexual behaviour.
- **Low social and economic status of women** – contributes to their inability to negotiate for safer sex and makes them susceptible to engage high-risk sexual behaviour.
- **Urbanisation and mobility** – increase the spread of HIV, especially when sexual partners are separated for long periods.
- **Sexual activity at an early age** – the immaturity of the genital tract enhance the chances of trauma and transmission of HIV.
- **Cultural beliefs and practices** – such as dry sex, sexual cleansing, early onset of sexual activity such as early marriages, re-use of cutting instruments used for scarification, etc.
- **Transfusion of un-screened blood.**
- **Mother-to-child transmission** (especially at the time of delivery).
- **Re-use of unsterilised injection equipment** (needles, syringes, etc.).
- **Needle-stick** and other occupational exposures.

Stages of HIV Progression

1. Window Period

This is the period from the point of infection to the time one tests positive. In the window period the test result is negative. During this period, one may experience flu-like symptoms frequently after a few weeks to a few months from the point of infection. This happens because the body attempts to combat the first entry of HIV germs. The symptoms may last only up to two weeks.

2. Sero-conversion

This is when a person converts from HIV negative to HIV positive status. It is the time when antibodies first develop and can be detected in the blood. This period usually takes 2-4 weeks but can take up to 3

months. During this time there are no symptoms, but a person is highly infectious because the HIV is replicating quickly without being kept in check by antibodies.

3. Asymptomatic Sero-Positive Stage

This is the period from sero-conversion to the time one begins to manifest symptoms. There are no symptoms of the infection. This period varies from person to person, depending on the diet, health habits, the individual's attitude, and other factors that influence the immune system.

4. Symptomatic Stage

This is the stage when the immune system begins to deteriorate and some symptoms begin to manifest.

5. Full-blown AIDS

During this stage the immune system is weakened, and the body is unable to fight off nearly all infections. Multiple symptoms are a common feature during this stage.

Promotion

Key Messages on the Transmission of HIV

The most common *modes of transmission* in Zambia are person-to-person during sexual intercourse and mother-to-child. Other important modes of transmission include transfusion of contaminated blood and blood products, sharing of sharp instruments such as needles or razor blades during circumcision, tattooing, ear piercing, etc, and unsafe injection practices such as reusing un-sterile needles or syringes.

- HIV is **not transmitted through**:
 - Germs on hands
 - Food
 - Cups or utensils
 - Saliva
 - Coughing
 - Use of the same towels
 - Sharing toilets.

HIV is not spread in these ways because there is no contact with fresh blood, semen, or vaginal fluids, which have large concentrations of HIV.

- HIV cannot live for long outside the body. It prefers to live in warm, moist places. If blood, semen or vaginal fluid that is infected with HIV is left in the air to dry, *e.g.* on a cloth or bed sheets, the virus will no longer be alive and cannot infect someone else.
- HIV is killed by boiling or sterilisation with Jik.

Community Partnerships and HIV/AIDS

HIV/AIDS has a significant impact on all sectors. Health workers have a responsibility to be aware of HIV-related activities undertaken by other organisations, groups, or sectors in the community and to ensure effective co-ordination. The frontline health worker should:

- Identify popular or influential local leaders to work with
- Identify the HIV/AIDS needs of the community with all stakeholders at community level

Ensure you educate communities about HIV/AIDS, prevention of HIV including safe sex practices, and care for the affected, including orphans and persons living with AIDS (PLWAs).

Priority Interventions to Control the Spread and Mitigate the Impact of HIV/AIDS

- Information, education, and communication (IEC) for reducing risk behaviour (abstinence, being faithful to one partner, condom use).
- Voluntary Counselling and Testing (VCT).
- Youth-friendly health centres.
- Prevention and control of STIs (prompt identification and appropriate treatment).
- Reducing mother-to-child HIV transmission (family planning, anti-retroviral drugs, appropriate counselling, and support on breastfeeding and alternatives).
- Management of opportunistic infections, *e.g.* TB.
- Improved drug supply.
- Community based and family support for orphans and vulnerable children (OVC) and PLWAs.
- Promoting destigmatisation of HIV + persons and PLWAs, especially through the attitudes and behaviour of health workers.
- Counselling - peer education, spiritual and psycho-social support.
- Home based care (HBC), including advice on good nutrition, water, and sanitation.

Prevention

Counselling

- Counselling is a process that assists individuals to reach their own informed decisions about what they should do, or to come to terms with a problem that is facing them.
- Counsellors can also equip clients with the necessary skills such as assertiveness to enable them discuss sensitive issues with their spouses, children, relatives, and others.
- Counselling can be conducted on a one-to-one (person-centred) basis or in groups.
- Counsellors need training to develop their skills, hence health providers who have not had the opportunity for training in counselling should identify others nearby who can provide this service to those who need it. Trained counsellors may be health providers, teachers, church officials, or youths.
- Every health worker should have counselling skills. If you do not, liaise with the DHMT for counselling training.
- Patient overload may deter successful counselling of patients/clients. Other trained counsellors may assist to counsel patients/clients.

Voluntary Counselling and Testing (VCT)

- VCT services enable people to determine their own HIV status and to take measures to keep themselves healthy and reduce the risk of transmission of HIV to others.
- These services will be provided in a growing number of health centres over the coming years.
- If your health centre does not provide testing services, you can still give counselling and make referrals to a centre that does do testing, or make arrangements through the DHMT to have specimens collected and tested elsewhere.

Voluntary Counselling and Testing (VCT) Facts for Health Workers

- VCT is important in promoting behaviour change.
- VCT helps to maintain healthy lifestyles among those who test positive and thus enhance positive living.
- As a healthcare worker, make sure you know where VCT services are locally available, and make appropriate referrals.
- VCT services provided by the government and NGOs are open to all. Therefore, encourage children, youths, women, and men to have a test to know their HIV status.
- VCT is optional, not mandatory, and is confidential.

- Health workers should encourage HIV tests in specific circumstances such as:
 - *Individuals with STIs*
 - *Couples considering marriage*
 - *Couples considering having a child*
 - *Cases of sexual abuse*
 - *Patients with HIV-related signs and symptoms.*

Special Needs of Youth

Young people are at high risk of HIV infection. Many young people begin having sex as early as the ages of 12 to 15 (sometimes even earlier), and do not usually use condoms.

Young people are especially at risk because they:

- Tend to have limited access to information on HIV/AIDS (and STIs)
- Tend to think that HIV/AIDS does not affect them, that it is only the older people who are vulnerable
- Tend to be under pressure to exchange sex for money or goods than those older than them
- Have little power to negotiate whether they engage in sex or under what conditions (safer or less safe sex)
- Are vulnerable to incest or other forms of sexual abuse due to lack of power and information
- Often do not have the skills needed to avoid unwanted or unsafe sex.

Making Services Youth-Friendly

Youth have a right of access to services that are youth-friendly. Therefore, health workers need to ensure that youth can readily come to health facilities for information and services related to HIV/AIDS or reproductive health. Health workers have an obligation to:

- Treat young people with respect and maintain confidentiality
- Make young people feel welcome at the health centre
- Provide necessary information on sexual and reproductive health issues common to youth
- Ensure youth have access to information on safer sex practices and that those who need them have access to condoms
- Make referrals to life skills resources available in the community (in churches, etc.)
- Avoid judging or chastising young people who are sexually active

- Work with the neighbourhood health committees (NHCs) to determine the most appropriate youth sexual health promotion messages and approaches.

Mother-to-Child Transmission (MTCT) of HIV

In Zambia, the risk of an HIV + pregnant woman transmitting HIV to her infant is about 40%. Risk of transmission is increased when the mother has a higher concentration of HIV in the body. This is the case when:

- The mother is newly infected with HIV
- The mother is in an advanced stage of the disease.

MTCT is the transmission of HIV from an infected woman during pregnancy, delivery, or breastfeeding to a child. MTCT is by far the largest source of infection in children below the age of 15 years. There are 3 ways in which the baby may get infected:

- During pregnancy, (in utero): infection rate is about 21%
- During labour and delivery (intra-partum): infection rate is about 65%
- Through breastfeeding (post-natal): infection rate is about 14% (risk increases with duration of breastfeeding).

Factors that Contribute to MTCT

- Prolonged rupture of membranes of more than 4 hours.
- Intra-partum haemorrhage
- Micronutrient deficiency, such as Vitamin A.
- In breastfeeding mother - cracked nipples, mastitis, and breast abscesses.
- New maternal HIV infection during lactation.
- Oral infections in the breastfeeding baby, *e.g.* oral thrush.

It is your responsibility as a healthcare provider to:

- Encourage all pregnant women and their partners to be tested (referring to other facilities if necessary) because interventions are available to decrease risk of transmission for cases in which the woman is known to be HIV + (*described below*)
- Advise on available local community services
- Provide mothers with appropriate information on the risks/advantages associated with breastfeeding and formula-feeding and give support for the course of action they choose
- Manage opportunistic infections, in cases of symptomatic HIV illness (see appropriate sections in this chapter and in the chapters on TB and sexually transmitted infections)

- Make appropriate referrals, in cases of symptomatic HIV illness (specialist clinical services and community support services)
- Advise on safer sex in HIV-discordant couples (*i.e.* where one partner is HIV+ and the other is HIV negative)
- Provide family planning counselling to prevent new unwanted pregnancies in HIV+ women, and recommend dual protection
- Avoid procedures which can increase risk of transmission, such as amniocentesis and episiotomies
- If possible, provide nevirapine or zidovudine for HIV+ women and their babies (following approved protocols)
- If possible, offer or refer HIV+ pregnant women for caesarean section.

Infant Feeding Options for an HIV-Positive Mother

- Counsel mother on feeding options and support her in making an informed choice using the information given in the next section.
- HIV+ mothers risk transmitting the virus to their infants through breastfeeding. However, breastfeeding reduces risk of diarrhoeal and respiratory infections. Risks of HIV infection must be weighed against those associated with unsafe drinking water and inadequate or inconsistent supply of infant formula.
- For HIV+ women who choose breastfeeding, counsel them to exclusively breastfeed and to abruptly wean when the infant reaches about 6 months of age (this may somewhat reduce the risk of HIV transmission).
- For those who choose not to breastfeed, advise use of proper infant formula prepared with safe drinking water (cow's milk is not adequate).
- Ensure you are aware of what resources are available in your community and refer mothers accordingly.
- Ensure that child receives vitamin A and other micronutrient supplementation.

Birth to Six Months

During this period, milk in some form is essential for an infant. If not breastfed, an infant will need about

150mls of milk per kg of body weight each day.

Box 7.1: Milk Requirements

An infant weighing 5 kg needs:
150ml x 5kg = 750mls per day, which may be given as 5 feeds of 150mls per feed.

For mothers who decide to use breast milk substitutes, the health worker needs to:

- Ensure that families have some means for accurate measuring of both the water and the powdered or liquid milk
- Demonstrate to mothers and families how to mix breast milk substitutes accurately, and to ask them to show how they will prepare feeds to ensure that they can do this correctly.

Three different feeding methods can be used as described below.

1. Breast Milk Substitutes

a. Commercial Infant Formula

- Commercial infant formula is based on modified cow's milk or soy protein.
- It is closer in nutrient composition to breast milk, though it may lack some substances, such as long-chain essential fatty acids present in breast milk.
- It is usually adequately fortified with micronutrients, including iron.
- The formula is usually available as a powder to be reconstituted with water.
- The instructions on the tin for mixing should be followed exactly to ensure that it is not too concentrated or diluted. Over-concentration can overload the infant with salts and waste amino acids, which can be dangerous, and over-dilution can lead to malnutrition.
- Feeding an infant for six months requires on average 40 x 500 gm tins (44 x 450gm tins) of formula.
- Infants who are fed on commercial infant formula do not need complementary foods if they are gaining weight adequately.

Commercial infant formula could be considered as *an option by HIV+ women* when:

- The family has reliable access to sufficient formula for at least six months
- The family has the resources - water, fuel, utensils, skills, and time - to prepare it accurately and hygienically.

b. Home Prepared Formula

Home prepared formula can be made with:

- Modified animal milks
- Dried milk powder or evaporated milk.

Preparation

A preparation of formula with any of these types of milk involves:

- Modification to make it suitable for infants
- Taking care in preparation to avoid over-concentration or over-dilution
- Providing micronutrient supplements, as animal milks may provide insufficient iron or zinc, and may contain less Vitamin A, C, and folic acid
- If micronutrient supplements are unavailable, complementary foods rich in iron, zinc, vitamin A, and C, and folic acid should be introduced at four months of age.

Modified Animal Milk

- Cow's milk has more protein and a greater concentration of sodium, phosphorous, and other salts than breast milk.
- Dilution reduces the energy concentration, so sugar must be added.
- The milk, water, and sugar should be mixed in the following proportions and then boiled to make up 150ml of home prepared formula: 100ml of cow's milk with 50ml of boiled water and 10gm (2 teaspoons) of sugar.
- Feeding an infant for six months requires, on average, 92 litres of animal milk (500ml per day).
- Goat's milk is similar in composition to cow's milk and so needs to be modified in the same way. It is deficient in folic acid, which infants need to be given as a micronutrient supplement.
- Sheep and buffalo milk have more fat and energy than cow's milk. The protein content of sheep milk is very high. Using either for infants would, therefore, require more dilution than cow's milk in the following proportions: 50ml of milk with 50ml of water and 5gm of sugar.

Dried Milk, Powdered, or Evaporated Milk

- The full cream variety of dried milk powder or evaporated milk should be used.
- Normally, reconstitution involves adding a volume of boiled water to a measure of powdered or evaporated milk, as instructed on the container or packet.

- To make up a milk formula that is suitable for infants, the volume of water added needs to be increased by 50% and 10gm of sugar added for each 150ml of the feed. This is the equivalent of the recipe for the modification of cow's milk.

Home prepared formula could be considered as an option by HIV+ women when:

- Commercial infant formula is not available, or is too expensive for the family to buy and prepare
- The supply of animal milk or other milk is reliable and the family can afford it for at least six months
- The family has the resources to prepare it hygienically and can make the required modification accurately
- Micronutrient supplementation is possible.

c. Unmodified Cow's Milk

- During the first few months of life, feeding with unmodified cow's milk can cause serious problems, particularly if the infant becomes dehydrated.
- Infants need to be offered extra water (that has been boiled and cooled) and monitored carefully for dehydration if they have fever, respiratory infection, or diarrhoea.
- To ensure that the infant gets enough milk and that water does not displace milk, drinks of water should be offered after feeds.

Unmodified cow's milk could be considered as *an option by HIV+ women* when:

- Commercial infant formula is not available, or is too expensive for the family to buy and prepare
- The supply of cow's milk is reliable and the family can afford it for at least six months
- The family lacks the resources, time, and fuel to modify cow's milk to make home prepared formula
- Micronutrient supplementation is possible.

Note: As a health worker, ensure that you provide micronutrient supplementation when an infant is on home prepared formula.

2. Modified Breastfeeding

a. Early Cessation of Breastfeeding

- Early cessation of breastfeeding reduces the risk of HIV transmission by reducing the length of time for which an infant is exposed to HIV through breast milk.

- The optimum time for early cessation of breastfeeding is not known. It is advisable, however, that an HIV + woman stop breastfeeding as soon as she is able to prepare and give her infant adequate and hygienic replacement feeding.
- The most risky time for artificial feeding in environments with poor hygienic conditions is the first two months of life, and family circumstances will, therefore, determine when the mother is able to stop breastfeeding and start replacement feeding.
- Early cessation of breastfeeding is also advisable if an HIV + mother develops symptoms of AIDS.

Early cessation of breastfeeding could be considered as *an option by HIV + women* who:

- Find it difficult for social or cultural reasons to avoid breastfeeding completely
- Develop symptoms of AIDS during the breastfeeding period
- Can provide adequate replacement feeds, and can prepare and give these hygienically, only after their infants are a few months old.

b. Expressed and Heat-Treated Breast Milk

- Heat treatment of expressed breast milk from an HIV + mother kills the virus in the breast milk.
- Heat-treated breast milk is nutritionally superior to other milks, but heat treatment reduces the levels of the anti-infective factors.
- To pasteurise the milk in hospital, it should be heated to 62.5°C for 30 minutes (*the Holder pasteurisation method*). At home, it can be boiled and then cooled immediately by putting it in a refrigerator or standing the container in cold water.
- To minimise contamination, heat-treated breast milk should be put in a sterilised or very clean container and kept in a refrigerator or in a cool place before and after heat treatment.

Expressing and heat-treating breast milk is time consuming and women may not find it a practical option for long-term infant feeding at home. However, they need to be motivated and encouraged to set aside time and resources for this option.

3. Wet Nursing

In some parts of Zambia, there is a tradition of wet-nursing in the family context, where a relative breastfeeds an infant. This has a risk of HIV transmission to the infant through breastfeeding if the wet-nurse is HIV-infected. There is also a potential risk of transmission of HIV from the infant to the wet-nurse, especially if she has cracked nipples.

Wet-nursing should be considered only when:

- A potential wet-nurse is informed of her risk of acquiring HIV from an infant of an HIV+ mother
- The wet-nurse has been offered HIV counselling and testing, voluntarily takes a test, and is found to be HIV-negative
- The wet-nurse is provided with the information and is able to practise safer sex to ensure that she remains HIV-negative while she is breastfeeding the infant
- Wet-nursing takes place in a family context and there is no payment involved
- The wet-nurse can breastfeed the infant as frequently and for as long as needed
- The wet-nurse has access to breastfeeding support to prevent and treat breastfeeding problems such as cracked nipples.

Six Months to Two Years

After the age of six months, breast milk should normally be an important component of the diet, providing up to half or more of nutritional requirements between the age of 6 and 12 months, and up to one-third between the age of 12 and 24 months.

- An infant who is not breastfed needs replacement feeding, which provides all the required nutrients.
- Replacement feeding should preferably continue to include a suitable breast milk substitute. If not available, replacement feeding should be with appropriately prepared family foods, which are further enriched with protein, energy, and micronutrients, and given five times a day.
- Complementary foods made from appropriately prepared and nutrient-enriched family foods should be given three times a day. If possible, other milk products, such as unmodified animal milk, dried skimmed milk, or yoghurt should be included as a source of protein and calcium; other animal products such as meat, liver, and fish should be given as sources of iron and zinc; and fruit and vegetables should be given to provide vitamins, especially vitamin A and C. Micronutrient supplements should be given if available.

Note: Health workers need to discuss with families how to prepare an adequate diet from the local foods, and how to make sure that the infant eats enough.

Hygienic Preparation of Food

As a health worker, you need to know what is required to prepare and give feeds, and to be able to teach mothers and families how to do this.

In order to minimise the risks of contamination and bacterial infection in preparation of breast milk substitutes, you need to:

- Teach mothers and families to wash their hands with soap and water before preparing feeds
- Teach mothers and families to wash the feeding and mixing utensils thoroughly or boil them to sterilise them before preparing the feed and feeding the infant
- Ask mothers to demonstrate preparation of a feed and watch them to ensure that they can do it hygienically
- Teach mothers and families the following *basic principles*:
 - *Wash their hands with soap and water before preparing and cooking food or feeding a child*
 - *Boil water for preparing the child's food and any necessary drinks*
 - *Cook food thoroughly until it bubbles*
 - *Avoid storing cooked food or, if this is not feasible, store in a refrigerator or a cool place and reheat thoroughly before giving to the infant*
 - *Wash fruits and vegetables with water that has been boiled. Peel them, if possible, or cook thoroughly before giving to infants*
 - *Avoid feeding infants with a bottle; use an open cup*
 - *Give unfinished formula to an older child, rather than keep it for the next feed*
 - *Wash the cup or bowl for infant's food thoroughly with soap and water or boil it. Bacteria breed in food that sticks to feeding vessels and utensils*
 - *Store food and water in clean covered containers and protect from rodents, insects, and other animals*
 - *Keep food preparation surfaces clean.*

Feeding the Infant

Train mothers and families how to cup feed (*see Box 7.2 below*), and explain that it is preferable to feed infants this way because:

- Cups are safer, as they are easier to clean with soap and water than bottles
- Cups are less likely than bottles to be carried around for a long time giving bacteria the opportunity to multiply
- Cup feeding requires the mother or other caregiver to hold and have more contact with the infant, providing more psychosocial stimulation than bottle feeding

- Cup feeding is better than with a cup and spoon, because spoon feeding takes longer and the mother may stop before the infant has had enough
- Feeding bottles are not the preferred option
- Discourage the use of feeding bottles and artificial teats because:
 - *Bottle feeding increases the risk of diarrhoea, dental disease, and otitis media*
 - *Bottle feeding increases the risk that the infant will receive inadequate stimulation and attention during feeds*
 - *Bottles and teats need to be thoroughly cleaned with a brush and then boiled to sterilise them, and this take time and fuel.*

Box 7.2: How to Feed an Infant with a Cup

1. Hold the infant sitting upright or semi-upright on your lap.
2. Hold the cup of milk to the infant's lips.
3. Tip the cup so that the milk just reaches the infant's lips. The cup rests lightly on the infant's lower lip, and the edges of the cup touch the outer part of the infant's upper lip.
4. The infant becomes alert and opens his or her mouth and eyes. A low-birth-weight infant will start to take the milk into his or her mouth with the tongue. A full term or older infant sucks the milk, spilling some of it.
5. **Do not pour** the milk into the infant's mouth. Just hold the cup to the infant's lips and let him or her take it.
6. When the infant has had enough, s/he will close his or her mouth and will not take any more. If the infant has not taken the calculated amount, s/he may take more next time, or the mother needs to feed more often.
7. Measure the infant's intake over 24 hours, not just at each feed.

Prevention of HIV Transmission in Health Care Settings

Transmission of HIV due to exposure to blood in a health facility may occur in 3 ways:

- Exposure of a health worker to the blood of an infected patient (through needle-stick injuries)
- Exposure of patients to the blood of other patients with HIV infection (*e.g.* through re-use of non-sterilised equipment)
- Exposure of patient to the blood of an infected health worker.

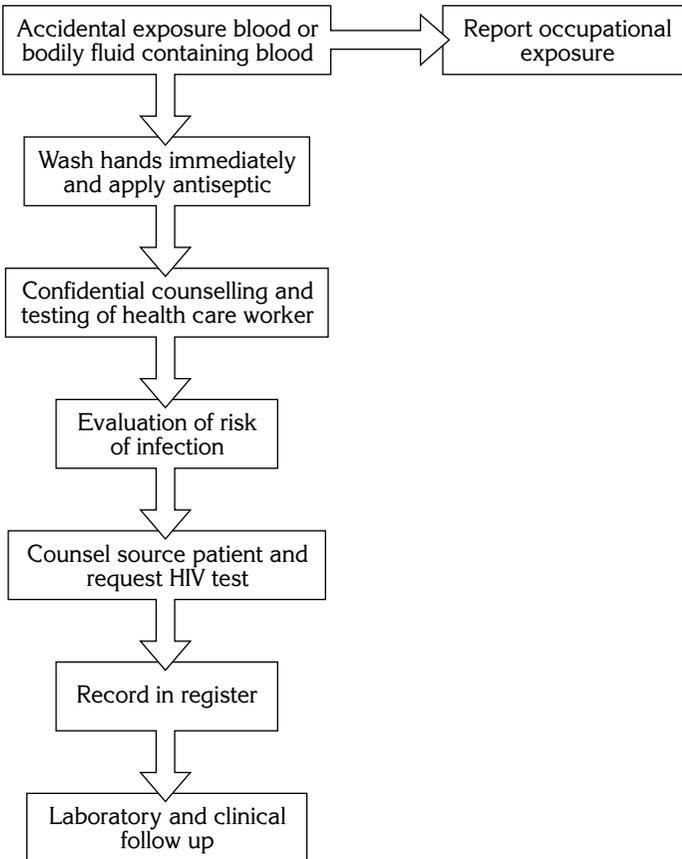
Ensure application of universal precautions as stipulated in *Chapter 1: Infection Prevention*.

Preventive Treatment in the Event of Rape or Incest

Health workers have an obligation to offer post-exposure *antibiotic* prophylaxis against STIs, following the protocol given in *Chapter 8: Sexually Transmitted Infections*.

Post-exposure anti-retroviral treatment may be given to reduce risk of HIV infection after assessment of risk by the doctor. Appropriate protocols should be followed as shown in Box 7.3 below.

Box 7.3: Procedures in Case of Occupational HIV Exposure



Diagnosis

Diagnosis of HIV infection is by an HIV antibody test; diagnosis of AIDS is made using the WHO clinical case definitions for adults and children.

In adults: The WHO clinical case definition for AIDS in an adult is: the existence of *at least two of the major signs listed in Table 7.1 below, together with at least one minor sign*, in the absence of diabetes, malignancy, or other diseases known to cause immunosuppression. Ideally, a clinical diagnosis of AIDS should be confirmed by an HIV test.

Presence of any of the following opportunistic infections in patients who have tested positive for HIV satisfies diagnostic criteria for AIDS:

- Cryptococcal meningitis
- Pharyngeal/oesophageal candidiasis
- Generalised extensive Kaposi's sarcoma
- Extra-nodal non-Hodgkins lymphoma.

Table 7.1: AIDS Clinical Signs in Adults

Major Signs	Minor Signs
<ul style="list-style-type: none"> - Profound weight loss - Diarrhoea, daily or intermittent >1 month - Fever, continuous or intermittent >1 month - Repeated or multi-focal abscesses 	<ul style="list-style-type: none"> - Cough > 1 month - Generalised pruritic dermatitis - Multidermatomal Herpes zoster - Atypical pulmonary tuberculosis - Extra-pulmonary tuberculosis - Dementia - Non-genital molluscum contagiosum - Severe drug reaction - Hairy leucoplakia - Unexplained nerve palsies, or paraplegia, or nerve palsies of acute onset - Recurrent oral candidiasis

In children: The WHO clinical case definition of paediatric AIDS is: the existence of *at least two major signs and two minor signs*, as indicated in Table 7.2 below:

Table 7.2: AIDS Clinical Signs in Children

Major Signs	Minor Signs
<ul style="list-style-type: none"> - Repeated respiratory infection (otitis media, pharyngitis, pulmonary infections) - Prolonged fever > 1 month - Recurrent oropharyngeal candidiasis 	<ul style="list-style-type: none"> - Generalised lymphadenopathy - Chronic recurrent diarrhoea - Weight loss or failure to grow - Persistent cough - Extra-pulmonary or extensive TB - Confirmed maternal HIV infection - Skin conditions (generalised eczema, papular dermatoses) - Chronic parotitis

The above definition is useful for patients above 3 months of age. For HIV/AIDS in neonates and infants below 3 months of age, the following features should alert the health worker to the possibility of HIV infection:

- Maternal HIV infection
- Failure to thrive
- Recurrent diarrhoea
- Repeated major infections (septicaemia, etc.)
- Prolonged fever
- Recurrent oropharyngeal candidiasis
- Pulmonary or extra-pulmonary tuberculosis
- Hemolytic anaemia
- Necrotising fasciitis
- Syphilis in the newborn, along with other intrauterine infections
- Diarrhoea.

Note: In infants and children below 18 months, HIV antibody testing may simply represent transfer of antibodies from mother to child. The HIV results should be interpreted with caution and in relation to symptoms in the infant.

Management

Key Points to Consider in Care and Support

- The health worker will need the support of the community (community based organisations or support groups, community based volunteers, or individual community members) in the management of HIV/AIDS. It is also important to know and keep an inventory of locally available community services.
- Ensure that the patient's HIV results are kept confidential.
- Give psychological support by being available and answering questions whenever possible.
- For questions and issues that cannot be handled at the health centre, refer the patient or family to appropriate service providers, especially home based care, counselling services, peer support group, and religious groups.
- Exhibit a hopeful and caring attitude to the patient, *i.e.* provide care with empathy.
- Ensure that the patient is kept clean and comfortable.
- Instruct the patient and family in basic hygiene and safe drinking water.
- Provide caregivers with food supplements for AIDS patients where available, otherwise advise on appropriate foods for positive living (refer to the booklet "Food for people living with HIV/AIDS" published by the Network of Zambian people living with HIV/AIDS or other similar books).
- Advise patients and caregivers to give liquids to patients with diarrhoea and with signs of dehydration, or who are losing significant quantities of body fluids. In a home environment, locally available fluids such as Mazoe, juices, weak tea, or sugar and salt solution (ORS) should be given.
- Encourage patients with diarrhoea to continue taking what solid foods they can tolerate.
- Advise patients and caregivers concerning household infection control measures and procedures, with particular attention to hand washing (with soap and water). Razors should not be shared. It is not necessary to wear gloves when attending to an AIDS patient, unless the patient has open sores.
- Provide continuous encouragement and support to caregivers, and at times also counselling, to help them cope with the burden of care.

Clinical Care in Adults

Table 7.3: Management of Common HIV-Related Disease Conditions in Adults

Disease	Action Taken
<p><i>Common skin conditions</i></p> <ul style="list-style-type: none"> - Generalised pruritic eruption - Eczemas - Superficial fungal infections 	Calamine lotion, antihistamines, Whitfield ointment, 1% hydrocortisone cream or ointment
Non-extensive warts	Cauterisation, if available
Molluscum contagiosum	Leave alone, or prick with needle and touch with phenol
Seborrheic dermatitis	Whitfield ointment, topical Nystatin with 1% hydrocortisone cream, antifungal shampoos where available
<p><i>Common oral conditions</i></p> <p>Non-extensive recurrent oral, pharyngeal or oesophageal candidiasis</p>	Nystatin tablets 500,000 units q.i.d. (<i>drops for children</i>)
Gingivitis/dental abscesses	Oral metronidazole 400mg t.i.d. and/or penicillin V 500mg q.i.d. x 7 days
Hairy leucoplakia	No treatment needed
Aphthous ulcers	Tetracycline/corticosteroid oral rinses, where available
Non-severe chronic diarrhoea	Rehydrate, trials of treatment with cotrimozazole and/or metronidazole. Refer if no improvement after 5 days treatment
STI	See Chapter 8: Sexually Transmitted Infections
Malaria	See Chapter 2: Malaria
Tuberculosis	See Chapter 6: Tuberculosis
<p>Cryptococcal meningitis</p> <p>Generalised Kaposi's sarcoma</p> <p>Extra-nodal non-Hodgkin's lymphoma</p> <p>Pneumocistis carinii pneumonia (PCP)</p> <p>Severe drug reactions</p> <p>Extensive warts</p> <p>Neurological disorders (<i>e.g.</i> paralysis/paraplegia or nerve palsies of acute onset and peripheral neuropathy)</p> <p>Herpes zoster (multidermatomal or involving the eye)</p> <p>Multiple repeated focal abscesses and other extensive mucocutaneous conditions.</p>	Provide support and refer

Treatment with Anti-Retroviral Drugs

There are now anti-retroviral drugs (ARVs) available that suppress the multiplication of HIV and therefore slow progression of the disease, and improve the quality of life for people living with HIV/AIDS. They can be effective. A health worker may come in contact with a person on these drugs. The health worker's role is to help the patient adhere to the prescribed regimen and monitor for adverse effects. Commonly seen adverse effects include:

- Nausea, vomiting, or diarrhoea
- Pruritus or skin rash
- Anaemia
- Peripheral neuropathy.

Clinical Care in Children

- Manage the following initially at health centre:
 - Diarrhoea (see Chapter 4: The Sick Child)
 - Fever (see Chapter 4: The Sick Child)
 - Oral candidiasis (thrush) (see Chapter 9: Common Medical and Surgical Conditions)
 - Other minor illnesses (check treatment guidelines in Chapter 9: Common Medical and Surgical Conditions).
- Recommend to the mother/parent or guardian to:
 - Continue breastfeeding (as long as the mother is well)
 - Have the baby fully immunised
 - Take the infant for under 5 clinic
 - Give the baby frequent nutritious meals and snacks
 - Have all infections treated early
 - Avoid scarification with un-sterile instruments.

Home Based Care for the Chronically Ill

Home Based Care¹ refers to care given to the chronically ill, in their own homes by health workers, or by volunteer community members (ideally, supported by health workers/counsellors).

¹ Some organisations use the term "Home Care" rather than "Home Based Care".

Home Based Care:

- Provides continuous quality care (emotional, spiritual, social support, etc.) for the chronically ill as close to the family as possible
- Supports families and communities that are already caring for the chronically ill
- Helps prevent further HIV transmission.

There are two models of home based care programmes:

1. *Hospital/health centre initiated outreach programmes*, reaching out to communities and integrating into community activities. For such programmes to be most effective, they need to ensure that the community takes up ownership of the programme.
2. *Community-initiated programmes*, often started by religious groups, NGOs, or CBOs. The health worker should support these programmes when conducting outreach activities.

Emphasis must be placed on developing and supporting *community based initiatives* to meet the demand. In all these approaches, one must ensure involvement by community based volunteers providing direct care and support, and direction to family members. Community based initiatives have tended to be more effective than institutionally based programmes at developing local capabilities. This has been through training efforts and co-ordinating strategies, such as integration of care services with primary health care, maternal and child health, and TB programmes.

Referral System

- A home based care programme should have a referral system in place, to enable it to refer clients requiring specialised and critical care to health centres or hospital for treatment and other medical advice.
- Likewise, health centres or hospitals will refer clients to HBC for continued care at home.

Prevention of HIV Transmission in HBC Settings

If a member of the community has accidental exposure to blood or body fluids when caring for an HIV infected person, they should report to their nearest health centre and the protocol outlined in Box 7.3 should be followed.

Documentation Required for HBC Programme

To contribute to the quality of supervision (and therefore the quality of the services provided) organisations running HBC programmes should document their work using the tools listed below:

- Client register
- Client assessment forms
- Inventory of HBC kits and equipment
- HBC diary for volunteers
- Monthly reports
- Minutes of meetings held with volunteers and community members.

You may also refer to *Guidelines for Management and Care for HIV/AIDS* published by the National AIDS Council.

Chapter 8

Sexually Transmitted Infections (Other than HIV)

Introduction

Epidemiology

Sexually transmitted infections (STIs) are a major public health problem in Zambia. About 10% of adult outpatient visits in Zambia are STI-related. Surveys in antenatal clinics have shown a high prevalence of syphilis (10%-15%) in expectant mothers. The prevalence is also high among young adults and adolescents.

However, the full extent of the STI problem is hidden. Most people with STIs seek treatment from informal health care providers, such as traditional healers or drug vendors and are therefore not captured in the official information system. In addition, there is growing antibiotic resistance. More than half of the gonorrhoea strains are now resistant to penicillin. Chancroid is also becoming resistant to most antibiotics including cotrimoxazole, which used to be the drug of first choice. Most STIs in women are asymptomatic and therefore case finding and identification is critical to the control of STIs.

Policy Statements

- Diagnosis and treatment of STIs is free.
- Identification and treatment of contacts is mandatory.
- All pregnant women are to be screened for syphilis (RPR) three times during pregnancy (1st, 2nd, and 3rd trimesters).
- All newborns are to be given tetracycline eye ointment at birth.

STIs and their Impact

Transmission of STIs

Most STIs are transmitted from an infected person to another through unprotected sexual intercourse. A pregnant woman with an STI can transmit to her child during pregnancy, delivery, or breastfeeding.

Common STIs

- Gonorrhoea
- Herpes genitalis
- Syphilis
- Chancroid
- Chlamydia
- Trichomonas vaginalis
- Lymphogranuloma venereum (LGV)
- Genital warts
- Pelvic inflammatory disease (PID)
- Hepatitis
- Pubic lice
- HIV

Bacterial vaginosis and candidiasis are other reproductive tract infections that can be sexually transmitted.

Effects of STIs

Health Related:

- High mortality and morbidity, especially in women between 15-45 years of age
- Urethral strictures in men
- Premature deaths
- Pelvic inflammatory diseases (PID)
- Mental illness (*e.g.* in connection with secondary/tertiary syphilis)
- Facilitates transmission of HIV
- Cardiovascular system complications
- Ectopic pregnancy
- Cancer of the penis/cervix
- Pneumonitis
- Reiter's syndrome
- Blindness
- Infertility
- Abortion, still birth, low birth weight, congenital syphilis, and ophthalmia neonatorum.

Social Impact:

- Divorce
- Societal stigma, etc.

Economic Impact:

- High cost of diagnostics and treatment
- Loss of human resources due to death
- Loss of income due to illness.

STIs and HIV Transmission

Sexually transmitted infections increase the risk of sexual transmission of HIV by increasing infectiousness and susceptibility. However, early detection and treatment of STIs reduce the spread of sexually transmitted HIV.

Promotion

The health worker has a responsibility to:

- Promote and reinforce safer sexual practices (abstinence, faithfulness to one partner, condom use (*see Box 8.1: ABC*))
- In a culturally appropriate way, correct misconceptions and provide information about STIs, how STIs are transmitted, consequences of STIs, and the importance of early and appropriate treatment
- Educate the community on STIs to ensure that they know how to avoid them, how to recognise them, the importance of seeking immediate treatment by a trained health provider, the dangers of not getting this treatment, and the importance of partner referral and treatment. This education should be done especially for young people in schools.

Box 8.1: ABCs of Safe Sex Practices

Abstinence from sex. The only guaranteed protection.

Be faithful to one partner.

Consistently use condoms.

Prevention

The health worker should take the following actions to assist in the prevention of STIs:

- Organise STI management to allow for privacy and courteous, sympathetic care
- Reinforce community educational efforts at the health centre
- Ensure early diagnosis and treatment of STIs and

- compliance with treatment
- Notify and screen sexual partners for STI infection, counsel, and treat accordingly
- Screen for and treat maternal syphilis
- Ensure confidentiality
- Provide ocular prophylaxis at birth against ophthalmia neonatorum (plus early diagnosis and treatment)
- Screen for and treat gonococcal infection among antenatal and family planning clients, where laboratory support is available
- Advise patients on protection from future STIs
- Educate the community and patients against the dangers of getting treatment from sources other than a health facility or registered pharmacy, and on the use of antibiotics without proper diagnosis and prescription.

Box 8.2 below provides guidance on how to communicate effectively on STI prevention.

Box 8.2: The 5 Cs of Good STI Communication

Counselling	On the dangers of STIs, the importance of having only one sexual partner, the process of STI care, and the link between STIs and HIV infection.
Confidentiality	Privacy is essential for effective counselling and STI management. Organise the consulting area to permit confidential discussion. Information regarding the patient should never be communicated to other persons without the consent of the patient.
Compliance with Treatment	Emphasise the dangers of defaulting whilst on treatment.
Contacts	Encourage patients to bring all sexual contacts (symptomatic or not) for treatment.
Condoms	Condoms should be strongly promoted for those who choose not to abstain from sexual intercourse. Even persons with a single sexual partner will benefit from condoms as one partner might be infected and not know it.

Note: People who come to the health centre suspecting they have an STI are often anxious. At times, patients will complain of symptoms other than the real ones, out of embarrassment. Be sensitive to this and direct your questions and advice in a polite manner.

Management

Syndromic Approach

In settings with adequate laboratory support, it is possible to treat based on the specific causative agents. This results in better targeting of treatment. However, in many health care settings, laboratory support is not available and clinicians must rely on signs and symptoms alone to arrive at a diagnosis. In this case, the health worker can generally identify only syndromes, but cannot reach a specific etiologic diagnosis.

The syndromic approach involves identifying constellations of STI symptoms and signs in order to categorise by groups of possible etiologic cause, and then provide treatment most likely to cure the causative infection.

Each syndrome is managed using a specific algorithm/flow chart. The algorithm includes history taking, physical examination of the patient (in some cases supplemented by other clinical diagnostic procedures), making a decision on diagnosis, and treatment.

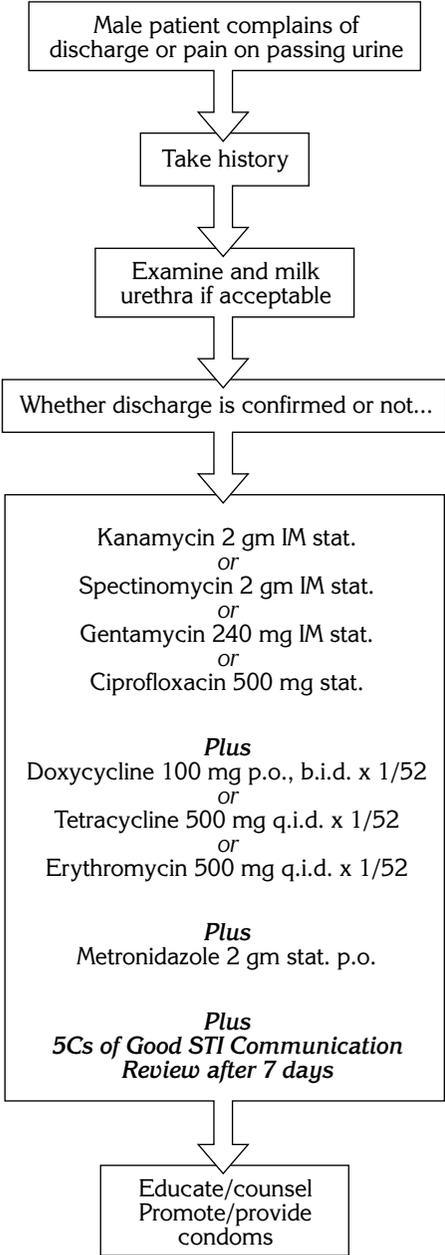
Common STI syndromic case definitions include:

1. **Genital ulcer syndrome – non-vesicular:** Ulcers can be found on penis, scrotum, labia, and vagina, with or without inguinal lymphadenopathy. Usually caused by syphilis, chancroid, lymphogranuloma venereum, granuloma inguinale, and atypical cases of genital herpes
2. **Genital ulcer syndrome – vesicular:** This syndrome is caused by genital herpes simplex virus (HSV) infection. Lesions are usually on anal region or genitalia
3. **Urethral discharge syndrome in men** (with or without dysuria): The syndrome is commonly caused by *Neisseria gonorrhoeae* and/or *Chlamydia trachomatis*. Other infections include *Trichomonas vaginalis*, *Ureaplasma urealyticum* and *Mycoplasma* species
4. **Vaginal discharge syndrome:** Abnormal discharge seen by the amount, colour, or odour with or without lower abdominal pain. The syndrome is commonly caused by bacterial vaginosis, vulvovaginal candidiasis and trichomoniasis; it is less frequently caused by gonococcal or chlamydial infection
5. **Lower abdomen pain in women:** May have symptoms of lower abdominal pain and/or pain during sexual intercourse with vaginal discharge, lower abdominal tenderness on palpation, or temperature more than 38° C. May be caused by gonococcal, or chlamydial infection. Can also be caused by appendicitis, ruptured ectopic pregnancy, and other gynaecologic conditions

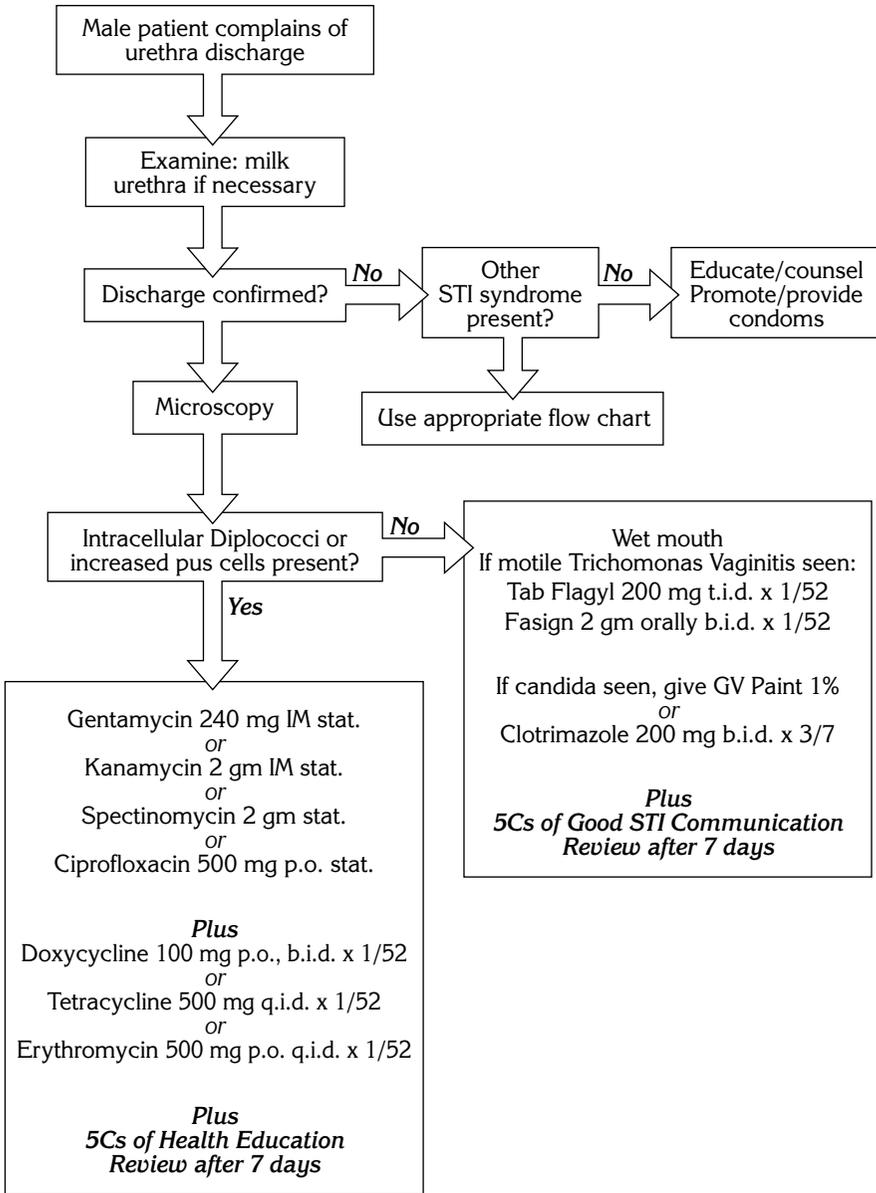
6. **Pain in the scrotum:** Symptoms include pain, swelling, redness, oedema, urethral discharge, and dysuria
7. **Inguinal buboes:** (Swelling in the groin) caused by lymphogranuloma venerium, chancroid. Signs and symptoms include pain and swelling
8. **Growths/warts:** May be due to syphilis or genital warts
9. **Congenital STI syndromes:**
 - a) *Congenital Syphilis*
 - b) *Ophthalmia Neonatorum*
 - c) *Perinatal HIV/AIDS (refer to the Mother-to-Child Transmission section of Chapter 7: HIV/AIDS).*

Algorithms for the symptomatic diagnosis and treatment of STIs are given in the following pages.

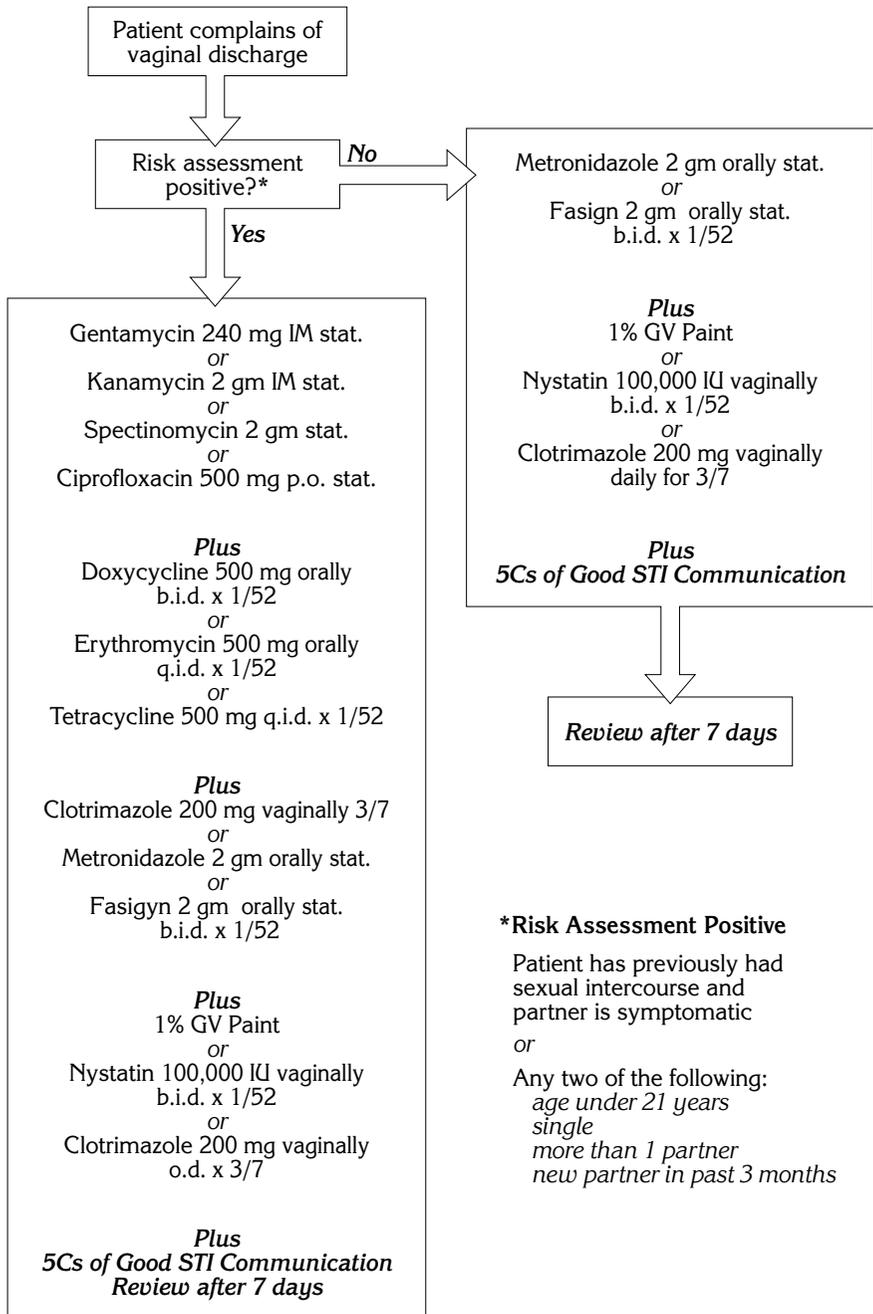
Flowchart 8.1: Male Urethral Discharge (no microscope)



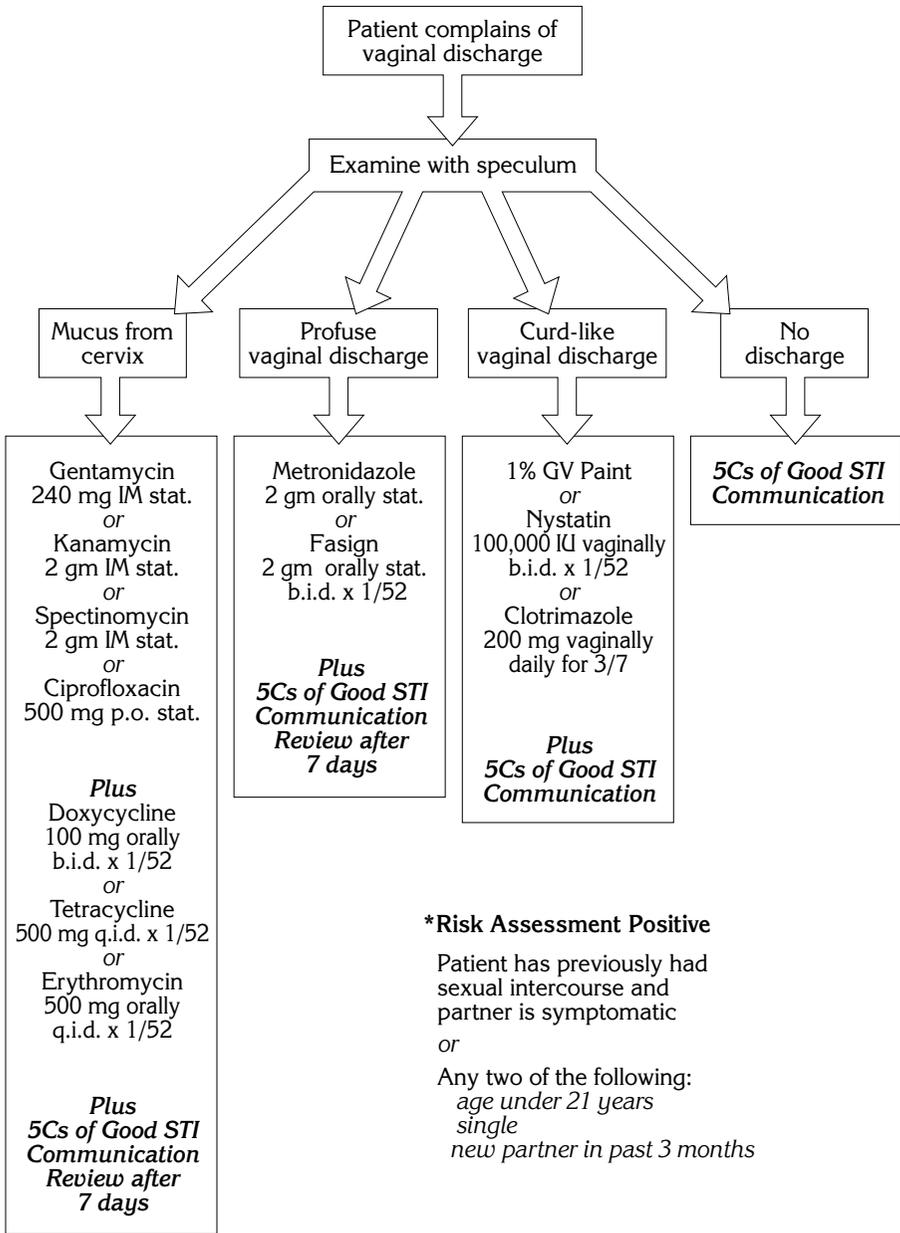
Flowchart 8.2: Male Urethral Discharge (microscope available)



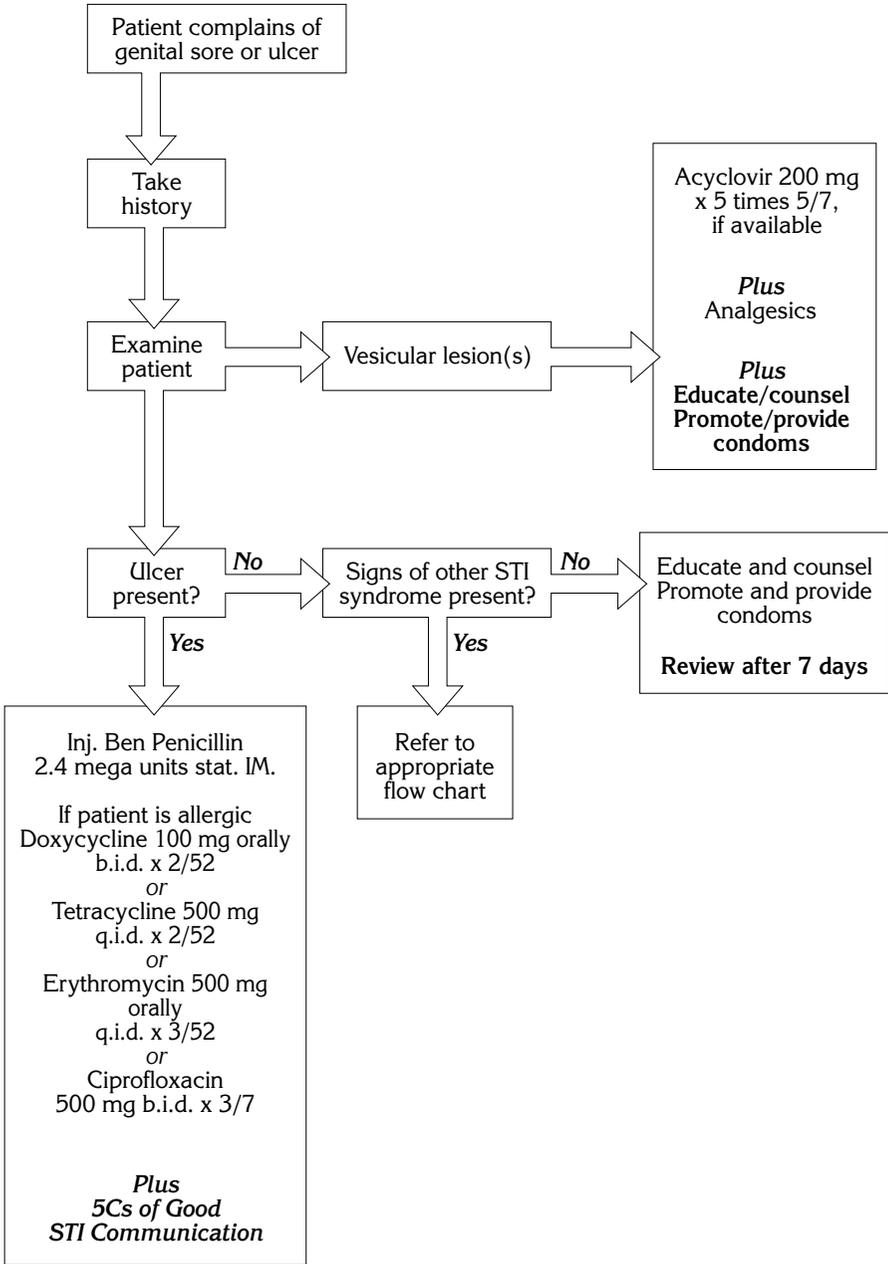
Flowchart 8.3: Vaginal Discharge (with no speculum)



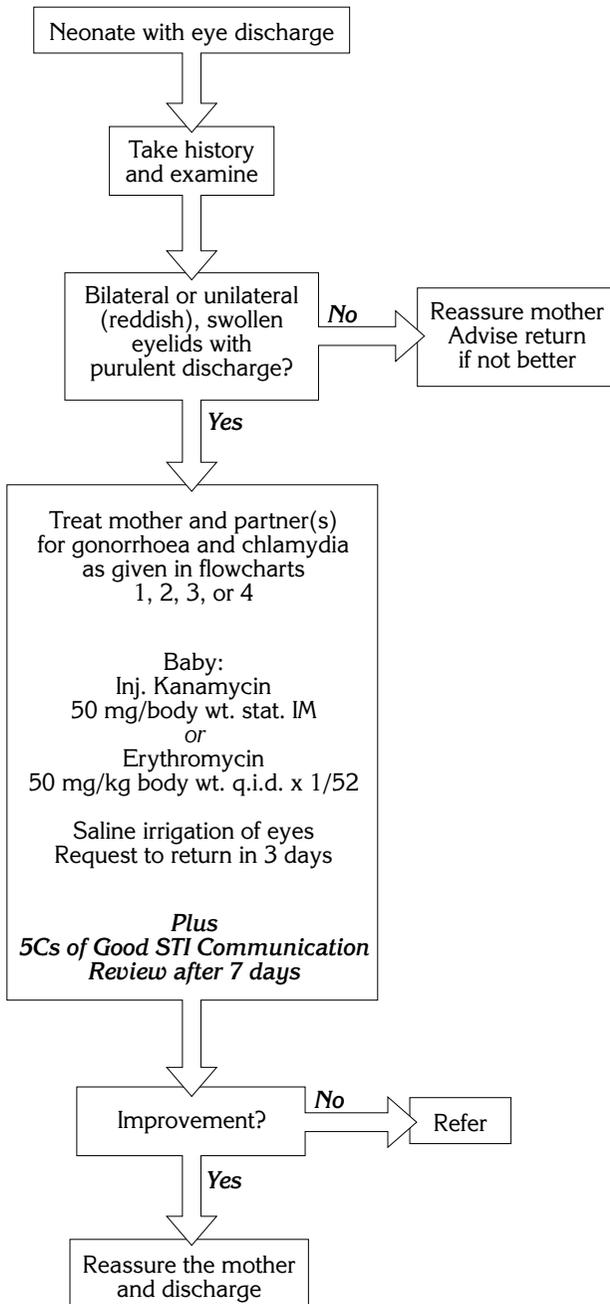
Flowchart 8.4: Vaginal Discharge (with speculum or vaginal examination)



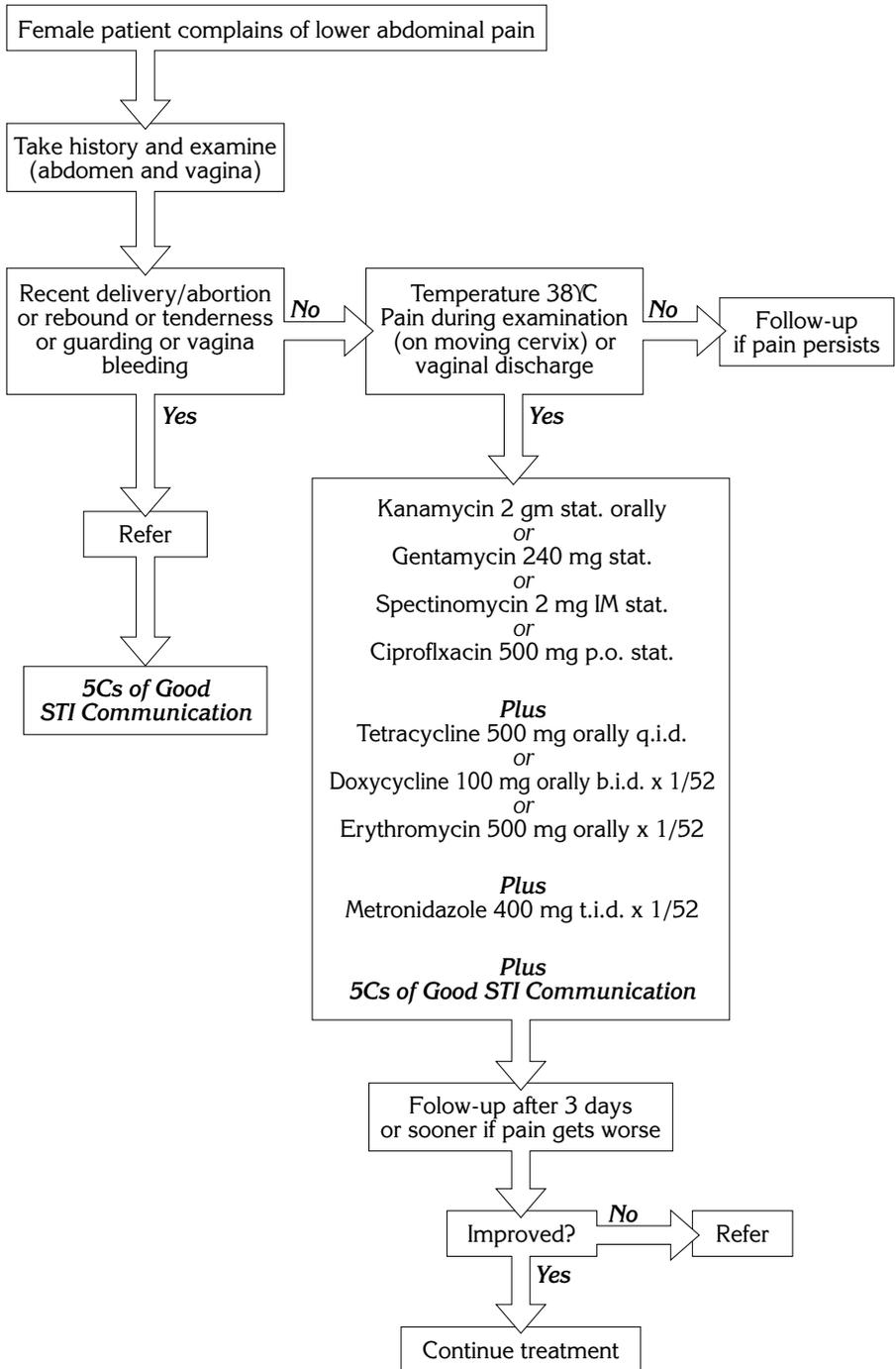
Flowchart 8.5: Genital Ulcers



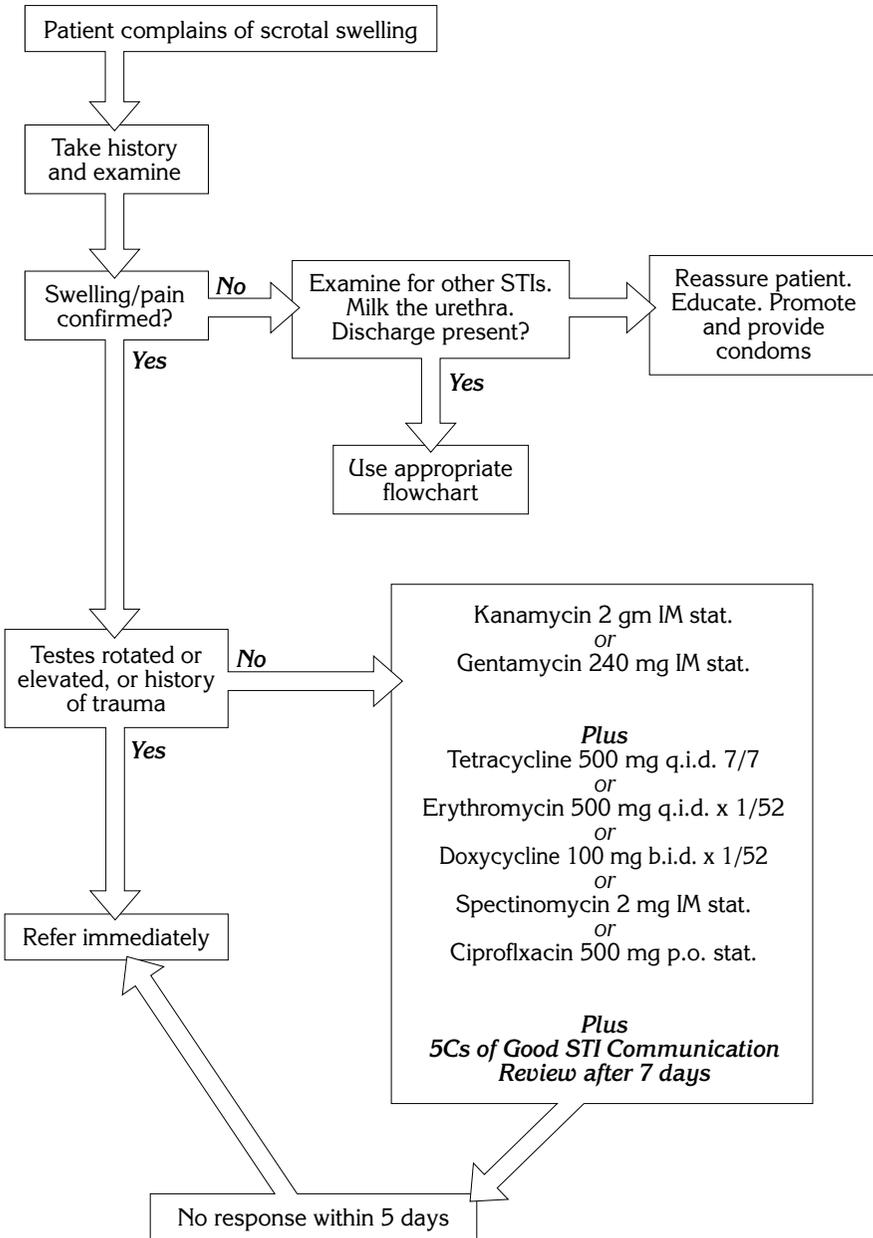
Flowchart 8.6: Neonatal Conjunctivitis



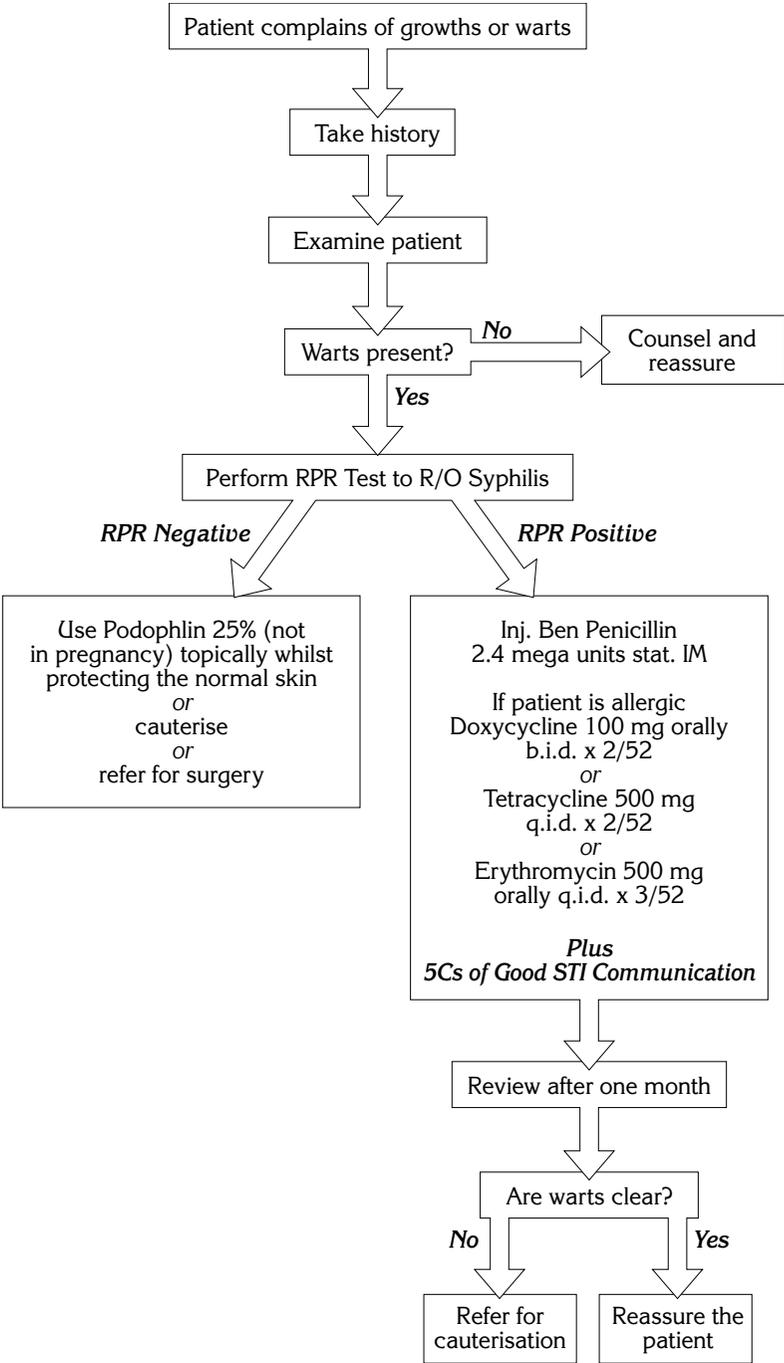
Flowchart 8.7: Female Lower Abdominal Pain



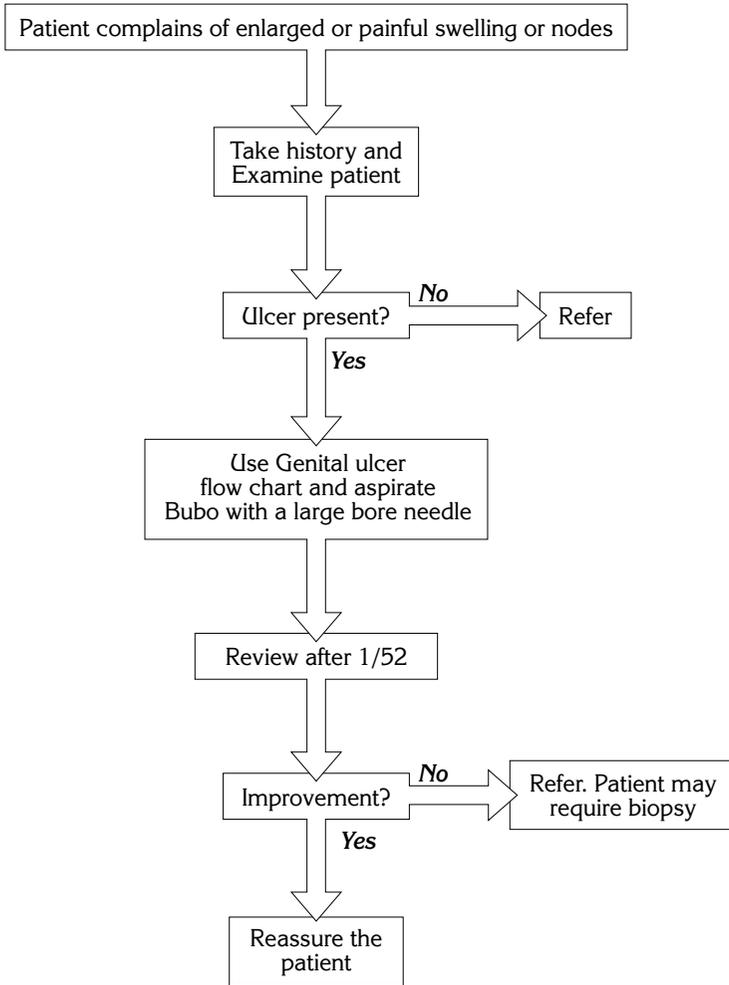
Flowchart 8.8: Scrotal Swelling



Flowchart 8.9: Growths and Warts



Flowchart 8.10: Inguinal Bubo



STIs in Pregnancy

STIs can be transmitted from an infected pregnant mother to her unborn baby, via blood or direct contact when the baby is passing through the genital tract resulting in the following complications:

- Spontaneous abortion
- Still birth
- Prematurity/low birth weight.

Congenital Syndromes

Congenital Syphilis

Occurs in approximately 1/1000 of newborns of pregnant women with untreated syphilis. Since most newborns and infected children are initially asymptomatic, diagnosis at birth is difficult and is underestimated in most cases.

There are 2 types of clinical syndromes:

1. Early Congenital Syphilis

Presentation within the first 2 years of life. Signs and symptoms include snuffles, palmar and plantar bullae, splenomegaly, pallor, joint swelling with or without pseudoparalysis, and cutaneous syphilis. These usually begin to appear between the 3rd and 8th week of life.

2. Late Congenital Syphilis – presentation after 2 years.

Treatment for Congenital Syphilis:
Procaine penicillin 50,000U/kg IM daily for 10 days.

Ophthalmia Neonatorum

A purulent conjunctivitis in infants younger than 30 days old.

Presentation is usually within the first 14 days of life. Symptoms include swollen eyelids, redness of the eyes, purulent discharge. The causes are many, common ones include *Neisseria gonorrhoea* and *Chlamydia trachomatis*. A newborn acquires the infection at delivery during passage through the infected birth canal. For treatment see *Flowchart 8.6*.

STIs in Children

1. Vaginal Discharge

Where girls aged *between 8-14 years* present with a vaginal discharge, management should be as follows:

Give: Spectinomycin 40mg/kg stat. or Gentamycin 40mg/kg stat.

or: Kanamycin 40mg/kg stat. plus Doxycycline 100mg b.i.d. x 1/52s

or: Erythromycin 250mg q.i.d. x 2/52 plus Metronidazole
200mg t.i.d. x 1/52 plus Nystatin Vaginal pessaries
100 000 IU b.i.d. x 1/52

or: 1% GV paint b.i.d. x 1/52.

Where girls aged *under 8 years* present with vaginal discharge, management should be as follows:

Give: Spectinomycin 40mg/kg stat.

or: Gentamycin 40mg/kg stat.

or: Kanamycin 40mg/kg stat. plus Erythromycin 10mg/kg
q.i.d. x 2/52.

2. Urethral Discharge

Where boys aged *between 8-14 years* present with urethral discharge, management should be as follows:

Give: Spectinomycin 40mg/kg stat.

or: Gentamycin 40mg/Kg stat.

or: Kanamycin 40mg/kg stat. plus Doxycycline 100mg b.i.d. x 1/52s

or: Erythromycin 250mg q.i.d. x 2/52

Where boys aged *under 8 years* of age present with urethral discharge, management should be as follows:

Give: Spectinomycin 40mg/kg stat.

or: Gentamycin 40mg/kg stat.

or: Kanamycin 40mg/kg stat. plus Erythromycin 10mg/kg
q.i.d. x 2/52

3. Genital Ulcer Disease

Where girls and boys *aged 8-14 years* present with genital ulcers, management should be as follows:

Give: Inj. Benzathine Penicillin 1.2 mega units stat. plus Erythromycin 250mg q.i.d 1/52.

Where girls and boys *aged under 8 years* of age present with genital ulcers, management should be as follows:

Give: Procaine penicillin 50,000U/kg IM daily for 10 days or Erythromycin 10mg/kg q.i.d. x 2/52

STI Prophylaxis in Cases of Rape and Incest

Responding to Sexual Violence (Rape and Incest)¹

All reported cases of rape or incest should be treated with special care due to complications associated with them. The culprits may be infected with diseases, which they pass on to victims. Similarly, the victim might end up falling pregnant. This section provides guidelines on what health workers could do when faced with this situation.

Three elements for responding to sexual violence:

- Protection of the victim
- Medical care
- Psychosocial care.

Protection of the Victim

Immediately following an incident of sexual violence, the following should be done to protect the victim:

- Physical safety of the victim must be ensured
- The identity of the victim should be kept secret and all information kept locked and secure from outsiders
- Health workers should give the victim as much privacy as she needs and reassure her about her safety
- The victim should then be escorted to the appropriate medical facilities
- The police should be contacted (with the consent of the victim).

All information regarding the expected procedures should be carefully explained to the victim, to ensure informed consent and preparedness.

¹ United Nations High Commission for Refugees (1999), *Reproductive Health in Refugee Situations: An Inter-Agency Field Manual*.

Medical Care

If possible, ensure a same-sex health worker is present for any medical examination, and ensure privacy and confidentiality. The victim should be prepared for the physical examination and a qualified health worker, of the same sex if possible, should conduct the initial examination and follow-up care as follows:

- Take a complete history and do a physical examination:
 - *The victim should not shower or bathe, urinate or defecate, or change clothes before the medical examination, as evidence may be destroyed*
 - *A detailed history of the attack, including the nature of penetration and results of pelvic examination should be documented*
 - *Health workers should collect all materials that might serve as evidence, such as hair, fingernail scrapings, sperm, saliva, and blood samples.*
- Perform tests and treatments as indicated:
 - *Where laboratory support is available, tests should be done to establish pre-existing conditions, such as blood for syphilis and HIV, and a pregnancy test*
 - *Provide presumptive treatment for common sexually transmitted diseases, including syphilis, gonorrhoea, and chlamydia. Refer to the guidelines above on syndromic management*
 - *Provide tetanus toxoid.*
- Provide Emergency Contraception, if appropriate or where possible, along with comprehensive counselling:
 - *Emergency contraceptive pills can prevent unwanted pregnancies if used within 72 hours of rape. (As described by WHO “emergency contraceptive pills (ECPs) work by interrupting a woman’s reproductive cycle, by delaying or inhibiting ovulation, blocking fertilisation or preventing implantation of the ovum. “ECPs **do not** interrupt pregnancy and thus are not considered as a method of abortion, nor should they be used as a substitute for regular use of contraceptive methods”.) Guidance on emergency contraception with the pills available at health centre level is given in the table below:*

Table 8.1: Emergency Contraception

Brand Name	First dose within 72 hours of intercourse	2 nd dose 12 hours after 1 st dose
Microgynon	4 tablets	4 tablets
Microgynon-30	4 tablets	4 tablets
Lo-femenol	4 tablets	4 tablets

- *Should ECPs be recommended, counselling should be given to the client to reach an informed decision.*
- *In the absence of ECP, the victim should be given 2 high dose of combined oral contraceptives stat. This should be repeated 12 hours later. An anti-emetic should be given at the same time (chlorpheniramine).²*
- Provide follow-up medical care:
 - *The victim or relatives to the victim should be counselled on the importance of returning for medical follow-up examinations one to two weeks after receiving initial medical care*
 - *Further tests and treatment, such as testing for, or treatment of STIs, or referral to other reproductive health services, may be indicated during the follow-up visit*
 - *Further visits may also be required for pregnancy and HIV testing*
 - *ARVs may be used after assessment of risk by the doctor.*

Psychosocial Care

Victims of sexual violence commonly feel fear, guilt, shame, and anger. Reactions may vary from minor depression, grief, anxiety, phobia, and somatic problems to serious and chronic mental conditions. Extreme reactions to sexual violence may result in suicide or in the case of pregnancy, physical abandonment, or elimination of the child.

Children and youth are especially vulnerable to trauma. Health providers and protection officers should pay special attention to their psychosocial needs. Victims of sexual violence should be treated with empathy, care, and support.

² JHPIEGO (1996), *Pocket Guide for Family Planning Service Providers*, 1996-1998.

Counselling

Quality counselling by trained workers, such as counsellors, nurses, social workers, psychologists, or psychiatrists should be provided as soon as possible after the attack. Reassurance, kindness, and total confidentiality are vital elements of counselling.

The objectives of counselling are to help the victim to:

- Understand what they have experienced
- Overcome guilt
- Express their anger
- Realise they are not responsible for the attack
- Know that they are not alone
- Access support network and services
- Pursue justice.

Special Issues (Sexual Violence in Domestic Situations)

Caution should be exercised before interventions in domestic situations, to protect the victim from further harm, especially if the victim has to return to the abuser. In this case, it is important to address each issue individually and determine the most appropriate response.

Health providers may choose to refer the matter to an appropriate disciplinary committee, inform the authorities, or provide discreet advice to the victim about her options.

Chapter 9

Common Medical and Surgical Conditions

Introduction

This chapter deals with medical and surgical conditions that have not been covered in the other chapters. As indicated in *Chapter 4: The Sick Child*, this chapter also covers children aged 5 to 14 years.

The conditions covered in this chapter are:

- Section 1: Hypertension*
- Section 2: Anaemia*
- Section 3: Sickle Cell Disease*
- Section 4: Diabetes Mellitus*
- Section 5: Convulsions*
- Section 6: Epilepsy*
- Section 7: Schistosomiasis (Bilharzia)*
- Section 8: Worm Infestation*
- Section 9: Poisoning*
- Section 10: Asthma*
- Section 11: Skin Conditions*
- Section 12: Accidents and Injuries*
- Section 13: Bites*
- Section 14: Drowning*
- Section 15: Eye Diseases*
- Section 16: Ear Problems*
- Section 17: Oral Health*
- Section 18: Sore Throat*
- Section 19: Rheumatic Heart Disease.*

Section 1: Hypertension

Definition

- Below the age of 30 years, blood pressure of, or above, 150/90 mm Hg.
- Above the age of 30 years, blood pressure of, or above, 160/95 mm Hg.

Epidemiology

Hypertension is a major cause of cerebral vascular accident (stroke), cardiac disease, and renal failure.

Prevention

- Advise patient to lose weight, if the patient is overweight.
- Advise patient to reduce salt intake.

Types

- Most cases are idiopathic (the cause is unknown).
- A few cases (less than 5%) may be caused by other diseases.
- The most common ones are chronic renal diseases.

Clinical Features

- Commonly asymptomatic and the patient is usually unaware that s/he has the disease.
- Raised blood pressure may thus be discovered on routine medical examination and/or
- When a complication occurs, such as a stroke.

In severe cases the patient may complain of:

- Headache, usually generalised
- Palpitations
- Dizziness
- Exertional dyspnoea
- Convulsions.

Diagnosis

- Clinical examination:
 - BP should be measured carefully in a calm setting and repeated after 5-10 minutes
 - Check BP again after two weeks without treatment, and again after a further two weeks
 - If the diastolic blood pressure is still 100mm or more it is time to start treatment.
- Look for signs of congestive cardiac failure.
- Urine analysis for protein.

Refer the following patients to higher levels:

- When the patient has signs of cardiac failure or proteinuria, the patient should be referred to hospital
- Patient diastolic BP of 130 or more should be referred
- All children with high BP should be referred

Other patients can usually be managed at the health centre.

Management

- Treatment of hypertension is for life.
- Patients should therefore not be committed to a life of anti-hypertension therapy based on a single blood pressure recording.
- The purpose of the treatment is to prevent complications.
- The most important complication is cerebral vascular accident (CVA) or stroke.
- The risk of a stroke is lower if the blood pressure is kept under 160/95.
- The treatment goal should therefore be a blood pressure of 155/90 or lower.

First Line Drug Treatment

Moduretic, 1 tablet daily.

Review patient at 1 month and at 3 months. If BP still is too high – refer to hospital. If BP is acceptable, continue drug treatment and see the patient every 3 months for:

- BP check
- Weight check
- Check for side effects of drug.

Section 2: Anaemia

Definition

- Anaemia may be defined as a state in which the blood haemoglobin level is below the normal range for the patient's age and sex. In Africa, it is usual, but not normal to see patients with Hb that is 2g/dl lower than normal for age or sex due to environmental factors, including infection and poor nutrition.
- A drop in Hb level deprives the tissues of adequate oxygen.
- The symptoms of anaemia are in fact symptoms of oxygen lack.

Table 9.1: Normal Ranges of Haemoglobin Concentrations

Age	Hb g/dl
Newborn	14.0-20.0
2-3 months	10.5-12.5
4 months-6 years	11.0-13.0
Adult females, not pregnant	12.0-16.0
Adult females, pregnant	11.0-15.0
Adult males	13.0-17.0

Promotion

- Encourage families to eat food rich in iron and folic acid.

Note: Iron from dark green leafy vegetables and other plant sources is better absorbed if taken with animal protein (e.g. fish, chicken, meat, egg).

- Promote the use of insecticide treated nets (ITNs) to prevent anaemia due to malaria.
- Promote routine de-worming of children to prevent anaemia due to worm infestations.
- Encourage women with heavy menstrual flow to seek medical care.
- Promote provision of adequate treatment for chronic illnesses.

Causes of Anaemia

The causes of anaemia can be classified in three groups. The most common causes are:

1. Blood Loss

- Menstrual blood loss
- Blood loss during pregnancy and delivery
- Hookworm infestation.

2. Decreased Red Cell Production

- Lack of iron or folic acid in the diet
- Chronic infections (TB, HIV, etc.)
- Cancer.

3. Increased Red Cell Destruction

- Sickle cell anaemia. The red cells are abnormal and are easily destroyed
- Malaria. The parasites destroy the red cells.

Symptoms

The patient complains of:

- Weakness
- Tiredness
- Dizziness
- Breathlessness on exertion
- Heart palpitations
- Paraesthesia in fingers and toes.

On examination:

- Pallor of the skin, mucous membranes, palms of hands, and conjunctivae
- Tachycardia
- There may be oedema
- Examination with a stethoscope reveals systolic heart murmurs.

Investigations

- Blood for Hb
- Sickling test at the hospital
- Full blood count (FBC) at the hospital.

Management

- Refer all patients with Hb under 6 g/dl
- Treat less severe anaemia according to the most likely cause, as follows:

Iron Deficiency Anaemia

Treat with ferrous sulphate:

- Adults: 200 mg t.i.d.
- Children below one year: 50 mg o.d.
- Children above one year: 50 mg b.i.d.
- Consider mebendazole treatment (de-worming).

Folic Acid Deficiency

Found in patients with chronic alcoholism and repeated or chronic diarrhoea:

- Treat with folic acid 5 mg o.d.

Anaemia Due to Malaria

- Treat the malaria itself – very important.
- Iron or folic acid are of little value, but can be used.

Note: Review all patients on treatment for anaemia after 2-3 weeks. Check Hb. If it has not increased, refer to hospital.

Section 3: Sickle Cell Disease

This is an inborn disease involving red blood cells. The cells are deformed (sickle shaped), and like malaria-infested cells, they easily burst or block the small vessels.

The patients have chronic anaemia, which does not respond to iron treatment. Infections are common, and most patients die from infections. They often have chronic ulcers of the legs, because of ischaemia.

Sickle cell crisis is an extremely painful condition.

Prophylaxis

Adults

- Folic acid 5mg daily for life.
- Malaria prophylaxis (*see Chapter 2: Malaria*).

Children

- Folic acid 1mg orally daily for life.
- Malaria prophylaxis.

Pain Crisis in Sickle Cell Anaemia

- Analgesic, such as paracetamol or ibuprofen.
- Antibiotic, such as amoxycillin.
- Fluids, oral or intravenous.

Note: Refer all children with sickle cell crisis to hospital. Refer all anaemia patients with haemoglobin level less than 6gm/dl.

Section 4: Diabetes Mellitus

Definition

Diabetes is a disease with chronic elevation of the blood glucose level.

Classification

There are two types of diabetes:

1. Type 1 Diabetes Mellitus

- Seen in children and young people
- The patients are lean
- Treated with insulin
- If untreated it will become fatal within months.

2. Type 2 Diabetes Mellitus

- Seen in obese adults – mainly in those older than 40
- Often treated without insulin
- Patients can live for many years without drug treatment.

Both types of diabetes are due to lack of insulin. Without insulin, the body cannot metabolise sugar and other carbohydrates and therefore the blood glucose level increases. When blood glucose exceeds 10-12 mmol/liter, glucose is excreted in the urine. The glucose in the urine carries water with it, so the patient becomes dehydrated and thirsty. The loss of glucose means loss of calories, so the patient loses weight and becomes tired.

Signs

Urinalysis; urine stix is positive for glucose.

Symptoms

Type 1 diabetes mellitus may develop within a few days or weeks with acute symptoms. Type 2 diabetes mellitus develops much more gradually, over months or even years.

The patient complains of:

- Thirst
- Frequent urination – even at night
- Weight loss in spite of eating well
- Lassitude and loss of energy
- Paraesthesia (tingling) in fingers and feet
- Aching and cramps are common in the legs
- Blurred vision
- Minor infections, *e.g.* boils or difficult to heal ulcers may occur.

Management

- Refer all patients with severe symptoms.
- Refer all patients with presumed type 1 diabetes mellitus.
- Overweight patients with slight symptoms can usually be managed at the health centre.

The treatment comprises:

- Education
- Diet regulation
- Drugs.

Education

- Educate and counsel the patient that s/he has a chronic disease, which cannot be cured, but can be alleviated greatly.
- Counsel patient to adhere to the treatment and advise on the consequences of not taking treatment.

Diet

- For type 2 diabetes mellitus, advise the patient to lose weight, eat less, and exercise more.

- Advise patient to avoid sugar, sugary food, sweet drinks, and confectionery, as these foods will cause peaks in blood glucose levels.
- Artificial sweeteners can be used instead.

Drugs

If diet fails to bring down the blood glucose within 3 months, refer the patient to hospital for drug treatment.

Follow-up

Patients with type 2 diabetes mellitus should come for regular follow-up at the health centre (every quarter). At each visit:

- Ask for symptoms
- Check urine glucose
- Check body weight (very important).

Diabetic Ketoacidosis

- Patients with undiagnosed diabetes mellitus or with insulin dependent diabetes may develop ketoacidosis.
- It is a life threatening condition. Put up an IV line with normal saline and refer as quickly as possible.
- The patient presents with severe symptoms of diabetes, heavy glycosuria, very deep and rapid breathing, and breath smelling of acetone.
- The patient may be unconscious.

Hypoglycaemia

- Most common in insulin treated diabetics after overdose of insulin. It may also be caused by an overdose of anti-diabetic tablets.
- When blood glucose falls below normal, the functions of the brain become impaired.
- The patient will behave oddly (like being drunk) and may become unconscious with fits.
- Also seen in alcohol intoxication and during IV quinine treatment of malaria.

Treatment

- If the patient is awake, give sugar, sweets, orange juice, or soft drink. S/he will recover within 10 minutes.
- If the patient is unconscious, give IV dextrose (200 ml 5% dextrose or 20 ml 50% dextrose). Recovery is immediate.

Long-term Complications of Diabetes

After years of diabetes (particularly in badly controlled diabetes with high blood glucose), the patient may have symptoms from various organs.

- **Eyes:** There may be loss of vision because of bleeding in the eye.
- **Kidneys:** Diabetes may lead to kidney failure with high blood pressure, proteinuria, and oedema.
- **Legs:** Diabetics may have problems with the blood circulation of the legs. This may lead to chronic ulcers and even to gangrene of the feet.
- **Nervous system:** Diabetes may cause degeneration of nerves with diminished sensibility, tingling, pain in the feet and legs. Sexual impotence may be caused by diabetic nerve damage.

Section 5: Convulsions

Definition

Generalised seizures are common medical emergencies.

There are two types of convulsions:

1. Epileptic
2. Non-epileptic.

This section deals with non-epileptic convulsions (*see also Section 6: Epilepsy*).

Convulsions in a person without known epilepsy is always a sign of danger, indicating the possibility of brain damage.

Common causes include:

- Infections:
 - *Cerebral malaria*
 - *Meningitis and encephalitis*
 - *Tetanus*
- Head Injuries
- Hypoglycaemia following overdose of insulin in diabetic patients
- Overdose of certain drugs.
- Certain types of poisoning
- Alcohol intoxication
- Pregnancy induced hypertension – eclampsia.

In young children (usually under 5) convulsions may be caused by:

- Fever (febrile convulsions)
- Neonatal sepsis.

Signs and Symptoms

- History of fever or a known condition.
- Generalised musculo/limb jerking.

Management

- It is important to rule out treatable diseases.
- Take a good history: is the patient epileptic? Diabetic? What drugs has s/he had?
- Has there been any head injury?
- Check temperature.
- Is the patient's neck stiff?
- If possible, check blood sugar.
- Examine blood slide for malaria.

In an Emergency

- Lay the patient down in a semi-prone position (i.e. on the patient's side).
- Protect the patient's airway; suction as necessary, to remove secretions.
- Protect the patient from self-harm. Administer oxygen, if available; ventilate, if necessary.

Treatment

- If the patient is still convulsing give diazepam 5mg IV or per rectum for adults (repeat after 10 minutes when necessary, to a maximum of 20mg).
- For children diazepam 0.2mg to 0.5mg/kg rectally or IV stat., or phenobarbitone 10mg/kg IV stat. Repeat 0.5mg/kg at 30 minutes interval x 2 doses if seizures persist.
- If temperature is high, do tepid sponging.
- If malaria is suspected, start malaria treatment, preferably with IV quinine.
- Treat other causes of convulsions accordingly.
- Refer the patient for further management.

Note: Give dextrose 50% (1cc/kg) IV or by nasogastric tube in suspected alcohol intoxication or hypoglycaemia.

Section 6: Epilepsy

Definition

Epilepsy can be distinguished from other seizures, because it is a chronic disease with recurrent attacks. Between the attacks, the patient is well. Epilepsy can start at any age, but usually it begins between the age of 4 and 14.

Types of Epilepsy

- There are several types of epilepsy.
- The most common type is recurrent generalised seizures.

1. Generalised Seizures

Causes

- Idiopathic
- Brain lesions: after trauma or in brain tumours.

Clinical Picture of Generalised Seizures

- Sometimes the patient may know of, or anticipate, the impending attack shortly before it starts.
- The seizures often start with a cry or a sudden jerk.
- Then patient becomes stiff, the ***tonic phase*** - tonic contraction of muscles:
 - *Arms flexed and abducted*
 - *Legs extended*
 - *Respiratory muscle spasms; as air is expelled this leads to a cry*
 - *Cyanosis*
 - *Loss of consciousness.*

Lasts 30-40 seconds.

- The ***clonic phase***:
 - *Violent jerking of face and limbs for 1-5 minutes*
 - *The patient may bite his/her tongue*
 - *At the end of the seizures, the patient may have urinary and faecal incontinence.*
- The ***post-ictal phase***: After the seizures, the patient remains unconscious and later goes into deep sleep. This phase may last from a few minutes to several hours.

Diagnosis

- The first attack is difficult to diagnose correctly.
- Usually the patient will know that s/he is an epileptic.

Management

- Explain the nature of epilepsy to patients and their relatives.
- Emphasise that the disease itself is benign. However, the patient may be seriously hurt during attacks (*e.g.* by traffic, by falling down, by fire).
- Refer the patient to hospital for final diagnosis and start of medical treatment.
- Treatment will usually be with carbamazepine or phenobarbitone, starting with a small dose and gradually increasing, depending on the patient's response.

Restrictions

- The patient should not do work that requires frequent climbing of ladders or work at heights.
- Advise the patient to avoid working with dangerous machinery or near open fires.
- To take shallow baths and not lock the bathroom door.
- Discourage cycling and swimming until at least a 6 month-period free of seizures has been achieved.
- Patient must be free from all types of seizures for one year, or seizures must have been exclusively during sleep for a period of three years, before driving may be resumed.

Withdrawal of Anti-Convulsant Therapy

Withdrawal of medication may be considered usually after a 2-4 year period of complete control of seizures.

2. Status Epilepticus

- Exists when a series of seizures occurs without the patient regaining awareness between attacks.
- It is *life threatening* because the patient will have difficulty in breathing between the attacks.

Management

- Maintain airway.
- Give diazepam IV 10-20mg/h. Adjust dosage to control seizures.
- Refer urgently to hospital.

Note: Use IV drugs only if resuscitation facilities are available, otherwise the rectal route is safer.

Nursing Management of Epilepsy

Objectives of nursing are to:

- Control and prevent seizures (*refer to Section 5, management of convulsions in an emergency*).
- Prevent injury during seizures
- Gain an understanding of the patient and his/her relationship to his/her environment
- During the seizure, remove all objects in the vicinity that may injure the patient
- Loosen constrictive clothing on the patient
- Record time of onset and duration of the seizure, and also record parts of the body involved in the seizure, *e.g.* generalised
- Support the patient during the seizure; if jaws are clenched in spasm, do not try to open to insert a spatula or mouth gag
- Place a folded blanket or pad under the head to protect the head
- Stay with the patient until s/he is fully conscious and re-orient him/her to environment
- Ensure privacy and protect the patient from any onlookers
- Observe for incontinence of urine, faeces, and any obvious paralysis or weakness of arm after attack
- After the seizure passes, turn the patient's head to the side to aid drainage of mucus and saliva, and prevent aspiration
- Explain condition to patient afterwards, stressing the importance of taking the prescribed medication regularly
- Educate the patient on how to study his/her environment to determine the triggering factors of his seizures
- Re-orient the attitude of the patient and family to the disease. Encourage them to discuss their feelings and attitudes about epilepsy. Help the family and patient towards self-acceptance; reinforce areas of strength
- Advise patient to wear a bracelet indicating that the wearer has epilepsy.

Section 7: Schistosomiasis (Bilharzia)

Definition

Schistosomiasis or snail fever (bilharzia) is a disease caused by a parasite called schistosoma. Schistosoma is water-borne. The larvae of the parasite penetrate the skin and settle in the body as small worms, which produce

eggs that lodge in the bowel or urinary bladder. Here they cause ulceration, and the patient will have blood in the urine or stools and later may develop cancer.

Types of Schistosoma

- *Schistosoma haematobium*, which invades the urinary tract.
- *Schistosoma mansoni* which invades the liver and bowel.

Promotion

- Educate the community to avoid swimming, walking, or wading in polluted water.
- Educate the community on the elimination of breeding sites, making the environment hostile to snails by removing aquatic vegetation, altering the flow rate of streams, or building concrete linings to walls of drains.
- Advise the community on preventive measures, such as wearing protective clothing when in contact with infected water.
- Provide health education for those at risk, about the disease, the route of transmission, and prevention.
- Encourage the use of latrines.
- Discourage washing/bathing in rivers, etc.
- Encourage protective wear for farmers working in irrigation schemes.

Prevention

- Elimination of reservoirs: selection of appropriate chemotherapeutic agents, dosage, and frequency of administration.
- Work with extension workers from other sectors to provide:
 - *suitable sanitary facilities for the disposal of excreta, to avoid eggs reaching intermediate hosts*
 - *piped chlorinated water supplies or properly constructed wells for domestic use.*
- Elimination of vectors: chemicals, such as niclosamide, may be applied to kill the snail population.
- Provide mass treatment of infected persons in endemic areas.
- Involve the community in control programmes.

Route of Transmission

- Infected persons pass parasite eggs into fresh water with urine or stools.
- The eggs are hatched and the larvae invade some species of snails.

- The larvae mature in the snails; once they leave the snails, they are ready to invade humans.
- The larvae penetrate the skin of persons who walk or swim in the water.
- In the blood vessels of the infected person, the larvae will mature to small worms, which will start laying hundreds of eggs each day.
- The eggs are the cause of the disease. They lodge in the lining of the urine bladder (*schistosoma haematobium*) or in the lining of the large bowel (*schistosoma mansoni*). Here they cause inflammation, bleeding, scars – and after several years even cancer.
- The infected person passes eggs into water – and the cycle starts again.

Incubation Period

4-6 weeks after infection symptoms appear. The infective stage lasts from 1– 25 years, if not treated.

Clinical Features

- A few days after exposure - itching of the skin – “*swimmer’s itch*”.
- High fever in some patients after a couple of weeks, which may be mistaken for malaria. This is an allergic reaction to the parasites and is called “*Katayama fever*”. It may last for some weeks.

After some time infection is silent, until the patient feels the presence of the millions of eggs. The symptoms differ for the two types of parasites, as described below.

Signs and Symptoms

In the early stages, there are no specific findings except for local dermatitis.

Schistosoma Haematobium

- Haematuria.
- Later, frequency in micturition and dysuria.

Schistosoma Mansoni

Less specific symptoms:

- Weakness
- Tiredness
- Loss of weight

- Diarrhoea (possibly with blood – dysentery-like)
- Low grade fever
- In later stages, the patient may present with abdominal swelling (hepato-splenomegaly, portal hypertension).

Investigations

- History of blood in urine or stool.
- Urine stix will show blood in urine in patients with *Schistosoma haematobium*.
- Stool/urine microscopic examination for schistosome eggs.

Management

- Praziquantel 40mg/kg body weight stat. or 20mg/kg b.i.d. x 1/7
- Treat other complications, *e.g.* anaemia.

Note:

1. Other drugs like mebendazole are not effective, so do not use them.
 2. Haematuria may persist even after treatment. Medication can be repeated after 6 months.
-

Complications

- Anaemia
- Cancer of the bladder/bowel
- Respiratory symptoms
- Reduced mental concentration in children
- Portal hypertension.

Section 8: Worm Infestation

Definition

Worm infestations are common in children. They are transmitted through faecal oral route or by skin penetration. Common worms include:

1. *Ascaris Lumbricoides*

- *Ascaris lumbricoides* is a large pale yellow round worm about 20–35cm long.
- The female adults live in the small bowel and lay eggs, which are passed in faeces.
- Eggs mature in moist soil.

Promotion

Educate communities on:

- Good sanitary disposal of faeces
- Good personal hygiene and proper handling of food
- Adequate treatment of all infected persons.

Transmission and Life Cycle

- Oral faecal route by swallowing food or water contaminated with ascaris egg.
- When eggs of ascaris are swallowed, the larvae hatch in the small intestines. These then penetrate the wall to reach the capillaries, and are carried via the liver and the right side of the heart to the lungs. The developing larvae then reach the trachea and are swallowed in tracheal mucus to re-enter the small intestine where they mature, mate, and produce eggs 2 months after ingestion.

Clinical Features

- When the larvae pass through the lungs of the patient, s/he may have:
 - *Fever*
 - *Cough*
 - *Wheezing (an allergic reaction to the larvae).*
- The mature worms in the small intestine:
 - *Usually give no symptoms*
 - *May cause abdominal discomfort*
 - *May cause acute intestinal obstruction due to the load of worms, which may be so large that the intestine is blocked, although this is rare.*

Diagnosis

- History of passing worm in stool.
- Microscopic examination: eggs in stool.

Treatment

Mebendazole 100mg twice daily for 3 days or 500mg stat.

2. Hookworm Infection (Ankylostomiasis)

- The hookworm (*ankylostoma duodenale*) is a small worm (8-10 mm long), which lives in the upper part of the small intestine, where it sucks blood from the intestinal wall.
- Hookworms are the most important intestinal worms, because they cause anaemia.

Prevention

- Wearing of shoes
- Sanitary disposal of faeces
- Treating infected people.

Transmission and Life Cycle

- Man is infected by larvae, which penetrate the skin and migrate via the venous system to the right ventricle of the heart and to the lungs, then to the trachea and larynx.
- The larvae are swallowed and reach the small intestine in 3 to 5 days after skin penetration.
- The worms mature in 4 to 5 weeks and live up to 9 years.

Clinical Features

- When the larvae penetrate the skin, there may be:
 - *Itching*
 - *Erythema*
 - *Vesicular eruption.*
- When the larvae pass through the lungs, they may cause:
 - *Cough*
 - *Fever (like in round worm infection, but less severe).*
- Adult worms in the intestines may cause:
 - *Diarrhoea*
 - *Chronic anaemia.*

Diagnosis

- Suspect hook worm infestation in all anaemic patients.
- Eggs can be found in stool on microscopic examination.

Treatment

Mebendazole 100mg tablet twice a day for 3 days.

3. Enterobiasis (Pinworm)

Enteriobiasis vermicular is a nematode. The worms are small, white, and thread-like.

Clinical Features

Prutitus ani (itching on the anus, usually at night).

Diagnosis

Stool microscopic (anal scraping specimen).

Treatment

- Mebendazole 100mg b.i.d. x 3/7.
- Treat the whole family.

Prevention

- Hand washing before eating food.
- Hand washing after using toilet.
- Cut finger nails short.
- Proper disposal of faeces.
- Treatment of infected persons.

Section 9: Poisoning

Introduction

- Poisoning is a common medical emergency, occurring especially among children.
- Children are curious and sometimes unknowingly swallow, inhale, or come in contact with poisonous materials.
- Household cleaning materials and other potentially poisonous substances, such as medicines, chemicals, and pesticides, should be kept out of the reach and sight of children.

Promotion

- Discourage storing paraffin in beverage containers.
- Advise parents to keep poisonous materials (including medications) out of the reach of small children.

1. Drug Poisoning

- Common causes of drug poisoning are aspirin, paracetamol, chloroquine, iron, and antihistamines.
- Leads to systemic poisoning, when taken or given in large doses (intentionally or accidentally).

Clinical Features

Aspirin

- Tinnitus, lethargy, and abdominal pain occur in mild poisoning.
- In severe poisoning, there is hyperventilation, sweating, vomiting, convulsions, and coma.

- Can be lethal if taken in a quantity more than the recommended dosage.

Paracetamol

- Initially abdominal pain, which subsides.
- After 2-3 days liver failure: jaundice, confusion, drowsiness, which may lead to coma and death.
- Can be lethal if taken in a quantity more than the recommended dosage.
- For children much less doses can be lethal.

Chloroquine

- Mild poisoning: blurred vision, tinnitus.
- Severe poisoning: weakness, haemoglobinuria, oliguria, low blood pressure, shock, and convulsions.
- Can be lethal if taken in a quantity more than the recommended dosage.

Iron

- Initially vomiting, often with blood due to haemorrhagic gastroenteritis. It occurs within 6 hours and subsides.
- After a free period of about 24 hours, convulsions, shock, acidosis, and signs of liver failure – jaundice, coma.
- Can be lethal if taken in a quantity more than the recommended dosage.

Antihistamines

Drowsiness, confusion, coma.

Management

- Find out which drug was taken, how much was taken, and when it was taken. Secure the container to ascertain the drug, where possible.
- If the patient is conscious, induce vomiting by irritating the throat, or do a stomach washout with normal saline.
- Give oral or IV fluids.
- If the patient is dehydrated, give ORS or IV fluids.
- If the patient is unconscious or critically ill, refer to the next level.

Note:

Do not attempt to make an unconscious patient vomit or attempt stomach washout

Do a gastric lavage if ingestion of drugs occurred within the last six hours.

2. Paraffin (Kerosene) and Petroleum Distillate Poisoning

This is a very common source of poisoning in Zambia. Paraffin, petrol, and furniture polish produce a similar clinical picture.

Signs and Symptoms

- Vomiting and diarrhoea
- Coughing and dyspnoea
- Rapid breathing
- Fever after 24 hours.

Treatment

- Take a full patient history to ascertain time of ingestion, inhalation, or poisonous contact.
- Determine the type, nature, and amount of exposure to poisons.
- **Do not induce vomiting** if the patient has swallowed kerosene, strong acids, or corrosives.
- **Do not wash out stomach.**
- Give procain penicillin to prevent secondary bacterial pneumonia.
- Give anti-acids, *e.g.* milk, magnesium trisilicate.
- If patient is drowsy, dehydrated, and in coma, put up IV fluid normal saline in 5% dextrose, and refer the patient.
- Counsel guardians.
- Refer to the next level.

3. Carbon Monoxide Poisoning

This is common in households where braziers are kept burning during winter nights, with doors and windows closed.

Clinical Features

- Disorientation
- Respirations may vary from shallow and rapid to slow and sighing
- Limb reflexes are increased
- Pupils are dilated
- Temperature is low
- Skin is cold
- Coma.

Treatment

- Oxygen therapy, if available
- Start IV line dextrose 5% N/saline (if condition is severe)
- If no improvement, refer to the next level.

4. Organophosphate Poisoning

Organophosphate poisoning can occur as a result of inhalation, skin contact, or through ingestion of common household pesticides. They are ingested accidentally by children or deliberately in a suicidal attempt in adolescents and adults. Farm workers may be exposed to inhalation during spraying of crops.

Clinical Features

Mild Poisoning

- Anorexia
- Headache
- Dizziness
- Weakness
- Impaired vision
- Substernal discomfort.

Moderate and Severe Poisoning

- Nausea
- Salivation
- Abdominal cramps
- Vomiting
- Bradycardia
- Severe diarrhoea
- Slow pulse
- Dyspnoea
- Pin point pupils
- Coma.

Treatment

- Maintain a clear airway (intubation)
- Remove the clothing and rinse the involved parts with plenty of water
- Induce gastric lavage or vomiting

- Give atropine sulphate 2 mg IM and repeat every 5-10 minutes until there are signs of atropine intoxication (flushed face, fast pulse, large pupils). Administer the specific antidote PAM if available
- Start IV fluids
- Start oxygen therapy if patient comatose
- Refer to hospital.

Note: Do not attempt mouth-to-mouth resuscitation.

5. Mushroom Poisoning and Contaminated Foods

- Some mushrooms are poisonous and may be mistaken for the harmless edible mushrooms. This is common in some parts of Zambia.
- Many organisms, *e.g.* bacteria or fungi, can contaminate food.

Signs and Symptoms

- Find out if other members of the household who ate the same food are affected.
- Abdominal pain, nausea, vomiting, and diarrhoea.
- *In severe cases a state of collapse and dehydration with subnormal temperature.*

Management

- Stomach wash out with normal saline, if ingestion less than six hours (mushrooms).
- Keep patient warm.
- Give ORS to prevent dehydration due to diarrhoea, or administer IV fluids if the patient cannot take anything by mouth.
- Start antibiotic if fever occurs after 24 hours.
- If no improvement after 24 hours refer to hospital.

Section 10: Asthma

Definition

- Asthma is a disorder characterised by attacks of wheezing and difficulty in breathing. Between the attacks the respiration is normal.
- The asthma attacks occur because of oedema of the bronchi combined with increased secretion of mucus in the bronchi.

Precipitating Factors

- Exposure to allergic substances such as fumes or dusts, e.g. pollen from flowers, dust from cats or dogs, etc. The patient often knows how the attacks are provoked.
- As a reaction to an URTI (“asthmatic bronchitis”).
- In some cases no predisposing factor.

Prevention

- Advise patient to avoid causative allergens where possible.
- Emphasise the need to avoid cold weather and take prescribed medications.
- Avoid medication that may trigger or aggravate asthma, e.g. aspirin, propranolol, or penicillin.

Signs and Symptoms

- Mild Attacks
 - Cough
 - Mild chest tightness (*expiratory wheezing*).
- Severe Attacks
 - Coughing
 - Wheezing
 - *Difficult breathing. As severity worsens, there is anxiety and restlessness*
 - *The patient cannot breathe when lying down, but has to sit up*
 - *Fatigue state after attack.*

During an asthma attack, the patient feels they can get air into the lungs, but cannot get the air out again.

On examination:

- There is difficulty in breathing and expiratory wheezing
- The patient may be very distressed
- In very severe, life threatening cases, there may be cyanosis.

Features of Acute Severe Asthma

Moderate Attack

- Pulse rate increased (>120)
- Unable to speak in sentences
- Cannot lie down.

Life Threatening Attack

- Cannot speak
- Central cyanosis
- Exhaustion, confusion, reduced conscious level
- Bradycardia
- Silent chest.

Note: It is important that the health worker also looks for the presence of signs of any conditions that might complicate the asthma, such as pneumonia.

Treatment of an Acute Asthma Attack

Never treat asthmatic patients with sedatives or tranquillisers, even though they are anxious and restless. Diazepam and other sedatives may kill a patient with an acute attack.

1. Mild Attack

- Salbutamol/ventolin 2-4mg t.i.d.
- Aminophylline 100mg b.i.d.

2. Moderate Attack

- Adrenaline 1:1000, 0.5ml–1.0ml s.c. stat.
- Aminophylline 5 mg/kg IV slowly in 20 minutes.

Note: In the presence of any other conditions that may complicate the asthma, the patient should also be treated appropriately for these conditions.

The following precautions should be taken:

- Patients should be lying down or sitting in bed to prevent hypotension
- Aminophylline is very irritating if injected into the tissues or an artery and may cause gangrene and sloughing of the skin.
- Injection must be given very slowly. Rapid intravenous injection of aminophylline can cause ventricular fibrillation and sudden death
- Firm pressure should be applied over the injection site after withdrawal of the needle or the venodilatation will result in a brisk haemorrhage.

If necessary both adrenaline and aminophylline may be repeated after one hour.

After treatment, the patient should be able to lie down and to speak without difficulty. Continue treatment if patient still has difficulties in breathing.

Treatment of Severe or Prolonged Attacks

As above, plus:

- Prednisolone 45mg – 60mg o.d. ^{3/7}
- Oxygen if available
- Refer to hospital if a severe asthma attack does not subside.

Nursing Management of Asthma

- Management should be individualised.
- Provide adequate hydration to keep secretion from thickening.
- Provide psychological care, especially in acute stages, to allay anxiety.
- Administer bronchodilators and closely monitor condition during the attack.
- Nurse patient in a propped up position.
- Provide health education on disease contributing factors, avoid over crowded places, and other sources of infection.

Section 11: Skin Conditions

Introduction

The common causes of skin conditions include:

- Infections (viral, fungal, bacteria)
- Allergens (intrinsic/extrinsic)
- Chemicals.

A medical history is important and should include a family history of allergic disorders such as asthma, hay fever, and food and drug allergies.

1. Herpes Zoster (Shingles)

Herpes zoster is an acute viral infection. It is caused by varicella virus, the same virus that causes chicken pox. The first attack gives rise to chicken pox usually in children and herpes zoster in adults. It involves the nerve roots.

Clinical Features

- The characteristic lesion consists of groups of vesicles, which follow the neural pathways of the skin. The rash never crosses the midline of the body.
- Sensation/itchy pain before eruption of rash.
- Severe agonising pain after eruption of rash may persist for many months.

Treatment

- 1% Gentian violet or calamine lotion to keep vesicles dry and clean.
- Give antibiotic if there is evidence of pus or secondary infection.
- Acyclovir skin ointment to shingles 6-hourly until they heal, if available.
- Acyclovir (Zovirax) 800mg t.i.d./q.i.d. x 7/7. For children: give 10mg/kg every 8 hours, if available.
- Analgesics as appropriate.
- Refer severe conditions, such as involvement of the eye of more than one dermatome, to the hospital.

2. Impetigo

Impetigo is a superficial bacterial infection. It is highly contagious and affects mainly children.

Signs and Symptoms

Lesions consist of pustules with crusts, mainly on the face.

Treatment

- Washing with soap and water
- 1% Gentian violet application
- In severe cases an antibiotic (penicillin) may be given
- If infection is severe, refer.

3. Contact Dermatitis (Eczema)

An acute eruption of skin rash that usually progresses to chronic eczema.

Cause

Direct contact with chemicals such as cement, detergents, or other irritants.

Signs and Symptoms

- Itching – worse at night
- Skin patch rashes.

Management

- Moisturising lotions are very helpful in reducing itching and softening of skin (boiled, cooled cooking oil may be helpful).
- Apply 1% Hydrocortisone skin ointment twice daily. In chronic or in non-responsive cases a strong steroid cream, Betamethasone 0.1% ointment, applied twice a day can be used on the body, excluding the face.
- Avoid predisposing factors if known.

4. *Tinea Capitis (Ring Worm of the Scalp)*

A superficial fungal infection. Mainly affects children below the age of 10. However, it may occur in immuno-suppressed adults.

Signs and Symptoms

Coin shaped patches on the scalp with broken rustle hairs.

Treatment

- Counsel on scalp washing daily with soap.
- If severe give Griseogulvin tablets 125–250 mg daily for 3–6 weeks with meals containing fatty foods.

5. *Tinea Corporis (Body Ring Worm)*

Itchy circular or ringed patches on the body.

Treatment

- Apply Benzoic acid twice daily until the lesions clear and continue one week more.
- Griseofulvin 3-6 weeks with meals containing fatty foods.

6. *Tinea Pedis (Athlete's Foot)*

This is very common among men and both feet may be involved.

Signs and Symptoms

Itchy white maceration between toe webs. The 4th and 5th web spaces are the most affected. In severe form, there is eruption along the fingers.

Treatment

- Keep feet dry and apply Benzoic acid cream.
- Athlete's foot powder or baby powder may be used to maintain dryness.
- Open shoes or sandals ('tropicals') should be worn at home and shoes dried well inside.

7. Scabies

Scabies is caused by a mite *sarcoptes scabie*. The disease is acquired primarily through close personal contact, or through clothing and towels.

Signs and Symptoms

- Itchy swellings and rash.
- Predominant sites of lesions are finger webs, wrists, elbows, armpits, trunk (especially at the belt line), buttocks, inguinal, and genital area.

Treatment

- Scrub the body, preferably with warm water.
- Dry, and apply benzyl benzoate 25% all over the body from neck to toes (except the face) for 2 nights without bathing.
- Wash on the third day.
- All close family members in the home should be treated at the same time.
- All clothes and bedding should be kept clean. Treat secondary (pus) infection if present with an antibiotic.
- Encourage personal hygiene.

Note: In children apply ½ strength of 25% benzyl benzoate.

8. Leprosy

Leprosy is a chronic infectious disease. It is caused by a bacillus, *Mycobacterium leprae*, which has an affinity for attacking nerves and the skin. It is a droplet infection. If untreated, there can be progressive and permanent damage to the skin, nerves, limbs, and eyes.

Epidemiology

- Nationally, Zambia has achieved the WHO Leprosy elimination target of less than one case per 10,000

population. There are, however, some districts reporting rates as high as 17.2 per 10,000 population.

- The proportion of children among the reported new cases is 4.8%.

Promotion

- Prevent disabilities from leprosy by seeking health care and treatment early from the nearest health institution.
- Treatment for leprosy is free from all health institutions.
- Get all suspicious skin changes examined to rule out leprosy at your health centre.

Prevention

Early detection and treatment of patients is important to control the spread of leprosy.

Classifications of Leprosy

- Paucibacillary Leprosy is characterised by:
 - *1-5 lesions*
 - *Hypopigmented or erythematous*
 - *Asymmetrically distributed*
 - *Definite loss of sensation*
 - *Only one nerve trunk.*
- Multibacillary Leprosy is characterised by:
 - *More than 5 lesions*
 - *Distribution more symmetrical*
 - *Some loss of sensation*
 - *More than one nerve trunk.*

Diagnosis

Diagnosis is by clinical and physical examination for *Mycobacterium leprae* at a diagnostic centre.

Signs and Symptoms

- Leprosy mainly affects the skin and nerves.
- Suspect Leprosy if a patient has discoloured skin lesions on the body, associated with sensory loss by using cotton wool or pinprick method.
- Enlarged peripheral nerves.
- Positive skin smears.

Management

Management is divided into 2:

- a. Paucibacillary Leprosy (6 monthly treatments to be completed within 6–9 months).

Paucibacillary Leprosy: Adult Dosage			Paucibacillary Leprosy: Child Dosage - 10-14 years		
Drug	Day 1	Day 2-28	Drug	Day 1	Day 2-28
Rifampicin	600 mg (DOTS)	-	Rifampicin	450 mg	-
Clofazimine	-	-	Clofazimine	-	-
Dapsone	100 mg	100 mg	Dapsone	50 mg	50 mg

- b. Multibacillary Leprosy (12 monthly treatments to be completed within 12-18 months).

Multibacillary Leprosy: Adult Dosage			Multibacillary Leprosy: Child Dosage - 10-14 years		
Drug	Day 1	Day 2-28	Drug	Day 1	Day 2-28
Rifampicin	600 mg (DOTS)	-	Rifampicin	450 mg	-
Clofazimine	300 mg	50 mg	Clofazimine	150 mg	50 mg/ alt days
Dapsone	100 mg	100 mg	Dapsone	50 mg	50 mg

Note:

1. For children under 10 years, the dose may be adjusted, for example: rifampicin 300 mg, dapsone 25 mg, and Clofazimine 100 mg once a month and 50 mg twice a week in the case of Multibacillary Leprosy.
 2. If treatment is interrupted, a new regimen should be recommended.
- All suspected patients of Leprosy should be referred to diagnostic centres with laboratories for initial tests and treatment regimen.

Section 12: Accidents and Injuries

Introduction

Accidents and injuries are among the top ten causes of morbidity and mortality in Zambia.

Epidemiology

- Accidents constitute up to 10% of admissions and nearly 5% of deaths. They also cause temporary or permanent disability to the individual.
- Children below 15 years of age are more vulnerable.

Common causes include:

Automobile accidents, fires, falls, etc.

Prevention

- Educate parents about adequate supervision of young children both at home and during outdoor activities, not letting children play close to the cooking area or fire.
- Work in close collaboration with teachers and parents to ensure that road safety measures are taught at an early age.
- Involve community members in improving safety around the schools, roads, and public places.

As a health worker, you should keep the basic equipment at your health facility in working order, and emergency medications in stock so as to be able to handle accidents adequately.

1. Wounds

- Cuts, stabs, or blunt injuries can cause wounds.
- Cuts are often clean without much destruction of tissue.
- Stabs may be deep and damage internal organs.
- Blunt injuries often cause destruction of skin and other tissues.

Assessment

- Take a full history to determine how long ago the wound occurred, how it was sustained, and whether the patient has had a course of active immunisation against tetanus.
- Examine the wound to determine if it is bleeding actively, whether it is contaminated, and if any deep structures are involved.

Management

- Clean all wounds with soap and water and remove foreign matter and dead tissue.
- Give tetanus toxoid 0.5 ml to all patients.

- Give anti-tetanus serum (ATS) to all non-immunised patients.
- Suture fresh, superficial cuts using sterile equipment and materials.
- Do not suture stab or dirty wounds.
- Some blunt injury wounds can be sutured (if they look like cuts), but most must be left open.
- For closed blunt injuries, monitor vital signs, shock, etc. regularly.
- Do not suture wounds which are more than 6 hours after the injury.
- Give antibiotic if wound is septic, and clean with antiseptic solution regularly.
- Refer all large wounds and all stabbings in chest and abdomen to the hospital.

2. Burns

The following are the major causes of burns:

- Heat (wet and dry)
- Chemicals (acids, alkalis)
- Electrical, including lightning.

Types of Burns

- Burns may be partial or full thickness.
- Partial thickness burns involve the destruction of the epidermis of the skin.
- Full thickness burns involve the destruction of both the epidermis and the dermis. This may include the fat tissue, muscle, major vessels, and the bone.

Signs and Symptoms

- Pain is present in all kinds of burns.
- There is reddening of the skin in superficial burns with only partial skin loss.
- Blisters are present, especially in burns caused by hot liquids.
- Loss of body fluids, especially in deep burns
- Shock due to pain
- Fear.

Assessment

- Establish the cause of the burn.
- Assess the extent of the body injury by percentage and depth, using *Wallace rule of 9 or 7 (the latter for children)*. Refer to Figure 9.1 below.
- Assess vitals for signs of shock and infection.

Criteria for Referral of Patients

- Burns of 15% or more of body surface (partial or full thickness) in adults.
- Burns of 10% or more of body surface in children.
- Burns involving special parts of the body – face, genitalia, flexor areas.
- Lightning burns.

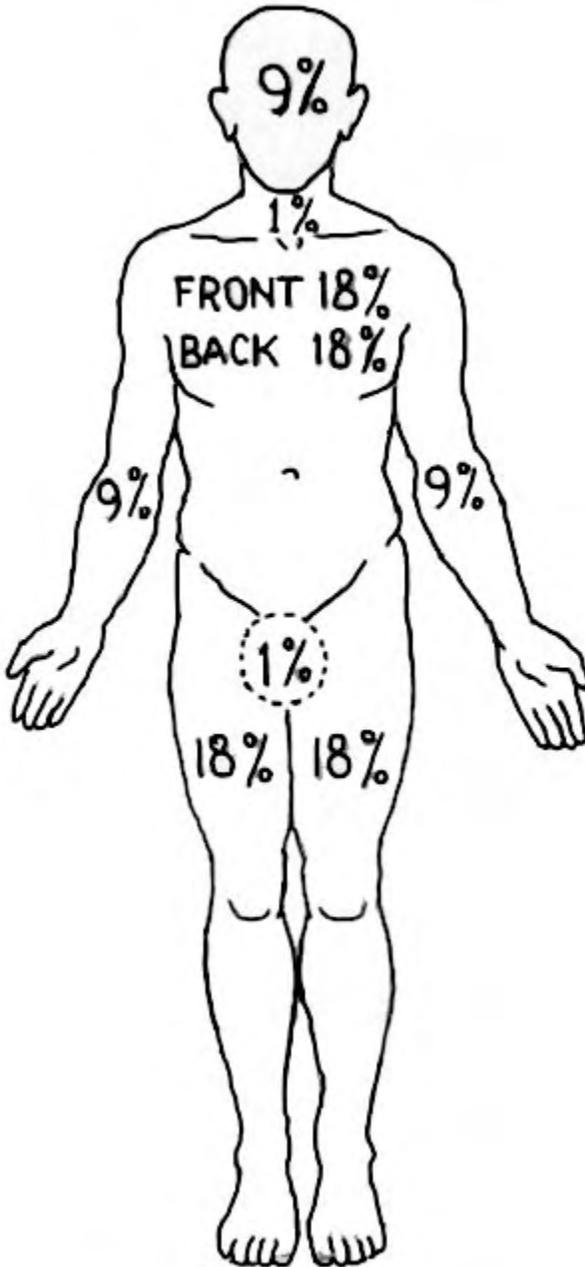
Complications include:

Shock, infection, anaemia, damage to the cornea if the eye is exposed to burn, contractures, and deformities caused by scarring.

Management

- Give first aid at site of burns (site of accident)
- Encourage cold water immersion of burnt area
- Give analgesics
- Encourage oral fluids
- Local cleaning plus topical antiseptic/antibiotics
- Monitor vital symptoms
- Give systemic antibiotics, when required
- Give tetanus toxoid, when necessary.

Figure 9.1: Wallace Rule



For burns of 10% or 15% or more in children or adults:

- Start IV fluids Ringer's lactate. If not available normal saline 0.9%.
- Use *Parklands formula* to calculate fluid requirement on first day of burns, i.e. 4ml x % body surface area burnt x body weight = total fluid required in 24 hours (see Table 9.2 below). On the second day assess condition and reduce IV fluids to half above or ORS if stable.
- Monitor fluid intake and output on a fluid balance chart.
- Refer all complicated burns to the next level.

Table 9.2: Treatment with Parklands Formula (First Day of Burns)

Hours after Burns Occurred	Patient's Weight	% of Body Surface Burnt	IV Fluid Required
1st 8 hours	20 kg	20%	800 ml
2nd 8 hours	20 kg	20%	400 ml
Last 8 hours	20 kg	20%	400 ml

Note: The first 8 hours count from the time the burns occurred.

3. Accidents

Accidents are common causes of death and disability.

Common causes include:

- Automobiles
- Ox-carts
- Rocks
- Building collapsing
- Mine disasters, etc.

Management

- Carry out a quick history and examination to establish the severity of the injuries, using the steps below:
 - Establish a clear airway and support respiration if necessary - airway, breathing and circulation (ABC)
 - Control any bleeding by using a simple pressure bandage. If bleeding from arteries this may require suturing to arrest bleeding. In such a situation apply pressure and refer immediately

- *Clean and debride wounds before suturing*
- *Immobilise fractures immediately by using splints (limbs)*
- *Give analgesics to relieve pain*
- *Give tetanus toxoid*
- *Commence IV fluids if severe haemorrhage or shock.*
- Refer the patient to the nearest hospital if the patient has:
 - *Sustained head or chest injuries*
 - *Suspected internal haemorrhaging*
 - *Is unconscious*
 - *Is in need of additional care.*

4. Fractures

Fractures are very common and can occur as a result of an accident or a fall.

Common Causes of Fractures

- Direct violence due to a blow
- Indirect, due to a fall or sudden strong muscular contraction commonly seen in transverse fractures of the patella
- Pathological, mainly due to bone disease.

Main Types of Fractures

- Closed or simple fractures. This is where the bone is broken but there is no open wound, therefore there is no risk of external infection.
- Open or compound fracture. In this case there is also an open wound, which means there is high risk of external infection such as pyogenic or gas forming organisms.

Clinical Features

- History of accident or fall
- Pain aggravated by movement of the affected area
- Swelling, bruising, and tenderness over the fracture line
- Loss of function of affected limb
- Abnormal mobility of the affected limb
- Grating on movement of the fragments
- Deformity where there is displacement of the fragments.

Note: It is important to note that not all signs can be present in every case.

Management

- Ask the patient not to move the affected limb or area unnecessarily, to avoid further damage. If you suspect spinal fracture ask the patient to remain in a lying position
- Immobilise the fracture immediately using splint (limbs)
- Control any bleeding if present using simple pressure bandage
- Give analgesic to relieve pain
- Commence IV fluids if patient is in shock
- Refer the patient to the nearest hospital for further management.

5. Spinal Injuries

- Spinal injuries are common following falls from heights or because of automobile accidents. Occasionally they may also occur from gunshots and other injuries.
- Injuries of the spinal column may cause damage to the spinal nerve roots (cauda equina) or the spinal cord and its vertebrae.
- Damage of the spinal cord can cause permanent disability, while injury to the nerve roots may have some recovery.
- Most of the nerve/spinal injury is done at the time of the accident.

Clinical Features

- History of accident or fall.
- Patient may complain of inability to feel/move limbs or pain (if conscious).

First Aid

- Ask patient to remain lying down. Ask if patient can move toes.
- Consider the patient to have a spinal injury if s/he has lost feeling/power or has altered level of consciousness.
- Lift such patients as one piece (3-4 people) to the available transport.

Management at Health Centre

- Do a quick assessment.
- Maintain airway if unconscious or not breathing well by use of tongue depressor or airway tube.
- Provide sandbags on each side of neck or cervical collar, if suspicious of neck injury.
- Monitor vital signs.
- Start treatment for shock and refer immediately.

6. Head Injuries

Injuries to the head are common in automobile accidents, sports, and fights. They can be closed or open.

Types of Head Injuries

- *Concussion* (mild head injury): loss of consciousness after a head injury for less than 30 minutes without any damage to the brain.
- *Contusion*: head injury with some degree of brain damage (bleeding or oedema is present).
- *Compression*: compression of the brain by a gradual steadily growing blood clot or oedema. Patient may be conscious and gradually develop altered level of consciousness or confusion.
- *Open scalp/skull wounds with or without depression* - brain matter may be mixed with blood trapped or noticed in the wound.

Signs and Symptoms

- Altered level of consciousness.
- Bleeding or spinal fluid discharge from nose, ears, or mouth.
- Scalp wounds or depression in the skull.
- Paralysis of limbs.
- Size of pupils – normal, dilated, or constricted.
- Pupils reacting or not reacting to light.

Management

- Assess quickly type of head injury.
- Observe for 24 hours all patients with a history of altered level of consciousness.
- Give antibiotic and tetanus toxoid in all open head injuries, and apply clean dressing.
- Refer all major head injuries to the hospital.
- Ensure that the referral notes are informative.

Section 13: Bites

Introduction

Dog and human bites are common. Bites from wild animals can also occur. Dog bites occur during provocation or by stray (rabid) dogs. Human bites mainly occur during conflict or fights.

1. Dog Bites

What to Do

- Inquire about the circumstances preceding the bite (provoked or not, stray dog?).
- Inquire if dog is vaccinated and is showing any signs of acting strange.
- If not vaccinated and not acting strangely, request dog to be observed for ten days (from day of bite).
- Owner should report outcome of dog after ten days. If dog strayed away or died, suspect rabid.
- Consider all stray dog bites as highly risky for rabies.
- Primary suturing should be avoided in all animal bites.

Management

- Debride/clean all punctured wounds thoroughly well with antiseptic under local anaesthesia.
- Give tetanus toxoid.
- Give anti-rabies vaccine, if it is a rabid dog bite. Dose as per manufacturer's instructions.
- Give antibiotics if there is high risk of infection.
- Give analgesics.
- Refer all big bites to the hospital.

Note: Bites by wild animals should be treated in a similar manner.

2. Human Bites

Management

- Debride/clean wounds under local anaesthetics
- Give antibiotic
- Give flagyl
- Give analgesics
- Refer all big bites to the hospital.

Consider risk of HIV infection in all human bites; health worker should tell the patient to return if s/he experiences any complications.

3. Snakebites

Snake bites are more common in rural, peri-urban, and hilly areas. Familiarise yourself with the poisonous snakes in the area. Consider all snake bites potentially dangerous and institute urgent treatment.

Prevention

- Encourage people to wear long clothing and footwear
- Avoid night walks.

Types of Venomous Poisoning Caused by Snakebites

a. Mambas and Cobras (Elapidae) – Neurotoxic Poisoning Snakes

Clinical Features

- Pain/swelling at site of bite.
- Dysphagia, excessive salivation.
- Dysarthria.
- Ptosis (Spitting Cobra) with respiratory failure (within hours if delayed).
- Tissue necrosis.

b. Carpet Vipers, Path Adders (Viperidae) - Cytotoxic and Haemotoxic Poisoning

Local Signs

- Pain, swelling, and local tissue destruction (progressive).
- Blistering of skin within 24 hours.
- Lymphadenopathy.

c. Rattle Snakes/Boomslang – Haemotoxic Poisoning

Systemic Signs

- Bleeding tendencies
- Renal failure
- Local pain
- Hypotension

Danger Signs

- Drowsiness
- Slurred speech
- Excessive oral secretions
- Difficulty in breathing
- Necrosis.

Management

First Aid

- Reassure the patient/relatives.
- Immobilise the bitten part.
- Assess clinical picture for severe local systematic signs of poisoning.
- Apply tourniquet to base of proximal bite, if Mamba or Cobra bite. Release every 45 minutes for about 30 seconds.
- Give tetanus toxoid and start IV fluids in severe conditions.
- Administer anti-venom, if available, as per manufacturer's instructions.
- Give analgesic.
- Give antibiotics when necessary.
- Refer to the hospital all patients that require further attention.

Note: Avoid sucking venom out of the bite with your mouth or making cuts in case of heamotoxin and cytotoxic poisoning.

Section 14: Drowning

Introduction

- Children run the risk of drowning when they play around water without supervision.
- High risk groups include toddlers, teenage boys, non-swimmers, and patients with seizures.
- Older children may drown in rivers and excavation sites filled with water.

Signs

- Comatose
- Restless
- Abdominal distension
- Respiratory failure.

Management

- Initiate breathing – clear the mouth of any debris, lay the patient facing down, pat on the back to facilitate the removal of inhaled water, and then do resuscitation.

- Start external cardiac massage if there is no palpable heartbeat.
- Give oxygen at the earliest opportunity.
- Give parenteral antibiotic.
- Refer the patient to the nearest hospital.

Section 15: Eye Diseases

1. Eye Injuries

Introduction

Blunt eye injury may result in:

- Torn or ruptured structure of the eye in serious cases
- Secondary damage due to the effects of haemorrhage, and later by infection
- Loss of vision.

Any person with a severe blunt eye injury should be referred to the hospital for specialist treatment.

Management

If vision is normal and only a black eye with sub-conjunctival haemorrhage, give:

- Analgesic
- Apply clean eye patch x 48 hours
- Review patient on the 3rd day, if improving continue analgesics. If not better, refer.

Note: All eye injuries due to sharp objects should be referred to the hospital immediately after first aid (eye antibiotic ointment and eye patch).

2. Conjunctivitis

- Conjunctivitis is the most common eye disease in Zambia.
- It may be acute or chronic.
- Most cases are due to bacterial or viral infection.
- Other causes include allergy and chemical irritations.
- The mode of transmission of infectious conjunctivitis is usually by direct contact via fingers, towels, or handkerchiefs to the opposite eye or to other persons.

Signs and Symptoms

- Red itching eye with pus discharge.
- Eye lashes may be stuck together on waking up.
- There is no pain or blurring of vision.

Management

Clean the eye with water before applying eye ointment: tetracycline 1% eye ointment three times a day for a week.

3. Allergic Conjunctivitis

Allergic Conjunctivitis is an eye condition that is precipitated by intrinsic and extrinsic allergens.

Signs and Symptoms

Red, itchy eyes with oedema of the conjunctiva and watery discharge.

Treatment

Mild Form

- Chlorpheniramine (piriton) 4mg two times daily for adults, 2mg two times a day for children aged 6-12 years, and 1mg for children aged 1-5 years.
- Apply tetracycline 1% eye ointment if there is secondary infection b.i.d./t.i.d.

Severe Form

Add Hydrocortisone 1% eye drops t.i.d. Discontinue once symptoms improve.

Note: If there is no improvement, refer to nearest eye clinic/hospital.

4. Ophthalmia Neonatorum (Gonococcal and Chlamydia Conjunctivitis)

Ophthalmia neonatorum is inflammation of the conjunctivae due to gonococcal or chlamydia infection passed from mother to child during delivery.

Signs and Symptoms

Red, swollen eyes with pus appear during the first week of life.

Management

Eye cleaning every 2–4 hours until eyes stop discharging pus. *Refer to Chapter 8: Sexually Transmitted Infections* for appropriate treatment for ophthalmia neonatorum and treatment of mother and contacts, using appropriate algorithms.

5. Trachoma

Trachoma is one of the major causes of blindness. It is a chronic infection of the conjunctiva, caused by chlamydia trachomatis.

Prevention

- Encourage and teach good face hygiene.
- Encourage the use of safe, adequate water supply.
- Encourage early treatment of eye problems.
- Encourage vaccination against measles for all children.
- Treat eye diseases using a different tube for each patient, to eliminate cross-infection.

Signs and Symptoms

- Painful irritated eyes
- Vascularisation of tarsal plate
- Mild or severe red eye
- In-turned upper lid with eyelashes scratching the cornea.

Treatment

Mild

- Do not turn the upper eyelid or eyelashes, or touch the cornea.
- Tetracycline 1% b.i.d. x ⁶/₅₂.

Severe

When eye lashes are touching the globe:

- Tetracycline 1% b.i.d. x ⁶/₅₂.
- Doxycycline 100mg b.i.d. x ¹/₇ then 100mg once ⁷/₇ only or erythromycin 250mg q.i.d. x ⁷/₇ adults, children 25mg/kg orally.

When eyelashes are touching the cornea:

- As above plus
- Epilation of eye lashes touching cornea, or refer to eye clinic for lid surgery.

- Cornea opacity in one eye and eye lid is normal – reassure the patients/guardian.
- If both eyes have severe cornea opacities, refer to the hospital eye unit for further assessment.

Section 16: Ear Problems

Introduction

Ear problems are common in children, and are the common cause of deafness. They can be acute or chronic.

1. Acute Otitis Media

- Inflammation of the middle ear presenting within 14 days.
- Can be suppurative or non-suppurative.
- May follow an upper respiratory infection.

Common causes include:

Viral, bacterial, and fungal.

Signs and Symptoms

- Pain
- Headache
- Fever (especially in children)
- Pus discharge from affected ear
- Redness of ear drum.

Management

- Give an analgesic (avoid aspirin in children).
- Give antibiotics x 7-10 days (penicillin or cotrimoxazole).
- Dry ear canal of pus if present by wicking with cotton wool.
- Encourage rest for 1-2 days.

Note: Ear drop antibiotics may be given, if available.

2. Chronic Otitis Media

- A suppurative inflammation, involving the middle ear for more than 2 weeks.
- It occurs as a complication of acute otitis media, which has not been treated or failed to respond to initial remedies.
- Sometimes it is caused by poor compliance of treatment by patients.

Signs and Symptoms

- Ear pus discharge or serous fluid.
- Poor hearing in affected ear.
- Perforation of ear drum (may be present).
- Low grade fever (may be present).

Management

- Give an antibiotic 7-10 days (if not taken previously) penicillin or co-trimaxazole.
- Daily ear wicking of canal until ear dry of discharge.
- Review after 2 weeks.
- Refer to the hospital if condition does not improve after 2 weeks.

3. Mastoiditis

Mastoiditis is an inflammation of the mastoid bone following an acute or chronic otitis media, which has not been treated or properly managed.

Signs and Symptoms

- Painful and tender swelling behind the affected ear
- Ear discharge (may be present or absent)
- Headache
- Fever.

Management

- Give initial antibiotic (parenteral, if possible).
- Give initial analgesic.
- Refer to the hospital immediately.

Common Complications

- Meningitis (especially in children)
- Perforation of ear drum
- Impaired hearing
- Other nose and throat infections.

Section 17: Oral Health

Introduction

Oral health is a standard of health of the oral and related tissues, which enables the individual to eat, speak, and socialise without active disease, discomfort, or embarrassment, and contributes to general well being.

Promotion

- Promote good hygiene, such as regular brushing of teeth to prevent dental diseases, including caries.
- Promote eating of fibrous food as opposed to sugar.
- Promote good habits, such as avoiding putting dirty objects into the mouth.

1. Dental Caries

Dental caries is a disease, which, by combination of chemical and bacterial actions, slowly destroys the enamel of the tooth.

Prevention

- Maintain good oral hygiene by regular brushing of teeth after meals, preferably with a fluoride tooth paste.
- Reduce intake of sugary foods and drinks.
- Visit a dental clinic for check-ups at least twice a year.

Causes

- Bacteria ferment sugar to produce acid. Prolonged presence of the acid causes loss of calcium (decalcification) of tooth enamel.
- Dental caries develop only in the presence of 3 interacting variables:
 - *Bacteria plaque*
 - *Bacteria substrate (sugar)*
 - *Susceptible tooth surface.*

Clinical Features

- White spot, which later changes to brown and eventually forms a cavity.
- The tooth is hypersensitive to cold or hot drinks and food.
- Pain if the pulp is involved.
- At a later stage, swelling appears at the base of the tooth.

Diagnosis

- On clinical examination with mirror and probe, a carious lesion (hole, cavity) is identified.
- Bitewing radio-graphs are used to diagnose caries on the biting surface and the slides of the teeth.
- Special dyes can be used to diagnose caries.

Complications

Dental abscess.

Management

- The aim is to preserve the tooth as much as possible, depending on the extent of decay.
- Give analgesics, such as aspirin or paracetamol, for pain relief.
- Give penicillin V tablets for the infection.
- Filling (using atraumatic restorative technique).
- Tooth extractions where the above options cannot save the tooth.

2. Periodontal Disease

Periodontal disease includes all pathological conditions of the periodontium (tissues which surround and support the teeth).

Prevention

Educate on good oral hygiene.

Types

There are two inflammatory diseases which are plaque induced:

a. Gingivitis

Gingivitis is an inflammatory response of the gingivae, without destruction of the supporting tissues.

Causes

Poor oral hygiene.

Signs and Symptoms

- Pain
- Redness of the gum
- Swelling of the gum
- Gum bleeds easily on probing.

Management

- Give analgesics.
- Improve oral hygiene, e.g. by scaling/polishing done at the dental clinic.
- Rinse with saline warm water twice daily.

Complications

Periodontitis.

b. Periodontitis

Periodontitis is a group of inflammatory diseases affecting all the periodontal structures. It results in destruction of the attachment apparatus and development of a periodontal pocket.

Prevention

- Good oral hygiene by regular brushing twice daily with fluoride toothpaste
- Regular visits to a dental clinic twice a year.

Causes

- Untreated gingivitis
- Microbiological factors
- Host factors, e.g. weak host defence mechanism to protect against plaque irritants.

Clinical Features

As in gingivitis plus:

- Pocket formation (between the tooth and gingival)
- Tooth mobility.

Diagnosis

- Confirm clinical features with radiographic examination, where possible
- Loose teeth
- Biopsy, where possible.

Management

As in gingivitis plus:

- Oral hygiene
- Non-surgical subgingival scaling
- Or tooth extraction.

Complications

Dental abscess.

3. Periodontal Abscess

Periodontal abscess is an acute collection of pus within a gingival or periodontal pocket.

Prevention

- Good oral hygiene by regular brushing twice daily, preferably with a fluoride tooth paste
- Regular check ups at dental clinic twice a year.

Causes

The presence of subgingival plaque frequently associated with a deep periodontal pocket.

Clinical Features

- Pain
- Swelling
- Pocket
- Tender to percussion
- X-ray, shows little evidence in early stages, later there is reduced bone density.

Management

- Establish drainage
- Carry out subgingival scaling to remove foreign objects and calculus
- Irrigate with sterile saline or chlorhexidine
- Give antibiotics, e.g. penicillin V 250mg four times daily for five days, or metronidazole 200mg three times daily for five days.

4. Oral Thrush

Oral thrush is a fungal infection caused by candida albicans. It is also known as candidiasis.

Prevention

Maintain good oral hygiene by regular brushing twice daily, preferably with a fluoride toothpaste.

Causes

In a poor oral hygiene environment, candida albicans, which is a yeast, colonises the oral cavity. It occurs more commonly in persons who have some form of immune suppression and predisposing conditions, such as diabetes mellitus and malnutrition.

Clinical Features

- Redness and inflammation of the mucosa
- Small white patches on the buccal mucosa, tongue, pharynx, gums, and hard palate
- Burning sensation in the mouth when eating food
- Coated tongue
- Bad breath (halitosis).

Management

- Eliminate predisposing factors
- Apply Gentian violet 1% twice daily for 7 days
- Nystatin suspension 100,000 units orally 4– 6 times daily for 7 days
- If condition persists, refer to the dentist.

5. Malocclusion

Malocclusion is a deviation from the normal occlusion (bite relationship) of teeth, which can lead to impaired function.

Prevention

- Avoid bad habits, *e.g.* thumb sucking
- Visit the dental clinic regularly, preferably twice a year.

Causes

- Congenital, *e.g.* abnormal relationship between the mandible (lower jaw) and the maxilla (upper jaw).
- Acquired, *e.g.* early loss of teeth, bad habits in children, like sucking of thumb or foreign bodies.

Clinical Features

- Overcrowding of teeth
- Teeth erupting outside or inside or alveolar bone
- Abnormal bite relationship.

Diagnosis

Clinical features above.

Management

Refer to a dental clinic for orthodontic braces, and further management.

Section 18: Sore Throat

Introduction

Sore throat is inflammation involving the structures of the throat (tonsils, epiglottis, larynx).

Causes

- The most common causes of sore throat in children are viruses.
- In children aged 5-15 years, the infection may be caused by bacterial infection, the most common of which is Group A Streptococcus. Sore throats due to streptococcal infection can damage the heart valves, a condition known as rheumatic heart disease.

Signs and Symptoms

- Painful throat when swallowing
- Fever
- Enlarged inflamed tonsils (suppurative or non-suppurative).

Management

- Give an antibiotic for streptococcal sore throat treatment for 10 days with penicillin
- Give analgesics
- Give saline gargles
- Refer to hospital for severe ('kissing') tonsillitis.

Complications

- Peritonsillar abscess (quincy)
- Rheumatic heart disease
- Acute Glomerulonephritis.

Section 19: Rheumatic Heart Disease

Epidemiology

- Acute rheumatic fever is the leading cause of acquired heart disease in developing countries.
- Rheumatic fever is a rare complication of streptococcal infections – particularly throat infections (tonsillitis and pharyngitis).
- Rheumatic heart disease is a complication of acute rheumatic fever. It is a result of damage to the heart valves that occurs from carditis during an attack of acute rheumatic fever.
- Although rheumatic fever is rare it is a serious disease, and this is why streptococcal throat infections should be treated with penicillin for 10 days.

Clinical Features

A typical history of rheumatic fever is:

1. History of preceding streptococcal infection.
2. 2-3 weeks later, acute rheumatic fever symptoms appear.

A patient with rheumatic fever may have:

- Fever
- Painful, swollen joints (knees, ankles, elbows, shoulders – shifting from one joint to another), or joint pains
- Heart murmurs and other signs of heart involvement, e.g. increased heart rate
- Abnormal movements (irregular, non-repetitive fidgeting or jerking movements of the limbs).

The final diagnosis can only be made at hospital level. Refer the patient.

Treatment for Acute Rheumatic Fever

- Bed rest, as dictated by patient's condition.
- Penicillin to eradicate streptococcal infection. Start patient on benzyl penicillin for 3 days followed by pen V for another 10 days
- Aspirin 75mg/kg/day in 4 divided doses for the first two weeks, with gradual reduction thereafter
- Refer all children to the next level for further management.

For Established Rheumatic Heart Disease

- Prevent recurrence of rheumatic fever.
- Provide prophylaxis for bacterial endocarditis

Prevention of Recurrence of Rheumatic Fever

- Monthly IM injection of 1.2 mega units benzathine penicillin given to children.
- Alternatives: penicillin V, sulphadiazine, erythromycin.
- Continue prophylaxis throughout childhood and adolescence.

Bacterial Endocarditis Prophylaxis

For any surgical procedure, give appropriate prophylactic antibiotic, depending on the site of surgery. This should be continued for life.

Primary Prevention of Rheumatic Fever

- Avoid over-crowding, *e.g.* houses or classrooms.
- Adequate treatment of streptococcal sore throat.

Chapter 10 – Mental Health

Introduction

Mental disorders are one of the most common public health problems in Zambia. This is against a background of various challenges facing the people, such as a rise in poverty levels, the spread of HIV/AIDS, unemployment, gender based physical and sexual violence, high rates of depression and anxiety disorders, and a rising number of street and drug-abused children.

As a frontline health worker, you need to be conversant with the management of mental disorders at community, health post, and health centre levels because mental illnesses, such as anxiety and depression, are common in people who attend general outpatient clinics. You need to:

- Provide basic treatment and care for people with a mental illness who may not be able to see a specialist
- Provide long-term follow-up and support for mentally ill patients at the health centre and the community within the catchment area
- Help demystify negative beliefs and practices about mental illnesses.

Policy Statement

To increase the life expectancy of Zambians through effective promotive, preventive, curative, and rehabilitation programmes for both communicable and non-communicable diseases, including mental health.

Epidemiology

Zambia is yet to compile country specific information concerning the incidence and prevalence of mental disorders. However, it has been estimated that over 12.5% of the global burden of disease is caused by mental and neurological disorders. The common mental conditions are anxiety and depression, which occur at a rate of 20-30% among the population, and up to 40% among those who attend general outpatient clinics. Unfortunately, these conditions are not appropriately diagnosed by most health workers.

Causes of Mental Ill Health and Illness

Potential causes of mental ill health and illness include:

- Poor living conditions
- Poor family relationships
- Poor interpersonal relationships outside the home
- Occupational adjustment
- Infections such as malaria, meningitis, syphilis, HIV, etc.
- Damage to the brain due to trauma
- Influences during childhood and adolescence.

Classification of Mental Illnesses

There are 2 main classifications:

1. Neurosis

These are *minor mental disorders* characterised by *anxiety and depression*. The affected individual may be facing difficulties with life leading to extreme tension, unexplained worry, and preoccupation with bodily symptoms. Complaints of inexplicable bodily symptoms may be single or multiple and may change over time. In addition, characteristic of inexplicable bodily symptoms are frequent visits to the health centre in spite of the negative investigations. Usually patients do not require hospitalisation for neurotic illnesses.

Management

- Take a full history of the illness including mental state examination (*see the box on the next page on how to conduct a mental state examination*). Take into account key areas such as the particulars of the patient, reasons for consultation, and personal and family history. The mental status examination will guide you in appreciating the patient's behaviour and thought pattern, the mood, perception, and cognitive/intellectual functions.
- Rule out any physical illness.
- Avoid unnecessary diagnostic testing and multiple prescribing in the case of inexplicable bodily symptoms.
- Provide counselling services.
- If problem persists, refer for specialist psychiatric advice.

2. Psychosis

A general term referring to major mental disorders *having marked impairment of behaviour, perception, mood, and/or intellectual functions*. Usually patients require hospitalisation.

The principle types of psychosis are:

a. Acute Psychotic Disorder (APD)

This forms the bulk of mental disorders that are seen at Chainama Hills College Hospital and psychiatric units across the country. APDs show development of a clearly abnormal picture in about two weeks or less. The patient appears:

- Restless
- Puzzled and perplexed (not able to appreciate time, place, and person)
- Hallucinated (hears or sees objects without external stimuli)
- Deluded (harbours fixed false beliefs that cannot be changed despite appeal to the reason of the person entertaining them, *e.g.* “I am the saviour Jesus Christ and have come to liberate all”).

Management

- Take a full history of the illness, including a mental state examination.
- Rule out physical illnesses, *e.g.* malaria, meningitis, HIV/AIDS.
- Depending on the severity of the illness, control the patient by giving injection diazepam 10 mg IV/IM as a statum dose or every 6-8 hours.
- Refer the patient to the nearest hospital as soon as possible.

Box 10.1: Mental State Examination

The Mental State Examination is designed to obtain information about specific aspects of the individual's mental experiences and behaviour at the time of the interview.

1. Appearance and Behaviour

- **Appearance:** observe the individual's state of hygiene and grooming
- **Attitude to the situation:** is the individual hostile, uncommunicative, withdrawn, guarded, seductive?
- **Motor behaviour:** does the individual display restless or repetitive behaviours, tremors, hand wringing, or other bizarre behaviours?

2. **Speech:** observe whether the rate and the volume are normal

3. **Mood:** how the individual perceives the world

4. **Form of Thought:** the degree of hesitancy or slowness in thinking; ability to stick to the topic; the extent to which the conversation makes sense

5. **Content of Thought:** the extent to which the individual is deluded (has false beliefs), has suicidal thoughts, has obsessions, compulsions, phobias, or hypochondriacal symptoms

6. **Perception:** whether the individual hallucinates or shows other perceptual disturbances

7. **Sensorium and Cognition:** Level of consciousness: is the individual clear-minded, aware of surroundings, or disoriented

- **Memory:** can the individual remember immediate, recent, and more remote events
- **Orientation:** can the individual correctly identify the current time, where s/he is, and who they are
- **Concentration:** can the individual maintain concentration
- **Abstract Thinking:** can the individual deal with concepts and see common characteristics among things

8. **Insight:** is the individual aware of his/her problem and his/her situation?

b. Schizophrenia

This is a chronic disorder with several subtypes. The symptoms are of a longer duration and may take 1-3 months or longer to remit. These symptoms include:

- Auditory hallucinations, discussing the patient or ordering the patient to do something
- Thought insertion or withdrawal (saying that some people are removing or inserting thoughts into the patient's mind)
- Delusions
- Poor hygiene
- Social withdrawal
- Hoarding (keeping rubbish).

Management

Acute Schizophrenia

In acute schizophrenia, the symptoms are of sudden onset and last between 1-2 weeks. Treat as in acute psychotic disorder (APD).

Chronic Schizophrenia

- Give tablet chlorpromazine 50-100 mg t.i.d. or b.i.d., or tab haloperidol 5-10 mg b.i.d.
- Injection modicate 25 mg IM monthly is also used for maintenance in chronic schizophrenia.
- Advise home visitation by Community Health Worker (CHW) to ascertain home environment.
- If unmanageable, refer to the nearest hospital.

3. Bipolar Affective Disorder

This underlies either mania (or hypomania) or depression depending on which feature or symptom predominates; can manifest as either mania or depression.

a. Mania

Mania is characterised by:

- Elevation of mood
- Talkativeness, due to rapid thought process
- Distractibility or inability to concentrate on one activity at a time

- Extravagance, due to delusions of importance and rapid thought process
- Increased libido
- Weight loss due to hyperactivity
- Insomnia, due to rapid thought process and hyperactivity
- Delusions of importance, *e.g.* “I am the President of the Republic of Zambia”.

Management

If the patient displays agitation, extreme excitement or disruptive behaviour, anti-psychotic medication may be needed as described below.

- Initially haloperidol 5-10 mg up to 3 times a day or chlorpromazine 50-100mg up to 3 times a day. The doses should be the lowest possible for the relief of symptoms, although some patients may require higher doses.
- Benzodiazepines, *e.g.* diazepam 5-10 mg IV/IM stat. or 6-8 hourly can be given.
- Refer to the nearest hospital if there is a significant risk of disruptive behaviour.
- Advise home visitation by Community Health Worker to ascertain home environment and relapse prevention.

b. Depression

Symptoms include:

- Depressed mood (sadness)
- Loss of interest or enjoyment
- Reduced energy
- Insomnia or hypersomnia, due to worry
- Reduced libido
- Guilty feelings
- Feelings of worthlessness
- Suicidal ideation.

Management: *Minor Depression*

The condition is predominantly reactive in nature. It is usually found in individuals with a neurotic disposition and also comes as a reaction to stress or any other external stimuli or situation which individuals might find difficult to deal with. This condition, although attracting medical attention, may not require hospitalisation since the patient or individual is able to acknowledge the presence of symptoms and is not a danger to him/herself.

In the management of Minor Depression, do the following:

- Take full case history, including mental status examination
- Rule out any physical illness
- Provide counselling services
- If condition is not improving, refer to the nearest hospital.

Management: Major Depression

The patient looks extremely sad, his/her movements and thoughts are slow, and s/he stoops, or sits with his/her head bent low. S/he does not wish to talk and says as little as possible, slowly and in monosyllables. In the management of Major Depression, do the following:

- Take full case history, including mental status examination
- Rule out any physical illness
- Refer to the nearest hospital
- Maintenance – start the patient with 50-75 mg of Amitryptiline (Tryptizol) oral/IM in divided doses (b.i.d. or t.i.d.) or Imipramine (Tofranil) 50-75 mg oral/IM in divided doses (b.i.d. or t.i.d.). Then follow up every 5-7 days and gradually increase the dosage up to 300mg
- Always assess risk of suicide in depressive illnesses. If suicide seems a possibility, refer the patient for specialist psychiatric care
- Identify current life problems or social stresses. Focus on small, specific steps patients/family might take towards reducing or improving management of these problems.

4. Organic Disorders

Organic disorders comprise mental illnesses that can be caused by any of the following:

- Infections, particularly malaria
- Meningitis
- HIV
- Drug intoxication, either directly or sudden withdrawal
- Vascular disorders
- Electrolyte imbalance
- Hypo and hyperglycaemia.

Organic disorders can broadly be divided into dementia and delirium.

a. Dementia

This is a chronic and progressive illness with disturbance of memory, thinking, orientation, comprehension, calculation, learning capacity, language, and judgment. Consciousness is not impaired. It is common in terminally ill people (HIV/AIDS) and the elderly.

Management

- Antipsychotic medication in very low doses (*e.g.* Haloperidol 1.5-5 mg o.d. or b.i.d. or chlorpromazine 25-50 mg o.d. or b.i.d. can be given to manage some behavioural problems (*e.g.* aggression or restlessness).
- Behavioural problems change with the course of the dementia. Therefore, withdraw medication on a trial basis to see if it is still needed, and discontinue if it is not.
- Avoid using sedative or hypnotic medications (*e.g.* benzodiazepines) if possible.
- Facilitate appropriate individual and family psychosocial care.
- Refer to specialist services if behaviour problems persist, especially psychotic episodes.

b. Delirium

This is an acute organic mental syndrome. The predominant feature of delirium is the clouding of consciousness. There is reduced ability to maintain attention to external stimuli, disorganised thinking, disorientation to time, place, and person.

Management

Refer to the hospital as soon as possible.

Epilepsy

Although epilepsy is not a mental illness, following an epileptic fit a patient may experience periods of confusion which are similar in nature to psychotic episodes.

Treatment of epileptic patients is by anti-convulsant therapy. Details are given in the Section on Epilepsy in Chapter 10: Common Medical and Surgical Conditions.

Management of Side Effects of Anti-Psychotic Drugs

- There are various side effects of anti-psychotic drugs, the commonest being extra pyramidal symptoms, such as neck stiffness, rolling of eyes, excessive salivation, dryness of mouth, slurred speech, drowsiness, reduced psychomotor activity, and sometimes skin changes.
- In the case of anti-epileptic drugs, the commonest side effects are double vision, dizziness, fatigue, insomnia, depression, and drowsiness.
- In both cases refer to the nearest hospital for further management.

Community Mental Health

Against a background of the various negative influences on the mental health of the population outlined in the introduction to this chapter, it is critical to pay particular attention to aspects of community mental health.

Community mental health is considered as a service in psychiatry aimed at promoting and maintaining positive mental health, prevention of mental illnesses, and rehabilitation of the mentally ill in the community.

The intention is to ensure that mental patients leaving hospital and also people confronted with disabling psychosocial challenges, requiring treatment and care in the community, receive both the health and social care they require right in the community where they live and where stressors originate from.

In order to carry out effective community mental health programmes, do the following:

- Gather information about how the catchment population of your health facility views mental illness, and how they deal with those suffering from mental illness
- Gather information about any locally available support services or support groups for the mentally ill
- Keep records of the number of patients attended to by age, sex, occupation, and diagnosis, new admissions, re-admissions, relapses, and possible reasons for relapses
- Integrate mental health activities into other health programmes, such as immunisations, antenatal and postnatal care, and other reproductive health programmes
- Facilitate health education in the community to try to promote better understanding of handling mental illness and mental health problems.

Community Based Rehabilitation (CBR)

Community based rehabilitation is the restoration, with the community's active involvement, of the individual's ability to function adequately as a member of the community. Frontline health workers can support community based rehabilitation by:

- Liaising with other sectors dealing with community based rehabilitation, such as the Catholic Secretariat and other church organisations
- Identifying possible community group activities in which those affected by mental illness could participate
- Facilitating the entry of the mentally ill into appropriate community groups, by ensuring that group members understand the situation and are willing to make efforts to provide support
- Passing information to the mentally ill individuals and their families about opportunities for the patient's involvement.

Social Support Groups

Social support groups are groups of people who share a common problem and who can therefore share experiences, understand the experiences of the other members, and can provide both psychological and practical help and support.

Health workers should try to:

- Spearhead the formation of support groups, *e.g.* for users of mental health services, guardians, and other family members
- Provide information required by support groups
- Liaise for technical assistance, if and when necessary, from relevant community groups.

Chapter 11 – Environmental Health

Introduction

Environmental health is continually assessing, addressing, and preventing factors harmful to the health of the population. These factors can be physical, chemical, biological, social, and psychosocial and can promote or affect the health of individuals or the community. Examples of such factors are safe water and food, ventilation in homes and work places, waste disposal, and disease control.

Epidemiology

- 80% of the health problems in Zambia are attributable to preventable diseases related to environmental health.
- Safe drinking water coverage in rural Zambia is as low as 18%.
- Less than 40% of households in some areas have access to latrines, clean water, and adequate sanitation.
- Diarrhoeal diseases are indicators of poor environmental health. They constitute:
 - *The 3rd most common cause of outpatient attendance for all age groups*
 - *The 5th major cause of hospital admissions for infants*
 - *The 6th major cause of death in children 1-14 years of age*
 - *The 2nd major cause of hospital deaths.*

Policy Statements

To create environments that support health through:

- Ensuring safe physical environments and health supportive habitats in communities and workplaces
- Minimising the risk of transmission of diseases by food handlers and vendors
- Ensuring medical examinations for food handlers twice per year
- Enforcement of the Public Health Act.

Health Promotion

1. Water Safety

Encourage households to:

- Store water safely, preferably in covered containers (with a narrow neck but wide enough to reach inside when cleaning)
- Keep safe drinking water separate from water for general purposes
- Keep water container off the floor or ground
- Draw water from a known protected source
- Treat drinking water with a chlorine solution (like Clorin or Jik).

2. Faecal-oral Transmission

To prevent faecal-oral transmission, encourage the community to wash hands:

- Before handling foods and before eating
- Before handling water
- After using the toilet and cleaning baby's bottom
- Before scooping water to drink
- Before preparing and serving meals.

3. Construction of Wells

Advise the community on the proper siting, construction, and protection of shallow wells (*consult the Environmental Health Technician or Health Inspector for further details*):

- The depth should be at least 20m with diameters 1.2-1.5 (inner and outer well rings)
- Leave room to deepen the well in case the well dries up during the dry season
- Situate the well a minimum of 30m away from the latrine and other sources of pollution
- Construct the well during the dry months of the year when the water table has stabilised and is at its lowest level
- Advise and supervise the construction of apron, drainage, and fence
- Conduct hygiene education on the importance of cleaning the surrounding areas.

4. Water, Sanitation, and Health Education (WASHE)

Promote the WASHE basic needs (WBN) package in the community to improve the environmental sanitation. These include:

- Protected well serving 250 people within 150m of their residence
- Sanitary facility for each household (preferably a VIP)
- Dish rack for each household
- Hand washing facility for each household
- Water storage facility with a narrow necked container
- Food storage facilities in the home
- Refuse pit
- Clean surroundings.

5. Food Safety

- Encourage food vendors (shopkeepers and marketers) to use a protected food store in order to avoid exposing food to dirt and flies. This requires:
 - *Proper siting and maintenance of latrines*
 - *Adequate public toilets at markets to help maintain high standards of hygiene*
 - *Proper storage and handling of foodstuffs sold in the market*
 - *Construction of racks*
 - *Medical examinations twice a year for food handlers.*
- Encourage communities to ensure that:
 - *Food is always washed thoroughly before cooking and eating*
 - *Food is covered at all times*
 - *Left-over food is heated before consumption*
 - *Food is bought from known, safe sources.*

6. Housing

- Encourage good housing. Good housing:
 - *Is well drained*
 - *Is situated away from water logged areas*
 - *Is situated away from offensive trades (such as kraals or abattoirs)*
 - *Is well ventilated*
 - *Has natural lighting*
 - *Has adequate space for each family member.*

This helps prevent the transmission of diseases such as measles, tuberculosis, other respiratory infections, etc.

- Encourage permanent housing structures and drainage systems: collaborate with NHCs, extension staff from other sectors, teachers, other community based committees and households to promote good housing standards.

Prevention

As a health worker, ensure that you understand and know how to interpret the Public Health and Food and Drugs Acts.

1. Minimum Quality Standards at Health Centre Level

Ensure minimum quality standards at the health centre, including:

- Safe and reliable water supply within 150m
- At least 3 safe and clean ventilated improved pit latrines for staff and patients
- Refuse pit or incinerator for solid waste disposal
- Good state of repair for the health centre structure
- Well maintained surroundings at the health centre.

2. Inspection of Schools and Markets

- Ensure regular inspection of water supply and sanitary facilities in schools.
- Periodically, inspect food at the market and ensure that it comes from known, safe sources to avoid food poisoning.

3. Disposal of the Dead

Advise on siting and management of burial grounds to avoid pollution of water sources.

- Burial sites should be well sited, at least 30m away from sources of water supply.
- Encourage organised community burial of the dead.
- Ensure proper disposal of the dead in cholera epidemics.

4. Enforcement of the Public Health Act

Liaise with the medical officers of health in the district and the health inspector in the enforcement of the Public Health Act and other health related Acts, such as the:

- Education Act.
- Environmental Protection and Pollution Control Act
- Extermination of Mosquitoes Act
- Factories Act
- Food and Drugs Act
- Local Government Act
- National Health Services Act
- Prisons Act
- Town and Country Planning Act
- Water Act
- Water Supply and Sanitation Act.

5. Conduct Sanitary Surveys

Sanitary survey is a tool used to inspect facilities like water points (wells, springs) and sanitary facilities (latrines) and their immediate surroundings, to identify potential risk factors in order to avoid the contamination of water sources that may cause water related diseases.

Steps Employed in Conducting a Sanitary Survey

- Produce a *map* of the area showing water and sanitary facilities.
- Survey wells, springs, and sanitary facilities with local officials and identify risk factors.
- Discuss the identified *risk factors* and determine the appropriate interventions.

6. Participatory Hygiene and Sanitation Tools (PHAST)

Use these tools (*available at DHMT offices*) to assist the community identify, prioritise their health problems, and find solutions to these problems. The tools are in the form of pictures or posters depicting various situations in terms of social and economic conditions.

Steps to Follow

- Have community members select pictures that best suit their situation and rank them according to their priorities.
- Discuss these situations with community members and try to find a lasting solution, using the PHAST tool.

Note: Refer to appropriate PHAST tool kit.

7. Community Mobilisation

- Collaborate with the Village Development Committee and the Neighbourhood Health Committee to plan interventions related to water, sanitation, and health education.
- Utilise existing formal and informal institutions at community level.
- In order to improve the implementation of community initiated programmes, work with and through popularly elected and other leaders in the community such as:
 - *Chiefs: provide encouragement and guidance for their communities to participate*
 - *Councillors and church leaders: Parent-Teacher Associations (PTAs), teachers at local school health services and child-to-child health programmes, local women's clubs, local drama clubs, the market development committee, community health workers, and traditional birth attendants (TBAs).*

Water Supply and Sanitation

1. Water Supply

Safe drinking water and proper sanitation are essential to life. Scarcity of water, compounded by inadequate sanitation and poor hygienic practices, causes diseases that become risks to public health. Diarrhoeal diseases are indicators of poor water supply and inadequate sanitation.

Some common health problems related to poor water and sanitation include:

- Water *borne* diseases (*i.e.* cholera, typhoid, polio, dysentery, etc.)
- Water *washed* diseases (*i.e.* scabies, trachoma, etc.)
- Water *vector* diseases (malaria, schistosomiasis, etc.)
- Water *related* diseases (trypanosomiasis).

Sources of Water

Generally, there are three main sources of water supply:

a. Surface Water

- Surface water is the most common, the most easily accessible, and also the most contaminated of the 3 sources of water. Examples include, rivers, streams, ponds, lakes, and marshes.
- Generally, the most important source of contamination is faecal matter.
- Water from these sources must be disinfected (*e.g.* through chlorination, boiling, etc.) before it can be used for drinking.
- To avoid contamination, water should be drawn from a location that is far away and up-stream from sewage dumping sites, industrial waste discharge sites, and drainage from agricultural sites.

b. Ground Water

Ground water is usually quite pure because it is filtered as it flows through the ground. When ground water is less than 20 metres deep, it usually flows downhill in the same direction as water runs on the ground surface above, and can carry pollution with it for some distance.

Ground water (drawn from wells and boreholes) is generally the most suitable for small communities. However, it is essential to protect these underground sources from contamination. Site the well or borehole 30m away from pit latrines or other sources of pollution. Where the ground slopes towards the well, the borehole should be sited 50m away from the pit latrine.

Sources of Ground Water

- **Open, shallow, and hand-dug wells:** Open, shallow wells are one of the most common sources of water in rural and peri-urban communities. The water from these wells, however, comes from soil close to the surface, and can be easily contaminated by germs from human and animal faeces nearby.

Sanitary Inspection Checklist for Wells

For Hand-dug Wells

- *Presence of a water raising system (buckets, ropes) that is inaccessible to animals and unauthorised users.*
- *Presence of walls that have an impermeable parapet surrounding the well to prevent water from seeping through.*

For Drilled Wells

- *Presence of a well casing, extending 30cm above the platform.*
- *Presence of a sealed pump at the base, to prevent surface water from entering the pump.*

For Both Well Types:

- *Presence of an impermeable (uncracked) platform extending a 1m apron around the well.*
 - *Presence of a surrounding that is properly sloped, so that water drains away from the well and does not collect in stagnant pools within 2m of the well*
 - *Latrines and other sources of pollution (e.g. animal excreta, rubbish) should be sited down hill, and at least 10m away from the well*
 - *The walls of the well should be sealed from 3m below ground to prevent surface water from seeping through.*
- **Boreholes:** If properly done, boreholes are less likely to be contaminated because they reach water deep in the ground, far from the surface.

- **Springs:** Spring water normally comes from the ground and is free from contamination. However, the water may be contaminated at the collection site. If this is the case, improvements are recommended, according to the sanitary inspection checklist below:
 - *Surface water diversion ditch dug at least 15m uphill*
 - *Availability of spring protection by impermeable (un-cracked) masonry or concrete collection chamber*
 - *Opening to the collection chamber is protected to prevent the entry of animals and other direct contact*
 - *Record of periodic cleaning of the chamber available*
 - *Presence of a manhole with a locked cover for entering and cleaning the chamber, with provision for a draining tube*
 - *Presence of a chamber free of silt and inaccessible to animals*
 - *Latrines and other sources of pollution (e.g. animal excreta, rubbish) are sited downhill and at least 10m away from the spring*
 - *Presence of a fence to keep animals at least 10m away.*

c. Rain Water

Rainwater is one of the most common sources of water supply as it provides some communities with safe and wholesome water, especially during the rainy season. Zambia has a reliable and predictable rainy season from November to March.

Rainwater Harvesting

Rainwater harvesting is the collection of rain in a sanitary manner, so that it can be used for domestic purposes. In practice, at the household level this is limited to a few litres only.

In rainfall deficit areas, the rainwater source has been known to provide safe water supply for only 3-4 months. Sensitise communities to invest in rainwater harvesting.

The 3 major components of rainwater harvesting are:

- Hard impermeable catchment surface, such as roof or concrete slab onto which rain falls
- Gutter from collection surface
- Storage tank.

Materials used for the collection of rainwater include plastics, concrete surface, iron roofing sheets, ferro cement jars, and brick tanks.

Water Quality

Water for drinking or domestic use should be clear, free of suspended materials and contamination, and should taste good.

Water Quality Monitoring

The objective of *water quality monitoring* is to ensure that water used by the community meets national water standards for drinking water, and is acceptable to users.

Water quality monitoring is necessary:

- When new water sources are established
- For regular monitoring, to protect water sources
- If water source is below standard
- When there are changes in environmental conditions, *i.e.* rainfall, drought, etc.
- During disease outbreaks.

Water quality monitoring requires that:

- Water samples are collected, stored, and dispatched in suitable sterilised bottles for bacteriological analysis
- Volume of samples is adequate (114 ml and 2 litres for bacteriological and chemical analysis respectively)
- Sampling points are representative
- Sample details are adequately described, and sample bottles properly labelled.

Zambia has adopted the WHO water quality guidelines. The tables below show the WHO guidelines for the physical, chemical, and bacteriological quality of drinking water.

Table 11.1: Physical Parameters of Water Quality

Parameter	Normal Values
Colour	0-15
Appearance	Clear
Turbidity	0-5NTU
pH	6.5-8.5
Odour/smell	Inoffensive
Residual chlorine	0.2-0.5 mg/litre

The presence of some physical parameters (turbidity, colour, and odour) can be objectionable to consumers and this requires simple treatment procedures as discussed in the physical treatment of water.

It is important to get chemical analysis when a new water source is being recommended for the community, so that it complies with the guidelines.

Table 11.2: Chemical Parameters of Water Quality (in mg/l)

Parameter	Normal Values	Parameter	Normal Values
Sodium (Na)	200	Total alkalinity	800
Potassium (K)	12	Chloride	250
Calcium (Ca)	100	Ammonia	1.5
Magnesium (Mg)	30	Nitrate	50
Manganese (Mn)	0.5	Nitrites	3
Lead (Pb)	0.01	Hydrogen (H)	0
Zinc (Zn)	3	Hydrogen Sulphide	0.05
Iron (Fe)	0.3	Hydrocarbons	20
Chromium (Cr)	0.05	Dissolved oxygen	No effect
Arsenic (As)	0.01	Phosphates	1.0
Copper (Cu)	0.003	Fluoride (F)	1.5
Cadmium (Cd)	2.0	Sulphate	250
		Cyanide	0.07

The presence of coliforms, especially faecal coliforms, in water indicates recent pollution and remedial measures in the form of boiling, chlorinating, and filtration should be undertaken.

Table 11.3: Bacteriological Parameters of Water Quality

Parameter	Normal Values
Total coliform count per 100ml of water sample	10 (unpipd water)
Faecal coliform count per 100ml of water sample	0
Escherichia coli (E. coli) per 100ml of water sample	0

Water Purification Methods

In an effort to provide safe water supply from surface water sources, advise the community to adopt some simple methods of water purification as follows:

i) Physical Treatment of Water

Types of physical water treatment include:

- **Simple straining or filtration:** Polluted surface water usually contains suspended impurities and eggs of worms. Communities can use this method, where a clean piece of cloth is stretched over a pot and the dirty water is poured through the cloth into the pot
- **Simple stone-sand filters:** This works on the principle of passing untreated water over stones, gravel, and sand. The process is known to remove some bacteria, suspended impurities, and ova. This type of filter can be constructed from different containers. For good results, the sand and gravel bed must be changed from time to time to avoid clogging
- **Charcoal filters:** Crushed charcoal is used instead of sand in this process. The method is known for removing bad taste, odour, and colour from water
- **Commercial filters – ceramic/candle filters:** The part that filters water is made up of ceramic material, a baked clay, or ceramic, and is porous. This process removes bacteria and other suspended impurities. Ceramic or candle filters are suitable for use in homes, offices, and health facilities
- **Boiling:** Boiling of water is a useful intervention for destroying pathogens, especially during epidemics. The method can be reliable if properly used:
 - *Water should be boiled for 5-10 minutes*
 - *Water should then be stored in narrow necked containers, e.g. 5 or 20-litre containers*
- **Solar or sunlight disinfection:** The ultraviolet rays from the sun kill harmful bacteria and make the water potable; this principle can be easily utilised at community level:
 - *Draw and transfer silt-free water (not too turbid) to a clean and transparent plastic container (i.e., cooking oil bottle)*
 - *Keep the container covered, and place it in constant sunlight for 4-6 hours*

- **The 3-pot system of water storage:** The drawing and storage of untreated water and allowing it to stand for a long time has an effect on some ova, which are known to die off. This system is suitable at community level and is done in the following sequence:
 - Use two big pots to fetch water on alternative days
 - Allow the first pot to stand for 24 hours
 - Carefully pour out the clear top water into a smaller pot for drinking, and use the remaining water for washing
 - When the first pot is empty clean, refill, and allow to stand for 24 hours. In this way, each day's water has been standing for 24 hours (one day) before it is used.

ii) *Chemical Treatment of Water*

Disinfecting of water using chlorine: Municipal water systems in Zambia use chlorine to disinfect water. Chlorine imparts a slight taste to the water but is perfectly safe, providing it is used in the appropriate concentration. Chlorine is added at central points in the water distribution system; it can also be added at point of use, *e.g.* in the home. Products currently available for this purpose include Clorin and Jik. Follow the directions on the bottle to ensure proper concentration of chlorine. For chlorination to be most effective, other physical means of protection against contamination, such as use of a clean, covered water vessel must be observed. Chlorine is an effective chemical for destruction of harmful organisms in contaminated water. However, chlorine is not very effective if the water is turbid (*i.e.* contains clay particles).

The common types of chlorine are:

- Calcium hypochlorite (HTH) 30-70% concentration; this can be either in powder form, as granules, or tablets
- Sodium hypochlorite (bleaching powder); this is normally in solution form, ranging from 1 to 18% strength
- Clorin; this is used for household water treatment, and is manufactured by companies authorised to manufacture such products.

To use chlorine properly it is important to:

- Know the type and strength of chlorine compound
- Know the amount of water you want to treat, because the more the water the more the chlorine
- Make sure that the water does not contain much clay (low turbidity).

The strength of the chlorine sold on the market is usually very high. It is important to first prepare 1% solution. Since not all the chlorine dissolves in water, use the clear solution after making the 1% solution. Careful calculation of the quantity of water to be chlorinated is essential for accurate results.

The 1% solution prepared may be stored but should be utilised within one month. Allow chlorinated water to stand for 30 minutes in order to kill the harmful germs.

Table 11.4: Preparation of 1 Litre of 1% Chlorine Solution

Chlorine Compound	Chlorine Strength	Amount Required	Approximate Measurement	Amount of Water Required
High test hypochlorite (HTH)	70	14 gms	1 heaped teaspoon	Add water to make 1000ml
Bleaching powder	34	30 gms	2 heaped teaspoons	Add water to make 1000ml
Bleaching powder	30	33 gms	3 level teaspoons	Add water to make 1000 ml
Sodium hypochlorite	10	100 ml	7 teaspoons	Add 900ml water to make 1000 ml
Liquid/laundry bleach	5	200 ml	14 teaspoons	Add 800ml water to make 1000 ml
Clorin solution	Follow instructions			

2. Sanitation

- Sanitation is defined as the safe and adequate disposal of faecal matter and solid waste. The hygienic disposal of human excreta is of the utmost importance to the well being of communities
- Diseases such as cholera, dysentery, typhoid, etc. are common in areas with poor and inadequate sanitation, and can easily be prevented at community level with the promotion of sanitation activities.
- Use of participatory methodology and tools such as “Sanitation and Water Ladders”, will enable you promote the provision of affordable sanitary facilities that are acceptable to the community.

- Site latrines at least 30m away from any water point, and at least 10m away from homes and classrooms. Where the ground slopes towards the water point, the water point should be sited 50m away from the latrine.

A good excreta disposal system must:

- Provide privacy
- Be free from unpleasant smells
- Be free from vectors, *e.g.* flies
- Be safe to use and have an adequate size of orifice
- Be easy to operate and maintain
- Be easy to construct
- Not contaminate the user
- Protect the user from bad weather.

In addition, the persons collecting the buckets must wear protective clothing, and the contents of the buckets must be disposed of properly.

Common sanitary facilities in Zambia include:

a. Wet Sanitary Systems

- Aqua privy
- Septic tank
- Water closet.

b. Dry Sanitary Systems

- Traditional pit latrine
- Ventilated Improved Pit latrine (VIP).

The traditional pit latrine and the VIP latrines are commonly found at health centre and community level.

Traditional Pit Latrine

- Commonly used in rural and peri-urban areas where little water is available.
- Appropriate for single households and not recommended for public places and institutions, as the risk of incorrect use of the lid is high.

Table 11.5: Advantages and Disadvantages of Traditional Pit Latrine

Advantages	Disadvantages
Low cost	Smell
Easy use	Fly nuisance
Easy to construct with local materials and local communities	

San Plat

In order to improve general hygiene involving the traditional pit latrine, it is now possible to incorporate a Sanitation Platform, known as “San Plat”. This is a pre-cast platform that helps to keep latrine floors clean. The features of the San Plat include: a platform raised from rest of the latrine, key hole cover, slab, and key hole squat orifice. The San Plat moulds are now available; you can make a request through your DHMT.

Ventilated Improved Pit Latrine

- The VIP latrine is designed to reduce two problems frequently encountered by traditional latrine systems, smells and the harbouring of insects.
- A VIP latrine differs from the traditional pit latrine because the VIP latrine includes a vent pipe covered with a screen, to prevent insects from flying through it.
- The roof is usually made of grass or roofing sheets, to protect the floor and people.
- It has a flytrap, located on top of the vent pipe.
- The VIP should be painted black to attract flies to the flytrap.

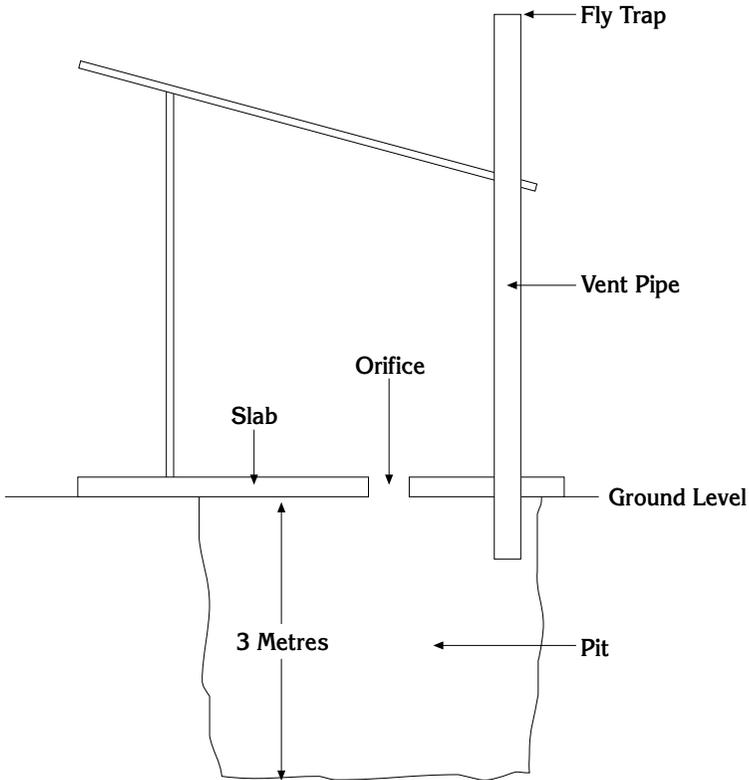
Features of Well Constructed VIP Latrine

- Pit should be square or round (normally 1m in diameter).
- A floor strong enough to stand on, and easy to clean, preferably with San Plat.
- The orifice, which is big enough to allow faeces and urine to pass through, but small enough to prevent accidents, especially for children.
- A tight fitting lid for the orifice to keep flies out of the pit. The handle should make it easy to remove and replace the lid.
- A roof usually made of grass, or roofing sheets, or concrete.
- A door for privacy.

Encourage communities to tip down into the latrine a mixture of soil and ash after each use of the latrine, for the following reasons:

- Reduction of odour
- Attracts fewer flies to the pit
- Soil/ash raises pH, which accelerates destruction of pathogens.

Figure 11.1: Construction Features of Ventilated Pit Latrine



Disposal of Waste Water (Sullage)

Sullage is waste water resulting from washing clothes and kitchen utensils, shower or bath water, or other domestic waste water not containing excreta. It can contain many germs, hence the need to dispose of it carefully. It is also important to provide water seals on sullage pipes. Sullage can be disposed of in several ways:

- Utilised for watering vegetable gardens and horticulture fields
- Channelled into septic tanks
- Disposed of in storm water drains.

Drainage of Water

- Good drainage is important for the health of the community because it prevents the breeding of mosquitoes in stagnant pools and it removes flood water.
- Flood water can contaminate drinking water supplies.
- Encourage communities to clear and clean all drainage channels to avoid blockages.
- Remove weeds to avoid temporary water ponds that encourage bilharzia snails.

Solid Waste Management

Poorly managed solid waste is known to contribute to the breeding of vectors/rodents, which in turn contribute to the transmission and spread of vector/rodent related diseases in the community, *e.g.* plague, cholera, etc.

The disposal of hospital wastes, which may become infectious, needs special attention at health facility level. The following methods are useful at community and health facility level:

- **Refuse Pits**

These are holes dug in the ground at least 1m deep, sited 20m away from the house and 30m away from the water source. The pit should be deep enough and be used for discarding and disposing of all types of waste.

- **Sanitary Landfill**

In this system, the solid waste is covered with soil to avoid breeding of vectors. For large amounts of refuse, the sanitary landfill method is simple and prevents flies and rats getting into the refuse.

- **Incineration**

Incineration is the best method of disposing of infectious materials for hospital wastes (syringes, needles, used drips, soiled beddings, clothing, placenta, etc.). Incineration is also the best method of solid waste management during outbreaks of infectious diseases.

- **Composting**

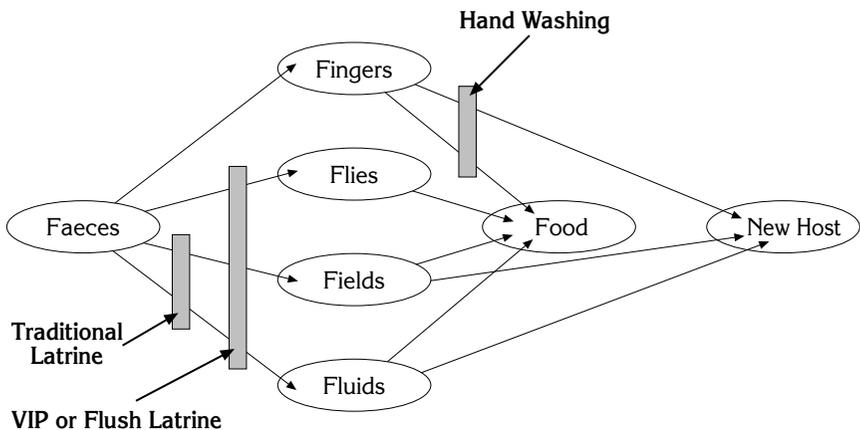
Composting is the treatment of organic materials to such an extent that it is rendered harmless. Compost can be used as a soil conditioner or as a fertiliser.

Ensuring Food Safety

The aim of food safety is to prevent food from becoming contaminated at any stage of production, collection, preparation, processing, storage, sale, and consumption. Faecal material may contaminate food in various ways, through:

- Fingers: by not washing hands after using the toilet
- Flies: by leaving food uncovered
- Fluids: by improper construction of latrines and through contaminated water supplies
- Food: being contaminated before consumption.

Figure 11.2: Potential Barriers to Transmission of Disease from Excreta



Faecal-oral transmission is the most common cause of diarrhoeal diseases, especially in children.

Transmission can be reduced by:

- Safe handling of food (to reduce the growth of bacteria through washing hands before touching food, covering food, etc.) in the home, at the market, and by the producer reduces the risk of diarrhoeal diseases
- Acquiring foods from approved sources, and storing it properly
- Keeping cutting boards clean and sanitary
- Cooking meats and fish properly
- Keeping utensils and knives clean and storing them properly.

Vector Control

Vectors of medical importance, including mosquitoes, flies, lice, fleas, cockroaches, etc. are a major cause of diseases such as malaria, plague, cholera, etc. in the community. Control of these diseases is by:

- Reducing insect infestation at the community level through good personal and household hygiene
- Seeking advice from the District Health Inspector to control stubborn insects like cockroaches, bedbugs, and fleas.

Houseflies

Flies can breed and feed on decaying organic matter (*e.g.* rotting vegetables, animal carcasses, and faeces). Flies carry bacteria from decaying matter into food, skin, and eyes. To control flies advise the community to:

- Bury or burn refuse, decaying matter, and faecal matter
- Keep house surroundings clean at all times
- Keep food utensils clean
- Protect food from flies
- Keep streets, roads, markets, and other public places clean
- Use insecticides to control flies, especially in the home
- Use fly screens on windows in houses, especially in guest houses.

Mosquitoes

Mosquitoes are vectors of malaria, yellow fever, filiriasis, etc. Malaria is a major public health problem in Zambia. Some proven control measures include the use of the following:

- Chemicals (Insecticide Treated Nets (ITNs), residual spraying, larviciding coils, etc.)
- Physical means (environmental management, through cleaning of areas around homesteads)
- Biological means (some species of fish are known to feed on the larvae of mosquitoes).

Cockroaches/Bedbugs/Lice/Fleas

Cockroaches are the most common and annoying vectors in most premises; because of their habits, they are often incriminated in disease transmission. Some preventive measures include:

- Personal hygiene in clothing and in the home, as cockroaches tend to thrive in unhygienic conditions
- Proper disposal of waste, using pits and burning
- Proper disposal and storage of leftover foods in covered containers
- Use of recommended chemicals.

Bilharzia Snails

Snails, which are intermediate hosts for bilharzia (schistosomiasis), breed and live in ponds, swamps, and slow flowing streams and rivers. Snails can be controlled through the following measures:

- Clearing vegetation along water edges at all times
- Clearing water channels so that water flows faster and makes snail breeding more difficult
- Discouraging urination and defecation in the open, especially near water sources
- Ensuring construction of good sanitary facilities (traditional pit latrine or VIP)
- Discouraging people from bathing and swimming in stagnant water.

Rodent Control

Rodents (rats and mice) are known to transmit deadly communicable diseases. Zambia has recently experienced plague outbreaks, one of the diseases transmitted through rodents. Remember that rats and mice only stay where they are fed.

Employ the following interventions to reduce rat/mice infestation in the community:

- Proper storage, collection, and disposal of all types of solid waste (refuse)
- Use of rubbish pits
- Clearing bush and long grass around dwelling places
- Filling open rodent holes with earth
- Storing mealie meal properly in closed containers
- Storing raw food like maize, cassava, beans, and groundnuts in a granary with rat protective plates
- Consulting the District Health Inspector in the use of substances to control large populations of rodents
- Using pets, like cats and dogs, to help control mice and rats
- Rat proofing of dwelling houses and food establishments, using “kick plates” (small piece of metal nailed at the bottom of a door to discourage rats gnawing).

Chapter 12 - Cross Cutting Issues

Introduction

The earlier chapters have been concerned with core medical issues. There are, however, additional issues which, while not being strictly speaking medical, nonetheless affect the provision of medical care. These issues cut across the various concerns that have been covered in the other chapters.

The cross cutting topics covered in this chapter are:

Section 1: Quality Assurance

*Section 2: Disease Surveillance: Detection,
Monitoring and Control of Outbreaks*

Section 3: Gender and Health

Section 4: Health Promotion

Section 5: Partnerships in Health

Section 6: Health and Poverty Reduction.

Section 1: Quality Assurance

Introduction

Quality assurance (QA) is an important part of every health care delivery system. It involves both the beneficiaries of the health care system (the external clients) and the health care providers (internal clients). Quality assurance means doing the work better all the time. It is concerned with ensuring that clients are satisfied with the services they receive, it helps to identify gaps and areas of weakness, and to check if goals are being achieved. It is important to remember that since quality of care is partly dependent on how clients feel about the services they receive, there is need to consult them from time to time on their views.

Quality Focused Vision

- The vision of health reforms is “to provide cost-effective quality health care, as close to the family as possible”.
- This edition of the ITGs focuses both on “*what*” is to be done for the clients, and “*how*” it is to be done. Both of these issues are important in the quality of care.

Example ***Appropriate Interventions***

When there is low immunisation coverage, the best interventions would be to increase access to immunisation services for those in hard to reach areas, and to make sure that people in those areas are informed about why immunisation is important, and where they can get the immunisation. Carrying out just one of these interventions would not be appropriate.

How the Interventions Are Carried Out

Quality assurance requires that the following issues are taken into account:

- Are the proper activities being carried out?
 - Are the services provided in time?
 - Do service providers have the appropriate skills to carry out the activities properly?
 - Are the materials available to carry out the tasks?
1. If *what* is done is right and it is also done *in the right way*, this means that service providers are performing the correct activities according to standards. In this case, we need to monitor and ensure things do not go wrong.
 2. If *what* is being done is right but *how* it is done is wrong, this means that we need to set standards and monitor to ensure that these standards are maintained.
 3. If *what* is being done is wrong but *how* it is being done is correct, this means that we should follow problem-solving steps to identify the correct interventions.
 4. If *what* is done and *how* it is done are both wrong, this means that quality is very poor. In these cases, we need to make a fresh start and do quality design.

Assessment of the Quality of Care

Assessment can take the form of a “snap shot” assessment, or a detailed study.

- Start by finding out if you have all the things you require to provide quality services.
- Consult the beneficiaries on whether they are happy with the way services are being provided, *e.g.* ask the clients about the health centre.
- Take action to improve the problems that have been identified.

Types of Assessment

- Self-assessment (done by yourself).
- Peer assessment (done by a colleague at the same level as you).
- Quality survey (using a questionnaire which defines quality).
- Exit interview (asking patients as they leave the health facility about the care that has been given).
- Equipment checklists (using a list of normal requirement; taking an inventory).

Monitoring the Quality of Care

Monitoring is the continuous collection and periodic analysis of data for selected quality indicators, the results of which are then compared with the established standards.

Types of Monitoring

- Use of indicators
- Supervision
- Review of documents.

In order to have an effective monitoring system, you must:

- Have commitment and interest
- Know how to interpret the data
- Know how to change the situation.

Evaluation of the Quality of Care

- Evaluation is a systematic way of studying the lessons learned from implementing the activity, and being able to take decisive, corrective action to improve quality.
- Evaluation is done at longer intervals than monitoring. It also helps us know if the planned goals have been achieved.

Principles of Successful QA Programmes

- **Teamwork:** This means working together to solve common concerns by applying good interpersonal skills and by co-operating and being positive in correcting identified errors. For example, a problem of delay in starting to provide services in an institution will require that all staff (cleaner, clerk, nurse, clinical officer, EHT) are involved in solving the problem.
- **Systems:** Systems are the ways in which health care is delivered. For health workers to maintain quality, they need to be familiar with the systems in place. For example, procurement of drugs is a broad area that covers quantifying the requirements, when to order, and how drugs are to be transported and paid for. When something goes wrong within the system, drugs may not reach their destination.
- **Process:** Is a step-by-step outline of how an activity is carried out. For example, a problem within the process for receiving drugs could be found to be that drugs are taken to the wrong destination, or that the wrong quantities of drugs are paid for.
- **Focusing on the client:** Understanding the needs of the clients and trying to ensure that these are met.
- **Focusing on data:** QA empowers health workers to make cost-effective decisions; this is only possible with good and accurate data as evidence.

Essential Elements Required for Quality Health Care Provision

1. **Technical competence:** The knowledge and skills needed to provide quality and safe health care.
2. **Technical performance:** The standards of behaviour. Even if a health worker has the knowledge and skills, s/he needs to apply these skills and to have the necessary inputs to provide the correct service.
3. **Effectiveness:** Care provided must yield the intended results. If measles interventions do not show a reduction in measles outbreaks, then the interventions are not effective.
4. **Efficiency:** Providing services in time and with minimum wastage. If a client is bleeding and care is given late, complications may occur which make treatment more costly because the patient will now require extended management with additional resources.
5. **Safety:** Both health care providers and clients need protection against harm in our institutions. For example, health workers need yearly medical examinations, protective clothing, knowledge, and skills to handle highly infectious materials, and a safe work environment. Clients require safe equipment, proper medication, and technically competent staff.

6. **Accessibility:** Clients have the right to health care. All barriers to health care should be eliminated.
7. **Continuity in care:** Clients should receive co-ordinated care. For example, a patient who is discharged should be followed up through reviews at the facility, or referred to a community based service, such as home based care.
8. **Interpersonal relationships:** Refers to a respectful and friendly work environment. Quality work culture encourages good communication, creativity, and involvement of health workers in decision-making. A difficult work environment is a result of poorly resolved conflicts, gossip, and management biases in support of subordinates.
9. **Amenities:** Refers to accessories for giving comfort to staff and clients. For example, a tearoom for health workers provides a place for informal communication and relaxation from the tensions of work.

Section 2: Disease Surveillance: Detection, Monitoring, and Control of Outbreaks

Disease surveillance is the collection, analysis, and interpretation of health information on where, when, and in whom the disease occurred, and the dissemination of information to those who need to know so that they can take appropriate action to prevent further diseases. The aims of disease surveillance are to monitor the number of cases of illness coming into the health system, and to use this information to detect the occurrence of outbreaks, and make decisions to respond appropriately on time. It is important to analyse the data at your health facility regularly as per guidelines and to implement appropriate measures to prevent further disease outbreaks.

Disease Surveillance

Purpose

- Helps to monitor programme performance and the impact of interventions.
- Identifies high risk populations.
- Involves timely detection and response to disease outbreaks.
- Provides information for programme planning and evaluation.
- Certifies achievement of disease control and disease elimination or eradication objectives.

Notifiable/Priority Diseases

(including notifiable diseases stipulated in the Public Health Act)

- Acute Flaccid Paralysis (AFP) or suspected poliomyelitis
- Measles
- Neonatal tetanus
- Cholera
- Meningitis
- Plague
- Rabies
- Typhoid fever
- Dysentery
- Yellow fever.

Note: Case definitions of the various diseases are given in the HMIS case definition manuals.

Steps in Disease Surveillance

1. Detecting, Notifying, and Reporting a Case or Disease Outbreak

Collect information on a health event (disease) for public health action (programme planning of disease control interventions and programme evaluation).

2. Investigating a Case or Outbreak

Collect and analyse data needed to confirm a suspected case/outbreak and plan to take appropriate public health action. Record this data in the form of a line listing (see below).

Line listing

- Line listing is a list of essential information to be collected on all reported cases, *e.g.* in measles outbreaks, information on sex, age, date of onset, immunisation status, clinical symptoms, and complications needs to be recorded.
- It is important to maintain a line listing of all investigated cases at your health facility.
- Line listing provides important and useful information on disease outbreaks that occur after conducting mass immunisation campaigns.

Frequency of Reporting

- Monitoring tools for individual case reporting (ND1) and weekly summaries (ND2) of notifiable diseases are available. Ensure that you complete these tools and submit them to the DHMT weekly.
- In addition, you should routinely complete ND3 monthly and submit them to the DHMT for compilation. The district then compiles monthly summaries using ND3 and submits these to the provincial level for onward submission to the CBoH. Monthly summaries should include zero reporting if no cases were reported during that month. For this system to be effective, complete the tools (reporting forms) on time.

Analysing and Interpreting Disease Patterns and Trends

- Monitor disease incidence (patterns and trends).
- Detect or verify outbreaks.
- Identify populations or geographical areas at high risk.
- Plan and evaluate the impact of programme activities.

Frequency of Data Analysis

- Data collected during an outbreak should be analysed as soon as it is available.
- Routinely collected data should be analysed weekly (ND2 form data) and monthly (ND3 form data).

Details of Analysis

- Surveillance data should first be analysed in terms of time, place, and person.
- Simple tabular and graphic techniques can be used to analyse and display data.
- Time analysis of changes in disease patterns and trends is important for detecting outbreaks, and for monitoring the impact of programme activities and interventions.
- Trends can easily be detected comparing surveillance data with those reported in previous months or in the same month of the previous year.
- An increase in the number of cases of a disease above the normal number of cases may indicate an outbreak.

Using Surveillance Data to Plan, Implement, and Evaluate Public Health Actions

The primary reasons for responding to an outbreak or a case are to *control and prevent further disease and to reduce morbidity and mortality* in the community.

Monitoring the Quality of Disease Surveillance

- *Timeliness* of reporting: Ensure that you report to the district in time. The ability to effectively control disease depends on the timeliness and appropriateness of the response to disease outbreaks.
- *Completeness* of reporting: Ensure that the reporting forms are completed correctly, with the relevant information, before submission to the district level.

Reporting Data to Higher Levels and Providing Feedback to all Levels

- Send monthly reports to the district by the 7th of each month.
- The district should send the reports to the province by the 14th of each month.
- The province should send the reports to CBOH by the 21st of each month.
- Provide feedback through meetings, newsletters, and supervisory visits.

Epidemic Preparedness and Response

The district is responsible for organising a response to control epidemics by:

- Strengthening or forming epidemic preparedness committees within the catchment area (health post, health centre, and district)
- Ensuring the availability of resources (medical and non-medical) for emergency preparedness and response (EPR)
- Establishing rapid response teams (RRT) within the catchment area (district, health centre, and health post level) that can respond to outbreaks within 48 hours.

Actions Needed for Different Types of Disease Outbreak

An ongoing outbreak:

- Needs immediate attention
- Identify populations at risk
- Prevent the spread of the disease and reduce morbidity associated with the disease through preventive, promotive, and case management interventions.

An outbreak that is almost over:

- Plan and implement activities to prevent future outbreaks/cases through preventive and promotive measures, such as health education, use of ITNs, chlorination of water, supplemental immunisation, etc.

Measles Outbreaks

Measles Surveillance

Measles is a notifiable disease. Complete ND1 and ND2 notification forms and submit them to DHMT. Report all measles outbreaks of 5 or more cases in a community immediately to the DHMT. Ensure that DHMT begins investigation within 48 hours.

Measles Outbreak Investigation

Start a line listing of all measles cases (*see the sample form shown in Table 12.1*):

- Provide detailed documentation on who is affected, where the cases are occurring, and whether or not the children were previously vaccinated
- Report outcomes (laboratory results, complications, and whether the child recovered or died)
- Do laboratory investigations of at least 5 cases in every outbreak to confirm the cause and characterise the types of measles virus circulating
- As soon as the outbreak threshold (5 cases) is reached, collect blood and urine specimens from 5-10 patients at first contact and send them to the UTH virology laboratory as soon as possible.

Specimen Collection and Transport

Blood

Collect 3.5 ml of venous blood in plain containers from 5-10 patients. Store specimens at 4-8o C. If there is no laboratory facility at the health centre, temporarily store the specimen in a fridge at 4-8o C and transport to the nearest laboratory facility within 24 hours. Serum can be transported cold or frozen in a vaccine carrier to UTH.

Urine

Collect 5-10 ml of first passed morning urine in plain containers from 5-10 patients. ***Do not freeze***; store in a fridge at 4-8° C. Transport specimen on frozen ice packs in a vaccine carrier.

Labelling of Samples

On the specimen container, indicate the patient's *name*, *date of collection*, and *type* of specimen. The laboratory form accompanying the specimen must bear the *date of the last measles vaccination*, the *date of the onset of the rash*, and the *date of collection*.

Note: The UTH laboratory will refund health centre costs for the samples sent for measles investigation.

Measles Outbreak Control Measures

Vaccination after an outbreak has begun will prevent up to 50% of individuals from acquiring the disease, if they are within 4 days of exposure. It is therefore much more cost-effective to *vaccinate children in surrounding communities* where cases have not yet occurred, or where very few cases have occurred.

When there is a measles outbreak, health workers should take the following steps:

- Search for additional cases from contacts and surrounding areas
- Minimise contacts with measles cases (keep children with measles out of school) for 5 days after onset of rash
- Concentrate on preventing further transmission to unaffected areas or communities; identify and vaccinate high-risk groups (those not previously vaccinated) in areas surrounding the affected community
- If fewer than 5 cases have been found, vaccinate only the close contacts and those children between 9 and 59 months with no record of immunisation
- Record vaccinations given on the child's immunisation card and on HMIS tally form
- If many cases are occurring in the age group below 9 months, vaccinate infants aged between 6 and 9 months as well
- Do not record the doses given below 9 months of age on the child's immunisation card and on HMIS tally form. These children will need to be re-vaccinated when they are 9 months old
- If the outbreak occurs in a hospital setting, immunise all admitted children aged between 6 and 9 months (it should be routine practice to immunise all admitted children 9 months and over, if not previously immunised).

Table 12.1: Sample of Measles Line Listing Form

Health Facility: Condition/Disease:

District: Date received at district:

Outpatient or Inpatient: (Use separate sheet for outpatient and inpatient)

No	DHMT ID #	Name	Village/compound/township	Sex	Age (for children > 2 yrs give in mths)	Date seen at facility	Date onset of symptoms	No past doses of measles vaccine (exclude doses in last 14 days)	Vit.A given in last 6 mths	Lab spec. taken (Y/N)	Lab Results	Outcome (alive, dead, complications)	Comments
1													
2													
3													
4													
5													
.													
.													
.													
.													
20													

Reporting

Determine the reasons why the outbreak occurred. Assess effectiveness of the immunisation programme and identify gaps. The report should include the following:

- How the outbreak was recognised
- Investigations/measures taken
- Problems encountered
- Conclusions and recommendations.

Health Education

- Messages to the community should include the importance of immunisation in preventing measles and other vaccine-preventable diseases.
- There should also be information on community case detection, household case management, and referral of measles infections.

Prevention of Nosocomial Infection

- Ensure the vaccination status of all eligible children (from 6 months to 5 years of age) entering a health facility (inpatient or outpatient) is up to date.
- Children vaccinated against measles under 9 months must have the vaccination repeated again at 9 months. This will reduce contagion in the health facility between infected and non-immune children.

Case Management

- Ensure effective case management to promote recovery and prevent complications through early treatment.

Immunisation

- Supplementary immunisation during disease outbreaks has been found to have little disease control value, since the appearance of a large number of cases in a community implies that susceptible individuals have already been exposed.

Actions to Be Taken During a Neonatal Tetanus Outbreak

Investigate all cases of neonatal tetanus within 48 hours of reporting (use mothers' TT vaccination history and risk factors).

Polio Eradication Campaign

Zambia committed herself to the global goal of polio eradication effort in 1995, and has since implemented successful national immunisation campaigns from 1996 to 1998. From 1999 to 2001, sub-national immunisation days have been conducted in districts bordering Angola and Congo DR.

Ensure that you:

- Attain and sustain high OPV routine coverage immunisation
- Conduct mass OPV vaccination campaign as per national schedule (two rounds) for children aged 0-5 years
- Conduct active surveillance for acute flaccid paralysis (AFP) among children aged 0-15 years. This involves detection and investigation of all children with AFP to confirm whether the problem is due to the polio virus
- Conduct a mopping up campaign when the wild polio virus is identified.

Section 3: Gender and Health

Introduction

“Gender” describes the socially constructed roles, activities, and responsibilities assigned to men and women in a given culture, location, or time. It refers to everything women and men do, and everything expected of them, with the exception of sexually distinct functions (such as childbirth).

Analysis of gender and health should address health issues arising from the full range of personality traits, attitudes, feelings, valued behaviour, and activities that society ascribes to the two sexes. Gender differences must be taken into account as health opportunities and health hazards are not the same for men and women.

These guidelines suggest ways in which gender based differences and inequalities are relevant to the provision of health services.

Gender Roles

- These are learnt behaviours in a given society, and are determined by societal norms. People are born female or male, but learn to be girls or boys who grow into women or men. As they mature, they are taught beliefs, behaviours, attitudes, and how they should relate to other people.
- They tend to change over time.
- Gender roles for women and men vary greatly from one culture to another, from one social group to another within the same culture, and according to race, class, education levels, economic circumstances, age, etc. All these influence what is considered appropriate for men and women to do.
- They may influence health care-seeking behaviour.

Some examples of gender roles in Zambia are:

<i>Men</i>	<i>Women</i>
Are the heads of households	Manage the kitchen
Issue instructions	Obey instructions
Make decisions	Are least consulted in decision-making
Protect families	Are protected.

Sex Roles

“Sex” describes the biological and genetic differences between men and women. “Sex roles” refer to the different physical and biological characteristics of men and women. Sex roles are determined at conception and therefore cannot be interchanged and do not change over time.

Some examples of sex roles are:

<i>Men</i>	<i>Women</i>
Produce sperms	Produce eggs
Impregnate a woman	Menstruate, become pregnant, deliver and breastfeed.

Gender Attitudes

Gender attitudes influence how women and men perceive themselves and others. Examining gender roles and relationships between men and women helps to understand underlying attitudes.

Gender does not mean:

- Focusing on women's positions only. In some instances men may be disadvantaged rather than women
- Fighting for equality between men and women
- Socially exaggerating the biological differences between men and women
- Blaming the opposite sex for inequality
- That only women should be gender advocates. Men also need to be involved.

Gender means:

- That both women and men have roles in the spheres of health services delivery and public life – from community to government level
- Recognition that gender roles are socially constructed and can, therefore, be changed
- Seeking to understand the root causes of inequalities, and addressing those causes
- Emphasising the establishment of structures or programmes that reduce women's workload, and release them from the culturally-defined limitations that prevent them from participating in development activities
- Addressing the inter-relationship between gender roles, and accepting that both men and women should be gender advocates
- Appreciating that men and women are different as a result of their biological and physiological make up, and that these differences often may become synonymous with inequities and discrimination, and so become unjust.

Women's Health

Concerns about women's health are based on the following factors:

- Health opportunities and hazards are not the same for men and for women
- Women are biologically and physiologically different from men. As a result, women suffer more from ill health and are more vulnerable to diseases than men
- Certain health problems are also more prevalent among or unique to women
- Social, cultural, and economic standing often adversely affects women more than men.

Men's Health

To a large extent, men:

- Make a difference in the control and prevention of many diseases such as HIV/AIDS/STIs because they are the decision-makers in the homes, especially in Zambia
- Make a difference in increasing couples' or women's participation in family planning
- Have special needs. For example, they need access to family planning and other services such as HIV prevention and control, and fathers' shelters at hospitals while waiting for their sick relatives
- Are often not targeted in public health programmes, and so lack the necessary information to adequately care for their partners and families.

Implementing Gender in Health

At the Health Centre Level

- Analyse exiting health activities to ensure that they encompass the whole life cycle for both men and women. These activities must ensure that reproductive health, disease control, mental health, nutrition, etc. are included and reach all segments of the population.
- Collect and analyse gender desegregated data on:
 - *Men and women's access to health services. Do they have equal access to all services? If not, what can be done?*
 - *Gender violence and its health consequences. How common is gender violence and what can be done to reduce it?*
 - *The health of adolescents. Is the health of both boys and girls being considered? What can be done to improve these programmes?*
 - *The socio-economic consequences of socio-economic and culturally defined gender roles.*
- Use the results of the data collected to modify health programmes and devise strategies for gender and health sensitisation.
- Ensure involvement of NGOs and pressure groups in advocacy to create awareness in the community.

At the Community Level

- Neighbourhood Health Committees and other community based groups should identify and discuss common value systems that discriminate against women and men. These include “customs” and “traditions” that may be tolerated by the society, but which are responsible for perpetuating inequities between men and women.
- Involve both men and women in advocacy for gender and health.
- Include both men and women in the decision-making processes of community based health initiatives.
- Include both men and women in the implementation of community based health initiatives.

Gender Violence

Gender violence includes emotional and physical abuse, mainly against women. It is a public health problem.

Domestic violence is a pattern of behaviour that generally starts with tension and intimidation in the couple's relationship, and progresses to physical assault, with injury to the woman and often also the children.

- It is often cyclical, characterised by periods of time when tension builds and then a release of tension through physical violence.
- It is a common cause of mental ill health and often results in serious harm or death to the afflicted.
- It is the most common type of gender violence seen in health care settings.

Sexual Harassment

- Is defined as any unwanted or unwelcome behaviour of a sexual nature that is offensive to the subject of the harassment, and causes that person to feel threatened, humiliated, or embarrassed.
- Sexual harassment is a type of gender violence.

Risk Factors

Some of the main risk factors for gender violence include:

- Increased use of alcohol or illicit drugs
- Gender inequalities (*e.g.*, the subordinate position of women)
- Cultural values that glamorise violence
- Unemployment, poverty, and homelessness.

Prevention of Gender Violence

- Collect information and define the causes of the problem.
- Identify vulnerable groups and develop prevention measures for each period in their lifecycle.
- Develop and test interventions to promote protective conditions and minimise vulnerability in different settings.
- Implement interventions based on test results and measure outcome.

Section 4: Health Promotion

The purpose of health promotion is to strengthen the ability and skills of individuals and groups in society, so that they act individually and collectively to take control of factors that affect their health. It leads to changes in knowledge, attitudes, and practices, and all other factors that have a bearing on health. For this reason, health promotion cuts across all sectors.

Strategies for Health Promotion

- Information, Education, and Communication (IEC)
- Social mobilisation
- Advocacy

These strategies aim to support health policies, increase partnerships and change knowledge, attitudes, and behaviour.

Information Education and Communication (IEC)

There are 3 approaches for IEC:

- *Individual* approaches, such as counselling or consultation
- *Group* approaches, *e.g.* focus group discussions (FGDs), role-play or drama
- *Mass* approaches, such as campaigns, rallies, parades, etc.

For IEC to be effective, use participatory approaches and multiple settings (workplace, health facility, schools).

Planning IEC Activities

- IEC should be based on a clear knowledge of the needs and perceptions of target audiences, and must always be linked to available products and services.
- Careful planning and vigorous implementation is essential to effective communication.

Basic Elements of an Effective IEC Plan:

1. Document the health status and determinants of the health problems seen in the community (with participation by other stakeholders)
2. Select practices (risk factors) for intervention
3. Select target audiences
4. Select communication channels
5. Develop communication objectives; position messages so as to communicate a benefit
6. Develop strategies and activities
7. Develop messages
8. Monitor the programme.

Step 1: Documentation

- Collect information on the community's *health status* – establish the magnitude of the problem(s), who is affected, in what circumstances these health events occur, and their geographical distribution in the community.
- Document the *key factors influencing the health status* of the community, including: *knowledge, attitudes, and practices* and other factors (*e.g.*, community members may not know the association between unprotected sex and HIV infection. They may associate HIV/AIDS with witchcraft or drug use).
- This step and the following steps should be done with the involvement of key stakeholders (including members of key audience groups).

Step 2: Select Practices for Intervention

- List all the health problems identified.
- Prioritise the problems.
- Look for important behaviours that bring about the selected priority problems.
- Remember that what people know and think is important to health programmes, but it is what they do or fail to do that is of utmost importance to effective IEC.
- Select 1 to 3 behaviours, which can be changed through health education using available resources. Liaise with relevant stakeholders (government sectors, traditional leaders, DHMT, etc.) for behaviours that might be difficult to change and may require additional resources.

Step 3: Select Target Audiences

- Stakeholders or participants in an IEC programme or activity may be involved as either target audiences, partners, or allies.
- Analyse the *audience* for the problem identified, *e.g. mothers who do not take their children for vaccinations*.
- It may be appropriate to further subdivide target audiences by religion, marital status, age, education level, or geographical location to help focus on specific messages.

Step 4: Select Communication Channels

- Continually identify where the people seek information from on health in the community, and why they seek information from such *sources*.
- Incorporate these *sources* in the IEC effort.
- Identify and analyse *structures* through which messages can be communicated to reach target audiences. Such structures may include: neighbourhood health committees (NHCs) and other community based organisations (CBOs), non-governmental organisations (NGOs), football clubs, farmers' associations, parent-teacher associations (PTAs), community health workers (CHWs), community distributors, scouts or girl guides, district councils, schools, churches, women's organisations, traditional healers, traditional leaders, and politicians.
- Identify the *medium* of communication, *e.g. television, radio, print media, or drama groups*. If the audience you intend to reach do not have access to television or radio, it is pointless to use such methods. Likewise, if your intended audience is largely illiterate, it is pointless to use the print media. In each case, the choice of medium must be appropriate for the intended audience.

Step 5: Develop Communication Objectives

- The desired end result in an IEC programme is to change from problem behaviour to a desired behaviour.
- Objectives should therefore address *actions*, not knowledge, or attitude.
 - *Objectives should be SMART; i.e. Specific, Measurable, Achievable, Relevant, and Timely*
 - *An example of a well written objective – “By the end of the year 2002, 75% of infants in community X will have been fully immunised by the time they reach 12 months of age”.*

Step 6: Develop Strategies and Activities

Decide on the general strategy to be used. Break this down into specific activities or actions. For each determine:

- Who is responsible
- When the activities need to be accomplished
- What resources are needed
- Which partners are expected to be involved.

Step 7: Develop Messages

Key to communication activities are the *messages* to be delivered. Develop messages that:

- Reinforce positive factors
- Respond to misunderstandings and areas of insufficient knowledge
- Address attitudes
- Explain the benefits of behaviours promoted
- Urge specific action
- State where to find the services being promoted and any help that may be needed
- Address barriers to action.

Step 8: Monitoring

The main aims of monitoring are to:

- Find strength and build on it
- Find a problem and fix it.

Choose appropriate indicators (based on the chosen objectives/ activities) and develop a detailed monitoring plan as part of the initial planning process. Results of monitoring during the execution of your activities will provide information to help you make necessary changes to your intervention and achieve better results.

Types of indicators you may use include:

- *Process* indicators, which focus on short-term results and activities, *e.g.*, were the activities implemented as planned? How efficiently?
- *Outcome* indicators, which provide information on the long-term outcomes of the programme or activity, *e.g.* change in death rate or quality of life
- *Impact* indicators, which provide information on the extent to which the objectives were achieved.

In selecting indicators, you should:

- Clarify the objective and targets
- Know the activities
- Identify groups to be involved
- Decide on what results are expected
- Know when results are expected.

Ask yourself the following:

- Will the indicator measure what is needed, and does this lead to achieving the intended objective?
- Will the indicator detect the problem, success, and/or magnitude of the problem?
- Is the indicator understood and acceptable to the people involved?
- Will it be fairly easy to use the data about this indicator?
- Who else will use this indicator?

Some indicators used in IEC:

- Proportion of people exposed to a health message
- Presence of an IEC action plan
- Number by type of IEC materials available
- % of the population by target group reporting change in their behaviour
- Number of plays performed about a health problem
- % of people using toilets after a health talk about good sanitation practices.

Social Mobilisation

- The community is an equal and important partner whose ideas should be respected.
- Social mobilisation is involving communities in designing interventions or programmes and taking action that benefits them. This can be done in programmes, such as national immunisation days, child health weeks, disease outbreaks, reproductive health activities, school feeding programmes, HIV/AIDS and TB campaigns, national commemoration days, construction of health infrastructure and rehabilitation, etc.
- For social mobilisation to be effective, the community needs to be well represented and have a clear understanding and appreciation of the issue at hand.

Strategies

- Identify and bring together all potential skills, resources, and stakeholders in the community.
- Facilitate the formation of community groups and provide technical advice.
- Form a social mobilisation committee that will act as a forum for local communities to participate in community based health promotion activities and co-ordination, and sharing of ideas and experiences.
- Establish the criteria for selection of members and develop the roles and responsibilities. Partnerships should be based on shared vision, transparency, equality, and consensus.
- Initiate health promotion activities using specific health or health related issues prevalent in the area as the entry point. The community should have the major say in the selection of the entry point.
- Empower the community with skills to set priorities, make decisions, plan, implement, and evaluate intervention programmes.
- Identify specific settings such as schools, workplaces, health facilities, or market places to carry out the task.
- Encourage the use of a variety of methods, approaches, or techniques to address the issues. Selection of methods should be done using an interactive (participatory process).
- Monitor and evaluate programmes with the target audience, using participatory methods.

Some stakeholders that should be considered in health programmes, if available in the area, include:

- Neighbourhood Health Committees
- Parent-Teacher Associations

- Traditional leaders, such as chiefs and headmen
- Health care staff
- In and out-of-school youths
- Church groups
- Women's groups and other community based organisations
- Line ministries and/or departments, *e.g.* Agriculture and Community Development
- Local businessmen
- Individuals involved in the creative arts (*e.g.* drama groups, musicians, etc.)
- Co-operating partners, such as NGOs, charities, development and faith-based organisations, etc.

When selecting organisations and individuals, pay attention to the following questions:

1. Which agency or individuals are interested or working in the issue at hand?
2. What is their comparative advantage?
3. What resources do they have (transport, training facilities, experience, personnel, etc.)?
4. What is their reputation in the community?
5. What influence do they have with the authorities and target groups?

Social Mobilisation Committee Functions

The committee will, among other things, carry out the following tasks:

- Develop a social mobilisation strategy; door to door campaigns are quite effective
- Needs assessment and objective-setting
- Develop key messages and identify messengers, media, and audiences
- Reach out into all parts of the community, sharing information about the issues, and building support for the project
- Help identify potential strengths in the community and obtain resources for programme activities
- Help assess health problems and opportunities that affect health in the community
- Co-operate in conducting research, monitoring, and evaluation activities
- Help mobilise resources to support programmes
- Follow-up and feedback.

Factors Leading to Failure

Social mobilisation is built on mutual trust, it is bound to fail if:

- There is excessive dependency on outside influences, such as government or donors
- The community is not involved in designing, planning, implementing, monitoring, and evaluating of the programmes
- There is inadequate preparation and training
- There is dishonesty or lack of transparency and accountability over resources.

Participatory Methods

The following methods, can be used to mobilise community action:

Group Discussions

- Prepare the place for discussion well in advance, place people in their peer groups, *e.g.* sex, social status, and age groups.
- Set agenda and objectives.
- Build confidence in every member to ensure that everyone participates freely without feeling embarrassed.
- Control members who dominate the group.
- Maintain relevance.
- Help the team to keep on track.
- Talk less, listen more.
- Keep time.

Role Plays

- Collect information about a situation.
- Analyse the issues.
- Devise messages to be acted upon.
- Avoid detail.
- Select people to do the role play.
- Explain what they are to do.
- Allow them to practice for a while.
- During the play, the audience should observe and listen carefully, noting the skills and issues.
- After the play, ensure that the role players resume their normal behaviour.
- Facilitate a discussion around the issues raised as they affect real life situations.

The Un-serialised Poster*

- These are usually dramatic pictures that are open-ended and so leave room for varied interpretations.
- Use a set of posters or photographs to encourage creative thinking.
- Different audiences should come up with a different stories or issues from the pictures.

The Story with a Gap*

- A story illustrated by two contrasting pictures of before and after situations for brainstorming.
- The participants invent the steps or connect already made steps leading to the present scenario.

Open-ended Stories*

- You can also employ dramatic episodes in which the main character receives conflicting advice and is undecided as to which of the options to take.
- The audience is invited to suggest the best solution.

Three Pile Sorting*

- Participants sort out three sets of picture cards, *e.g.* those that show good hygiene practices, those that are clearly harmful, and those that are neither clearly good nor clearly bad.
- Activities for community, government are done jointly.

*You can order a kit from the Central Board of Health through your DHMT

Advocacy

Advocacy has become an unavoidable activity of health promotion. It is time consuming and therefore potentially costly. Advocacy can enhance or damage your reputation or that of the health facility; it is therefore wise to ensure there is a strong case for advocating for a selected issue. You should carefully plan your advocacy campaign.

Before beginning an advocacy campaign, you need to answer five questions:

- What is the problem and its significance?
- Can it be easily changed?
- Are the benefits greater than the cost?
- Is there acceptance of the activities?
- What actions are recommended?

Your advocacy is likely to be successful if in presenting your arguments you:

- Are clear about the problem
- Know the causes
- Put across workable solutions
- Provide evidence
- Create a large following in support of your idea
- Act firmly to improve the situation
- Revisit and adapt your arguments.

For an effective advocacy programme, you should ensure that you take the following steps:

- Identify the issues
- Reach consensus with different stakeholders on the issue
- Focus on an issue that has achievable goals, has high impact solutions, and is easily understood and felt by many
- Assess needs and be clear about what you expect to achieve
- State what you want to change, by how much, by whom, and when
- Identify target audiences and analyse their perceptions
- Shape messages such that they are easily understood
- Deliver the messages at the right time, by the right person, in the right place, and through the right media
- State exactly in a few words what you want to say and why. The chief may have only a few minutes to spare
- Ensure a mass of supporters. Advocacy thrives on numbers. Use techniques and channels appropriate to the target audience and setting
- Assign clear responsibilities to stakeholders
- Implement strategy. You should be patient as change is slow to come
- Provide feedback at each stage of the campaign
- Evaluate strategy used and adapt where necessary.

Section 5: Partnerships in Health

Introduction

“Partnerships in Health” refers to a positive relationship between all stakeholders who interface in health service delivery, to achieve set objectives, and to make improvements in the provision and sustainability of health services.

Frontline health workers should form partnerships in the catchment area of their health centre in collaboration with the Health Centre Committee, Neighbourhood Health Committees, communities, traditional healers, NGOs, CBOs, the private sector, and donors. Effective partnerships are based on mutual trust and respect, transparency, open and clear communication, recognition of the comparative advantages of each partner, a shared vision, and common goals.

Partnerships enable key stakeholders to:

- Work together to analyse the health problems in their area
- Identify the most important health problems
- Agree upon possible solutions
- Develop joint work plans
- Implement and evaluate progress jointly
- Jointly mobilise resources
- Add technical expertise when needed
- Extend vital services to high risk or communities with special needs
- Improve quality and efficiency of care and prevent duplication
- Ensure that communities take an active role in identifying and solving their own health problems, create healthy environments, and learn the art of well-being.

Types of Partnerships

External Partnerships:

Refers to the partnerships a community has with partners *outside* of the community itself. These partnerships may be with other stakeholders working in health in the same geographical area, such as government sectors, NGOs, the traditional sector, and the private sector.

Internal Partnerships:

Refers to partnerships built among groups and individuals within the community itself, *e.g.* TBAs, churches, Neighbourhood Health Committees, women's or men's groups, etc. An internal partnership tends to be sustainable as it creates interdependency and empowers the community to work together. Joint use of resources strengthens community actions and improves the chances of achieving common goals.

Levels of Partnership

- The health centre/health post and the community – between the health centre committee, area NGOs, CBOs, the private sector, the social sector, and the various communities in the catchment area.
- The district – with the district development co-ordinating committees, health boards, other governmental sectors, NGOs, etc.

Cost Sharing – User Fees

The role of cost sharing and user fees is to promote partnership. The goals of the cost sharing programme are:

- To promote community participation in health
- To encourage health workers to provide better services through performance bonuses
- To raise funds to improve the quality of care at the point of collection.

The majority of the funds collected through user fees should be returned to the health centre where they were collected, and should be spent on improving the quality of care in the health centre and the community. These funds can only be used with the approval of the community through its representatives – the Neighbourhood Health Committee members, Health Centre Committee members, and the chairperson of the Health Centre Committee. The chairperson *must* sign all cost sharing imprest requests.

In the spirit of partnership, the Neighbourhood Health Committees should draw up action plans responding to the needs of their communities. These plans then form the basis for community action plans which are incorporated into the district-wide action plans. These plans should be costed, and it should be indicated where the resources will be found. Some of these resources will come from a set-aside in the district grant for community health interventions. Another source of funds is the cost sharing fees available for quality improvement. These are only two of the resources available for communities. There are other external sources of funds (NGOs, projects, etc.), but far more important are the internal resources available to the communities in cash, kind, time, and labour.

Although cost sharing fees are a source of funds for community based health actions, these uses are not the only possible uses of user fees. Cost sharing funds can be used to purchase drugs, to pay a cleaner or a guard, to buy medical or cleaning supplies, as well as to support community

based agents (tTBAs, CHWs, etc.). The actual use of the funds should be negotiated and planned with all concerned at the health centre and district level.

Community involvement not only includes the use of the funds, but also the setting of fees, methods of payment of user fees, and any other charges. In the future, communities will be asked to participate in the identification and the taking care of those among them who are unable to pay.

Summary of Key Issues in Cost Sharing

- All health workers should make sure that they are familiar with the cost sharing exemption criteria, and that they educate their communities on these exemption criteria.
- Communities must be involved in setting of fees, methods of payment of user fees, and any other charges.
- The funds realised through cost sharing can only be used with the approval of the community through its representatives: the NHC and Health Centre Committee members.
- Cost sharing funds can be used to fund community based health actions, to purchase drugs and other medical and non medical supplies, to pay for services, such as security or cleaning at the health facility, as well as to support community based agents (TBAs, CHWs, etc).

Section 6: Health and Poverty Reduction

Introduction

The recent high levels of poverty in Zambia have led to serious concern about, and concerted efforts towards, poverty reduction. In the 1990s, the average levels of poverty in the country rose from 69% in 1996 to 73% in 1998. A central strategy in poverty reduction has been to promote economic growth in the country, partly through increasing the capacity of human resources.

An educated and healthy population are vital ingredients in economic development. Provision of adequate and easily accessible health care is, therefore, a major aspect of poverty reduction efforts. In Zambia, the high disease burden has a major negative effect on economic activity. For instance, it has been indicated by the Central Statistical Office in the 1996 Living Conditions Monitoring Survey Report that 25% of the population is sick during any given two-week period. This leads to tremendous loss of economic productivity.

Poverty and Ill Health

As has been the case in other African countries, Zambia's poverty reduction efforts have included concerns over health, because of the linkages between health and poverty reduction. A healthy person is better able to secure his/her well-being, and that of the family, in both material and psychological terms. The reverse is also true. Ill health is, therefore, both a cause and a result of poverty. In fact, being unable to maintain one's health is considered one of the major dimensions of poverty.

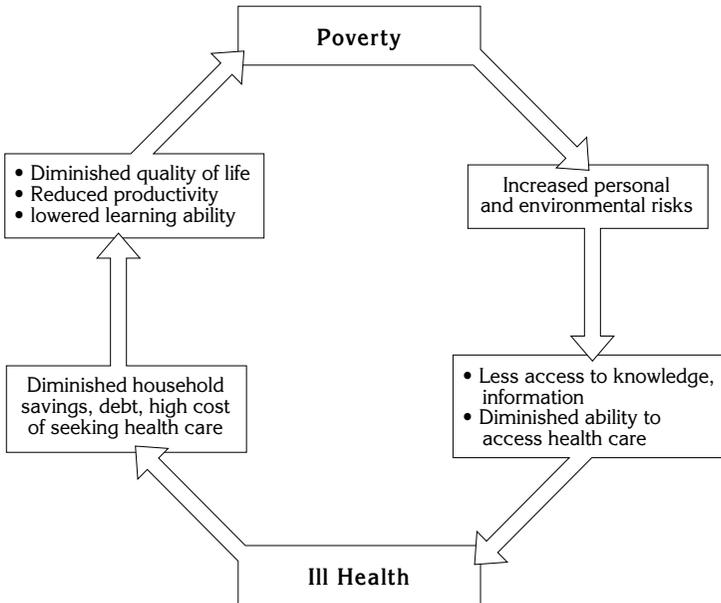
It is for the above reasons that the motto of the health sector's poverty reduction strategy in Zambia is "health is wealth". Ill health, therefore, leads to poverty, as indicated below.

- The poor are more prone to disease, because of their relative lack of access to health care
- Physically and mentally, a sick person is less able to be economically productive
- Being less productive economically, a sick person has fewer resources to be able to access certain fundamental needs, for instance proper/adequate food, thereby becoming prone to further disease. Family members will inevitably be affected by this, and malnutrition for children is a common consequence
- Malnourished children are particularly prone to disease. Given that a person's early childhood years are important for that person's later development, mentally and physically, malnutrition in childhood means diminished capacities in later life. One consequence of this is lower economic productivity, leading to poverty
- Being less productive economically, a sick person has fewer resources to be able to access health care, which further weakens the individual
- Where the sick person is able to access health care, the cost of the health care means that the financial resources devoted to securing health services are diverted from meeting other needs, such as school fees, etc.
- A sick person often needs to be cared for by family members, who in turn have to take time off from economically productive activities
- The reduced income for the family as a result of illness, for instance where the sick person is also the main earner of income for the family, means that the family's standard of living drops, making the family more prone to other illnesses. This is due, for instance, to lack of proper/adequate food, or lack of access to such preventive measures as clean, safe water. This situation is made even worse where the main earner of income actually dies from disease

- One of the effects of lack of income, partly due to ill health, may be inability to send children to school
- Where children are able to attend school, a family's low income levels may mean that children go to school without adequate food and other resources, which negatively affects their academic performance, and may lead to dropping out of school altogether
- In the long-term, lack of education leads to reduced possibilities for productive economic activity
- Lack of education also leads to lack of access to information, one of whose consequences is the inability to make informed decisions concerning one's livelihood.

The above are only some of the relationships between poverty and ill health. They are summed up in Figure 12.1 below.

Figure 12.1: Poverty and Ill Health



Health and Poverty Reduction: The Example of Immunisation

The close link between health and poverty reduction can also be illustrated by one health intervention: immunisation.¹ It has been indicated in *Chapter 3: The Well Child*, that immunisation is one of the most cost-effective and important health interventions. The reasons for this are:

- Immunisations are very effective in preventing childhood diseases, such as measles, polio, diphtheria, whooping cough, tetanus, and tuberculosis
- Many of the major health problems in Zambia are diseases that can be prevented by immunisation
- Some of the diseases that can be prevented through immunisation, are diseases that can leave victims permanently disabled, such as polio and tuberculosis
- Immunisations are both cheap and easy to administer, compared to other medical interventions. In particular, the costs of treating patients for diseases that could have been prevented through immunisation are extremely high
- Fully immunising children will mean a much lower disease burden for the whole country to deal with in future
- Fully immunising children will mean a healthier population, and therefore a more economically productive population
- The money saved, through a healthier population, can be channelled to other productive uses, thereby supporting poverty reduction.

All the interventions presented in this chapter are intended not only to improve the effectiveness of health care in Zambia, but also to enhance the quality and cost-effectiveness of the health care provided. Improving the health status of the Zambian people will lead to higher productivity of the country and thereby to poverty reduction.

¹ Source: Abt Associates Inc. (2000), *Poverty Reduction and Immunisations*.

Chapter 13 – List of Essential Drugs

Introduction

Essential drugs are those that satisfy and support implementation of the Basic Health Care Package and the health care needs of the majority of the population; they should, therefore, be available at all times in adequate amounts and appropriate dosage forms.

This chapter lists most of the essential drugs mentioned in this book for frontline health workers. Details on the use of these drugs are to be found under the respective chapters. Additional information on drugs can be obtained from the Zambia National Formulary.

Selection and Supply

The district or hospital Pharmacotherapeutic Committee (Drug and Therapeutics Committee), in conjunction with the Zambia National Formulary Committee, will select the essential drugs.

Essential drugs are defined depending on the level of health care:

- Community – supplied through the community health worker's kit
- Health centres – supplied through the health centre kit.

Note: Drugs that are justifiably required by the health centre and do not appear in the kit may be requested from the district as supplementary “bulk” drugs.

Community Health Workers

Essential Drugs

1. Acetylsalicylic acid tablets 300mg
2. Gentian Violet crystals
3. ORS (WHO-formula), sachets, powder 27.9g/1L
4. Paracetamol tablets BP 100mg
5. Paracetamol tablets BP 500mg scored
6. Tetracycline eye ointment 3.5g

Equipment

1. Bandage, cotton W.O.W. 5 cm x 5m
2. Condoms (male)
3. Cotton wool absorbent non-sterile
4. Notebook pad A5 ruled 50 pages
5. Pen ball point blue
6. Toilet soap
7. Triangular – bandage cloth 910mm sides

Rural Health Centres

Essential Drugs (supplied through the health centre kit as follows)

1. Acetyl salicylic acid (Aspirin BP) 300mg tablets
2. Aminophylline Europ. PH.II 100mg tablets
3. Amoxicillin USP 250mg tablets
4. Benzathine penicillin BP vials 2.4 MU injection
5. Benzoic Acid Co. ointment
6. Benzyl Penicillin G BP, 1MU (600mg) injection
7. Chlorpheniramine Maleate BP, 4mg tablets
8. Diazepam BP 5mg tablets
9. Doxycycline hyclate USP, 100mg tablets
10. Ferrous Sulphate BP, 200mg tablets
11. Ferrous Sulphate BP, 50mg tablets
12. Folic Acid BP, 5mg tablets
13. Gentian Violet Crystals
14. Hydrocortisone, 1% skin cream
15. Lignocaine HCL, 1% injection
16. Magnesium Trisilicate Co. BPC tablets
17. Mebendazole USP 100mg tablets
18. Methylethergometrine Maleate BP, 0.2mg/ml injection
19. Metronidazole BP 200mg tablets
20. Multivitamin BPC, formular tablets
21. Nitrofurantoin BP 50mg tablets
22. Noscapine Europ. Ph III 15mg tablets
23. ORS (WHO formula), sachets 27.9g/1L
24. Paracetamol BP, 100mg tablets
25. Paracetamol BP, 500mg tablets

26. Penicillin V Potassium BP, 250mg tablets
27. Procaine Penicillin BP/USP, 3MU injection
28. Salbutamol 2mg tablets
29. Tetracycline USP, 1% eye ointment
30. Trimethoprim-Sulphamethoxazole BP(Co-trimoxazole) 80/400mg tablets
31. Trimethoprim-Sulphamethoxazole BP (co-trimoxazole) 20/100mg tablets

Sundries/Equipment

1. Antiseptic Soap
2. Bag, Plastic, self-sealing, with min 64x83 mm
3. Ball pen
4. Bandages, cotton WOW
5. Braided silk suture, hospital reels 3/0"22m
6. Certrimide BP, Sachets 10g/1L powder
7. Chlorhexidine gluconate, guaranteed 20% 100ml solution
8. Condoms, lubricated
9. Cotton Wool 500g
10. Dispensing bottles with tight fitting lid, plastic
11. Gauze absorbent, non-sterile, 4 fold 0,90 x 5cm
12. Gauze, paraffin, dressings, sterile
13. Gloves, exam, Latex, disposable 6 – 7
14. Gloves, exam, Latex, disposable 7 – 9
15. Labels, self-adhesive
16. Needles, luer, disposable No. 23G 65 x 25mm
17. Needles, luer, disposable No 21G 80 x 38 mm
18. Needles, suture, curved 3/8, cutting 1L,3M,2S
19. Note book pad, A5, lined, 100 leaves
20. Out patients register (laying A4), 100pp printed, soft cover
21. Plaster, self-adhesive, Zinc oxide 5cm x 10m
22. Scalpel, surgical blade No. 15
23. Spoon, plastic, graduated 5ml
24. Swabs, gauze, non-sterile, 12ply 7.5 x 7.5cm
25. Syringe, Luer, disposable 2ml
26. Syringe, Luer, disposable 5ml
27. Toilet soap 90-100g

Bulk Supply Supplementary Essential Drugs for Rural Health Centres

Drugs that are justifiably required by the health centre and do not appear in the kit may be requested from the district to be supplied as supplementary “bulk” drugs.

1. Acyclovir 250mg tablets
2. Activated charcoal
3. Adrenaline injection 1 in 1,000 injection
4. Aminophyllin 25mg/ml injection
5. Amitriptyline 10mg/ml injection
6. Amitriptyline 25mg tablets
7. Amoxicillin 250mg tablet
8. Amoxicillin dry powder 125mg/5 ml
9. Antirabies vaccine human diploid
10. Anti-tetanus serum (ATS)
11. Anti-venom (for poisonous snakes)
12. Benzyl Benzoate 25% application
13. Benzylpenicillin 5MU injection
14. Calamine lotion
15. Chloramphenicol 125 mg/5ml suspension
16. Chlorpheniramine 4mg tablets
17. Chlorpromazine 50mg tablets
18. Ciprofloxacin 250mg tablets
19. Clotrimazole Vaginal Tablets
20. Co-trimoxazole 100/20mg tablet
21. Co-trimoxazole 400/80mg tablet
22. Dextrose IV 5% and 50%
23. Dextrose/saline
24. Diazepam 5mg/ml (2ml) injection
25. Ergometrine injection IM (IV) 200 mgs/ml
26. Erythromycin 125mg/5ml dry powder for suspension
27. Erythromycin 250mg tablet
28. Gentamycin 40mg/ml (2ml) injection
29. Haloperidol 5mg tablets
30. Imipramine 25mg tablets
31. Kanamycin 1g injection

32. Ketoconazole cream
33. Lignocaine injection 2%
34. Metronidazole 5mg/ml infusion
35. Methylated spirit
36. Miconazole cream 1%
37. Nalidixic Acid 500mg tablet
38. Nystatin Vaginal Pessarries 100,000 i.u.
39. Nyastatin oral drops 100,000i.u./ml
40. Oxygen, medical gas
41. Oxytocin 5 i.u./ml injection
42. Paracetamol 500mg tablet
43. Penicillin V 250mg tablet
44. Phenol
45. Praziquantel 600mg tablets
46. Podophyllin
47. Praziquantel 600mg tablet
48. Quinine injection 300mg/ml
49. Quinine tablets 300mg
50. Ringer's Lactate IV solution
51. Sodium chloride 9% solution (normal saline)
52. Spectinomycin 2g injection
53. Sulphadoxine-Pyrimethamine 500/25mg tablet
54. Tetracycline 250mg capsules
55. Tinidazole 500mg tablets
56. Vitamin A 200,000 IU capsule

Vaccines

(Those marked with an * are due to be added)

1. BCG
2. DPT
3. Haemophylus influenza Type B*
4. Hepatitis B*
5. Measles
6. Polio
7. Tetanus Toxoid

Contraceptives

1. Low-dose combined oral contraceptives (COCs)
2. Progesterone only pills
3. Progesterone only injectables (Noristerat)
4. Spermicide (foaming tablets)

TB Drugs

1. Ethambutol (e) 400mg tablets
2. Isoniazid (h)
3. Pyrazinamide (z) 500mg tablets
4. Pyridoxine (Vitamin B6) tablets
5. Rifampicin (r) 150mg + Isoniazid 100mg tablets (rifnah)
6. Streptomycin (s) 1g injection

Leprosy

1. MB blister packs (c)
2. MB blister packs (A)
3. PB blister packs (c)
4. PB blister packs (A).

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