

THE HANDBOOK FOR HEALTH PERSONNEL IN LIBERIA



USAID
FROM THE AMERICAN PEOPLE



A Note on the HANDBOOK and Cards

The Handbook is divided into 5 chapters with subdivisions, and includes a cover and index with foreword. The five 8 x 5 inch cards and instructions are not part of the 358-page printed book, but accompany it. The cards and instructions are ordinarily placed in a pocket inside the back cover of the book.

The charts on the 5 double-sided colored cards summarize much of the diagnostic choices in the Handbook, which are arranged under their respective organ systems, making it easier to see the choices while sitting in the clinic rather than opening the book. With my apologies the cards are in 4 PDF files, instead of one—in the future they will all be in one PDF file.

The Handbook on this flash drive is in Microsoft Word 97 – 2003 (except for the cards, cover and colored pictures which are in Adobe Acrobat--PDF). Be careful in printing the MS-WORD portions that the last line or two of a page doesn't jump over to a next new page and cause havoc—if so, try slightly reducing line width.

This page of information is not part of the printed Handbook

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ABBREVIATIONS AND ACRONYMS

A	Assessment and Diagnosis
abd.	Abdominal
AIDS	Acquired Immune Deficiency Syndrome
AFB	Acid-Fast Bacilli
ART	Antiretroviral Therapy
ARV	Antiretroviral [Medicine]
amp	Ampule
BID	Three Times a Day
BPHS	Basic Package of Health Services
caps	Capsules
CHC	Community Health Committee
CHV	Community Health Volunteer
CPI	Cotrimoxazole Preventive Therapy
D5W	Dextrose 5% in Water
DOTS	Directly Observed Therapy, Short-Course
EDC	Estimated Date of Childbirth
ENA	Essential Nutrition Actions
ENL	Erythema Nodosum Leprosum
EPI	Expanded Program for Immunization
FHR	Fetal Heart Rate
GV	Gentian Violet
H	Hour
Hgb	Hemoglobin
HIV	Human Immunodeficiency Virus

HS	At Bed Time
ID	Intradermally
IM	Intramuscularly
inj.	Injection
IP	Intraperitoneal
ITN	Insecticide-Treated [Bed] Net
IV	Intravenously
KCl	Potassium Chloride
LAM	Lactational Amenorrhea Method
LLITN	Long-Lasting Insecticide-Treated Net
LMP	Last Menstrual Period
MIP	Malaria in Pregnancy
MOH	Ministry of Health
MOHSW	Ministry of Health and Social Welfare
MTCT	Mother-to-Child Transmission
MUAC	Mid-Upper Arm Circumference
NMCP	National Malaria Control Program
NS	Normal Saline
O	Observations and Examination
ORS	Oral Rehydration Solution
P	Plan of Treatment and Management
PA	Physician Assistant
pen.	Penicillin
PHC	Primary Health Care
PID	Pelvic Inflammatory Disease
PPH	Postpartum Hemorrhage
PRN	As Needed
PO	Per os
Q	Every
QID	Four Times a Day
S	Symptoms and Signs
SAM	Severe Acute Malnutrition
SC	Subcutaneously
STI	Sexually Transmitted Infection
TAT	Tetanus Antitoxin
TB	Tuberculosis
TID	Three Times a Day
TT	Tetanus Toxoid
UTI	Urinary Tract Infection
VAD	Vitamin A Deficiency

FOREWORD

This *Handbook for Health Personnel in Liberia* is written as a guide for health personnel to more effectively prevent illness and give better health care to their patients.

It is written for: 1) use by the registered nurses, physician assistants, supervisors, certified midwives, and practical nurses in the clinics, health centers, and hospital outpatient departments who take care of patients; and 2) the same personnel and the environmental health technicians who work to improve health conditions and prevent illnesses in the villages, and who supervise the village health volunteers and traditional midwives.

It assumes a background of knowledge of illnesses for most middle-level health personnel from their training and therefore does not describe all aspects of most illnesses in detail, such as causes and pathology, but rather concentrates on diagnosis and treatment. And approximately one-half of the book is devoted to the prevention of illnesses.

In most instances the equipment available for examination in the clinic is limited to a stethoscope, blood pressure cuff, thermometer, weight scale, rapid diagnostic test for falciparum malaria and flashlight. A few clinics will also have a microscope with counting chamber and urine dipsticks. Therefore in such situations the clinician is not able to obtain blood chemistries, cultures, x-rays or other diagnostic tests except through referral of the patient. Considering these circumstances this Handbook attempts to simplify making the correct diagnosis and giving the proper treatment for the common conditions seen in the clinics, and emphasizes prevention. It is by no means a complete textbook of medicine. (Harrison's "Textbook of Internal Medicine" is well over 3000 pages with small print—this Handbook is less than 400 pages with normal-size print.)

RECORD SYSTEM

When dealing with the diagnosis and treatment of illnesses this book uses the "SOAP" system, which makes it easier to keep records. The letters stand for:

S—SYMPTOMS of which the patient complains (all history of the illness told to you by the patient goes under "S").

O—OBSERVATIONS of the clinic worker—physical exam and any lab work.

A—ASSESSMENT by the clinic worker (means the same as DIAGNOSIS).

P—PLAN of TREATMENT—Medicines given, procedures performed (such as suturing), and instructions or teaching given.

Such a good pattern of thinking about illnesses and diagnoses and a uniform way of recording are important parts of medical care.

AUTHORIZED PROCEDURES

Not all personnel are trained to do all procedures or handle all illnesses. Do not do a procedure for which you are not trained or authorized, even though it is suggested in this *Handbook*. An example would be congestive heart failure. If a new patient comes

with congestive heart failure, after emergency treatment if needed, he should be sent to the doctor for a definitive diagnosis and a plan of treatment, which may include diuretics, and perhaps ACE inhibitors and digitalization. The doctor may then refer him back to the clinic for long-term follow-up care. If the clinic worker is not trained and experienced in long-term care of congestive heart failure, he should send the patient to someone who is. Another example would be the administration of intraperitoneal fluids to a dehydrated infant—it should only be done by someone who is trained.

Drugs and Drug Doses

Please note that most drug doses are given on pg. 105 - 110 with drugs listed in alphabetical order or in categories. Not all dosages are repeated in all sections when prescribed for an illness. The drugs chosen are in almost all cases those listed in Liberia's National Formulary, with this revision specifically designed to guide the clinic worker in the use of these drugs.

Acknowledgements

The sections on diagnosis and treatment grew out of the experience in Lofa County. The sections on community health and prevention of illnesses have been contributed by a number of authors whose names appear which each article. The illustrations were principally drawn by Regina C. Faul-(Jansen) Doyle in 1979, on loan from Preventive Medical Services. Dr. Walter Gwenigale and Dr. Mark Monson, whose names do not appear as contributors, deserve special mention for their extensive reviews and suggestions for the second edition, and again Dr. Gwenigale, now the Minister of Health, deserves thanks for his support for producing this revision. For this third edition, many people have contributed to the revisions, with the names of principal revisers also listed with the sections they revised. Sincere thanks to all who have so ably contributed. Special thanks to Franklin Baer, consultant, who used his skill with technology to translate the second edition manuscript with drawings and charts to Microsoft Word, to Dr. Julie Stone, Internist in Cameroon, for her review of the manuscript and suggestions for improvement, to Dr. Rose Macauley, BASICS/Liberia Director, under whom the revision started, and to Mrs. Marion Subah, Education and Training Advisor, RBHS, Liberia, who set up workshops and tirelessly revised, contributed and assisted with revisions for the third edition.

The first printing of this third edition for the Ministry of Health and Social Welfare (MOHSW) was funded by the United States Agency for International Development (USAID) as part of the Rebuilding Basic Health Services (RBHS) Project. The second (supplemental) printing was funded by a grant from Global Health Ministries.

It is our hope that by studying and using this *Handbook*, health personnel will be better able to both prevent and treat illnesses and bring better health care to the citizens of Liberia.

Paul E. Mertens, M.D., Editor

NOTE: For this *Handbook for Health Personnel in Liberia*, it is assumed all mid-level health personnel have been trained to:

1. Always wash hands after examining patients.
2. Use sterile technique in all required situations (and know what such situations are).
3. Use universal precautions at all times.
4. Respect patient's privacy (keep door closed when examining patient or discussing topics requiring privacy).
5. Request patient's permission for others to listen.
6. Always greet the patient and be polite.
7. Always explain what he/she is doing.
8. Keep patient informed of findings on exam or lab results and explain the meaning.

These points are to be followed at all times and will usually not be repeated in the many instructions that follow for caring for patients.

Use this page for notes.

CHAPTER ONE—TREATMENT OF EMERGENCIES

CUTS AND WOUNDS

Abrasions, Cuts, Punctures, and Bruises are discussed in this section.

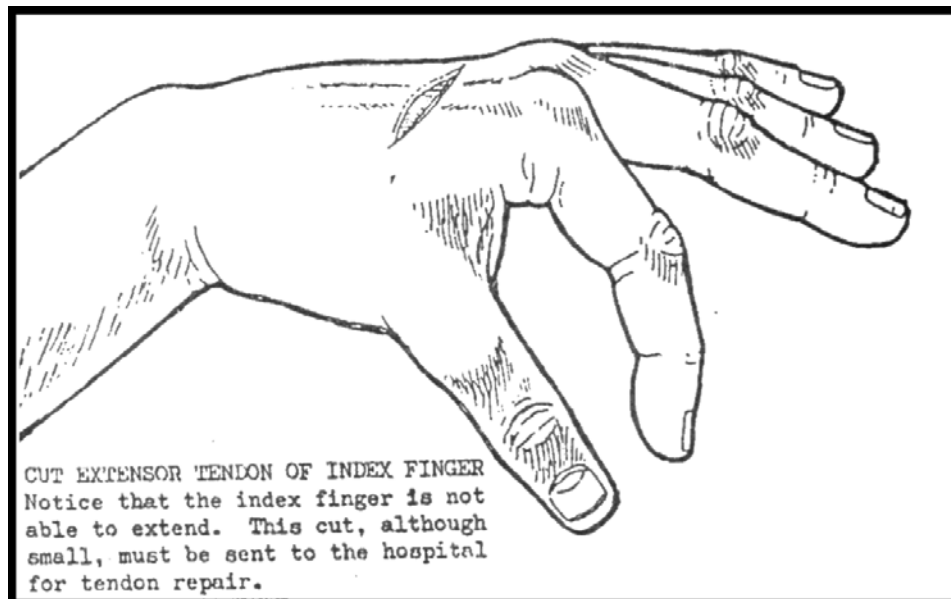
Abrasions

Wash with dilute aqueous chlorhexidine 0.05% or soap and freshly boiled water and dress the abrasion. Gentian violet 1% or antibiotic ointments (such as neomycin/bacitracin) can be used (especially if the abrasion is looking very dirty) but are usually not necessary. Just keep abrasions clean and they will heal.

Cuts

General Instructions for All Cuts

1. Wash all cuts well with antiseptic solution such as diluted aqueous chlorhexidine 0.05% or soap and boiled water. Remove all dirt, leaves, glass, sticks, etc.
2. Make certain **no tendons or nerves are cut**: check for **full movement** and **feeling** below (distal to) the place that is cut. For example, for a cut above the wrist, see if the patient can fully move the wrist and all the fingers, and check for numbness of the hand and fingers. If he is not fully able to move all fingers or if there is numbness, suture the wound (or tape and bandage the wound without suturing if the doctor can do a repair within a few hours). Send him straight to a doctor (because a tendon or nerve is cut and must be repaired).



3. **Stop bleeding** with **direct pressure** over the bleeding point until the cut can be sutured. (Sutures usually stop bleeding.) Tourniquets are dangerous and often less effective. Exception: a tourniquet usually is necessary if a hand or foot has actually been cut off, or nearly cut off.

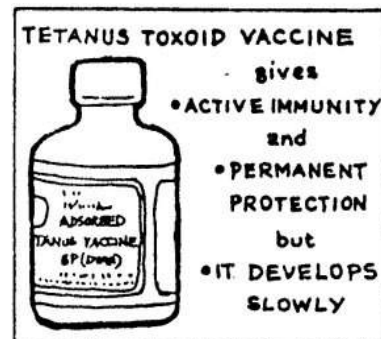
TETANUS PROPHYLAXIS (PREVENTION)

- 1) If the patient was previously vaccinated with tetanus toxoid (TT) or DPT/Pentavalent, give 1/2 cc TT as a booster (not antitoxin.) (Note: NO need to give TT if vaccinated in the past 5 years unless very dirty; then give TT unless vaccinated in the last 2 years.)
- 2) If never vaccinated with TT or DPT or Pentavalent vaccine, but the cut is a clean wound by a relatively clean object, give 1/2 cc TT (or Pentavalent for a small child), and repeat after 1 to 4 weeks, and again in one more month (3 doses total).
- 3) If never immunized, and if the wound is also dirty or if injured with a dirty, contaminated object, **give ½ cc TT stat as above and repeat in 4 and 8 weeks; but also give 1,500 units of human tetanus antitoxin (TAT) IM stat.**

4. Prevent tetanus preferably with tetanus toxoid (TT) vaccine, or tetanus antitoxin (TAT).

Fresh Cuts Less than 6 Hours Old

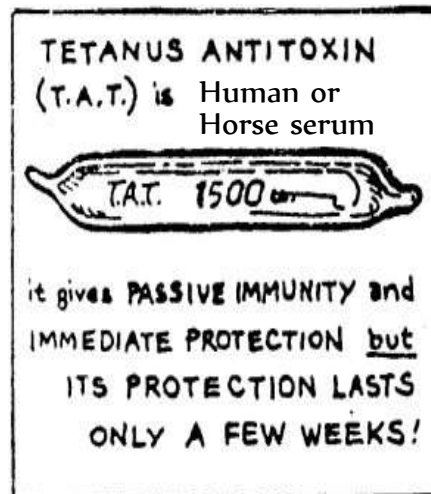
1. If small (½ inch or less), all clinic personnel may close the cut with tape. If larger, send the patient to someone trained and authorized to suture. (You may suture it if you are authorized.)
2. Warn the patient to **watch for signs of infection** and to **return immediately** if he sees these signs starting.



**SIGNS OF INFECTION OR CELLULITIS:
SWELLING, PAIN, WARMTH (feels hot), REDNESS**

Cuts 6–12 Hours Old

1. If a supervisor or doctor is present, let him decide whether to suture it properly, or to just bring the edges close together with 2 or 3 sutures. In general, if the cut was clean and was cleanly bandaged, closing with suture may be tried. If the cut is closed tightly with suture, it is best to give flucloxicillin 250 mg (or cefalexin 500 mg if available) TID x 7 to 10 days, and sutures must be removed if infection develops.

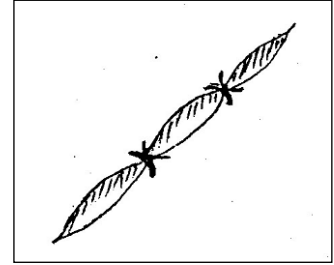


NOTE: National Drug Service is now bringing in **human TAT**. It is superior to horse serum antitoxin because it does not cause anaphylactic reactions or serum sickness, and gives protection longer. Look at the TAT you are using, and **be prepared for possible reactions if giving horse antitoxin—do a skin test first, and be prepared with epinephrine.**

Check which TAT you are giving

Cuts More than 12 Hours Old

1. As a general rule, **never** close a cut completely with suture if it is more than 12 hours old—if closed, it very frequently becomes infected and the sutures must then be removed.
2. Clean such an old cut with aqueous chlorhexidine 0.05% or soap and boiled water.
3. Skin edges may be taped together and loosely bandaged, or one or 2 sutures may be used to bring the edges more closely together without closing the cut completely.
4. If the cut looks clean watch closely for any signs of developing infection. Small pus forming in the wound with no swelling, redness or pain in surrounding tissue can be treated by soaking and cleaning with warm boiled water and soap or antiseptic 3 or 4 times a day. But if real infection is developing, treat for cellulitis.
5. If the wound is more than 12 hours old and packed with leaves or very dirty, suture loosely or tape, and start flucloxacillin 250 mg (or cefalexin 500 mg) TID x 10 days after cleaning without waiting for infection to develop. Almost all old cuts packed with leaves develop infection. (Teach people that direct pressure is better than chewed leaves because it stops bleeding without usually causing infection.)
6. Give tetanus prophylaxis. (See pg. 2.)



An old cut loosely sutured. Skin edges are very loosely sutured—just pulled closer together, but not closed, so if infection develops, pus can drain

Sutures

Continue to watch all cuts for infection after suturing them. Unless very loosely sutured, remove sutures immediately if real infection develops. If no infection, remove sutures in the face in 5 or 6 days. Remove sutures in other parts of the body in 7 to 10 days.

Cuts Developing Cellulitis

With actual infection remove most or all sutures so the pus will drain out, and treat the cellulitis with flucloxacillin 250 mg or cefalexin 500 mg TID for 10 days. If the infection is not starting to improve in 3 to 4 days, send the patient to the doctor.

PROTOCOL FOR TREATING CUTS

Control bleeding when the cut occurs with DIRECT PRESSURE if possible (Tourniquets are dangerous).



Next **CLEAN** well with dilute chlorhexidine or soap & boiled water.



Is some part **NOT ABLE TO MOVE** normally? → → **YES, some part cannot move normally**
↓ (cut tendon)

NO, all parts are moving normally



Suture skin or tape and bandage, give tetanus prophylaxis and send to the doctor for surgical repair of tendon or nerve.

Is some part **NOT ABLE TO FEEL NORMALLY?** → → →



↑
YES, some part has lost feeling (cut nerve)

NO, all parts can feel touch & pin-point well.



Is cut **LESS THAN 6 HOURS OLD?** → → **YES** →



Is the cut **very small**--less than 1 ½ cm. or ½ in.?

→ → **YES** →

1) Close it with Tape (or suture).
2) Give **TETANUS PROPHYLAXIS.**

NO, it is an OLDER CUT.



NO, it is larger →

1) Suture it if you have been taught to do so, or send the patient to someone who can.
2) Give **TETANUS** prophylaxis.

Is the cut **6 - 12 HOURS OLD?** → → **YES** →



1) Let a supervisor or doctor decide whether to suture it tightly or to just bring the skin edges more closely together.
2) Give **FLUCLOXACILLIN** if sutured tightly.*
3) Give **TETANUS** prophylaxis if needed (see page 2).

NO, it is MORE THAN 12 HOURS OLD



Is the cut **over 12 hours old, but it LOOKS CLEAN?** → → **YES** →



1) **Do NOT suture it tightly closed, but draw the skin edges closer together loosely** with tape or a few sutures.
2) Give **TETANUS** prophylaxis (page 2.)
3) **SOAK** 3-4 times a day in warm water.
4) Give **FLUCLOXACILLIN** if it becomes infected.*

NO, it is LOOKING DIRTY as well as being OVER 12 HOURS OLD. → → **YES** →

1) This is an old cut which came in looking very dirty or full of chewed leaves. Follow the same instructions (steps 1-3 above) as for a cleaner cut more than 12 hours old, but:
2) Start **FLUCLOXACILLIN** immediately without waiting for cellulitis to develop.*

*Continue to watch all cuts after repair. If cellulitis develops, remove all sutures if the cut is tightly closed and treat for cellulitis with cloxacillin or flucloxacillin (best), cotrimoxazole, or erythromycin (or if available and not improving with these antibiotics, try chloramphenicol). See pg. 73 and 74.

Puncture Wounds

1. Soak puncture wounds in boiled water and soap or antiseptic solution (aqueous chlorhexidine 0.05%). Remove any foreign material that you can see (wood, glass, etc.). Sometimes this may require a small incision to remove something such as a piece of stick broken off inside the foot. If you are not able to remove the foreign material, send the patient to the doctor.
2. Give tetanus prophylaxis (see pg. 2).
3. Bandage the puncture wound and warn the patient to **watch for any signs of infection**: warmth, pain, swelling, and redness.
4. Treat for cellulitis if infection develops (see “Cuts Developing Cellulitis”, page 3). If the infection is not improving in 3 days of treatment, send the patient to the doctor. Some dirt or a piece of stick may still be in the puncture wound. With a puncture wound from a very dirty or contaminated object, start antibiotics immediately without waiting for infection to develop.

Bruises

Bruises are caused by breaking little blood vessels (usually capillaries) in the tissues underneath the skin, often from something hitting the skin hard or from a sprain. Bleeding causes the area to swell and look dark blue. Bruises usually heal in about 2 to 3 weeks without treatment. Elevation and a cool pack may help reduce swelling. Check to be sure that the bruise is not from bleeding from a broken bone.

MOTOR VEHICLE ACCIDENTS

If you come upon a motor vehicle accident, move anyone from a dangerous location (lying on the road, or in a vehicle that may be hit again) to a safe location, but do it **gently, keeping spine straight and without turning or bending the neck**.

- **Assess airway, breathing, pulse, B.P. and state of consciousness**-quickly.
- **Use your cell phone** to call for an ambulance, or **arrange transportation**.
- **Stop bleeding with direct pressure**, and **keep airway open**
- Further assess the patient while waiting for the ambulance.

If an accident patient is brought to your clinic, do much the same. Ask about head injuries and if he was unconscious. See if he is thinking clearly and check a brief neurological exam (see that pupils are equal and respond to light and eyes move normally, with normal reflexes and balance). Remember Tappita (and soon JFK) can do a CT scan of the head if a head injury patient is not thinking clearly or has an abnormal neurological exam and may have a subdural hematoma. Call for an ambulance if it appears he will need hospital admission or emergency room care, and start Normal Saline IV to support B.P. to 90 systolic if he is in shock.

Further assess the patient. On exam avoid moving the head, neck and spine until you are sure there is no pain or tenderness there suggesting a fracture or dislocation. On exam you want normal breathing and breath sounds (entire chest), normal heart rate and rhythm, no abdominal tenderness or distention, and no fractures. If injuries are minor (perhaps only a few small lacerations and bruises, and no history of loss of consciousness or fractures) you may repair his lacerations, apply bandages and schedule follow-up visits. **But do not miss a serious internal injury which should be referred and admitted-if in doubt, refer!**

BURNS

REMEMBER

- Two of the **PURPOSES** of the **SKIN** are:
 - To **KEEP OUT BACTERIA**
 - To **PREVENT FLUID LOSS** from the body
- **Serious burns kill by:**
 - **Permitting bacteria to enter the body (causing infection)**
 - **Permitting fluid and electrolytes to escape from the body**
(Notice how any wound with the skin injured weeps much fluid).
- **Serious burns are either:**
 - **Very large, or**
 - **Very deep (third degree), or**
 - **Both large and deep.**

INITIAL TREATMENT and ASSESSMENT of BURNS

1. Cool the burn immediately with clean, cold water if available (but only if it has been less than ½ hour since the burn happened).
2. Send very large, severe burns directly to the hospital without doing anything further. Severely burned patients lose much fluid and plasma protein into the burn area from the rest of the body. The patient usually **needs IV fluids with sodium chloride** (not potassium) to replace fluid losses from the burn. Sugar-salt solution (made without orange juice) can be tried if no IV fluids are available or if the burn is not too large and severe.
3. Clean dirty burns very gently with aqueous chlorhexidine 0.05% or soap and boiled water.
4. Determine the degree and size of the burn:
 - a. First determine how deeply the skin has been burned. Remember different parts of the skin may be burned to different depths.
 - b. Then estimate how much skin has been burned by using the “Rule of Nines” or comparing the size of the burn with a five-dollar Liberian paper note to determine the percent of the body that is burned (see next page).
5. **Now, treat accordingly.**

First Degree Burns

If the skin is only reddened and painful but not blistered, and the patient can easily feel you touch it lightly, it is a first degree burn (only the surface is burned). It will get well without difficulty.

Treatment

Give acetaminophen 500 mg QID (adult) for pain. First degree burns are often caused by touching something hot very quickly or by wasting **hot** water on the skin. They do not require treatment to heal.

Second Degree Burns

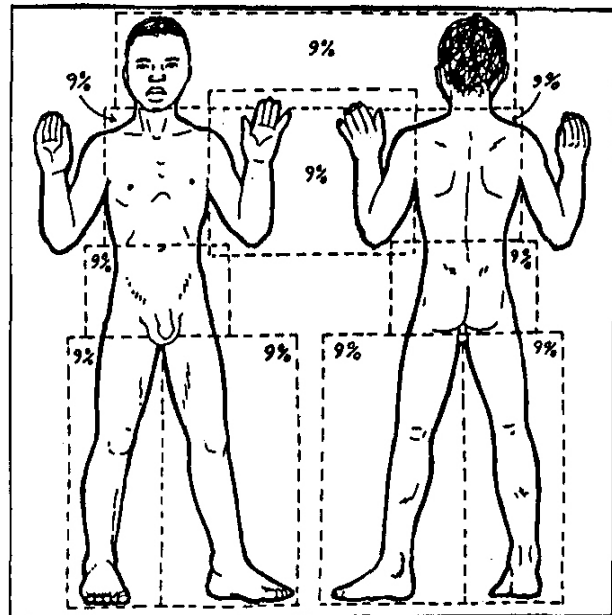
If the skin is blistered, the burn is second degree (skin burned part-way through). Second degree burns are often caused by **wasting boiling** or **very hot water** on the skin.

Treatment

1. Remove broken blisters immediately, but **leave unbroken blisters untouched** until they break by themselves. The skin heals better under unbroken blisters than it does under bandages.
2. If more than 7% of the skin surface in an adult is blistered send the patient to the hospital for treatment. See the “Rule of Nines” below; Use it for estimating the area of a 2nd or 3rd degree burn. (Note that 7% is slightly less than a 9% area.)

3. Rule of Nines

RULE OF NINES For Estimating the Area of a Burn (Total Skin Area 100%)	
Head	9%
Right Arm	9%
Left Arm	9%
Front of Chest	9%
Back of Chest	9%
Abdomen	9%
Lower Back	9%
Perineum	1%
Front R. Leg	9%
Back R. Leg	9%
Front L. Leg	9%
Back L. Leg	9%



The body surface is made of areas of approximately 9%.

4. For raw areas where blisters have been removed, apply bandages loosely and change every day if possible, or every other day if not. Apply **burn ointment** to the burn with every dressing change (sulfadiazine silver 1% is best, or use bacitracin-neomycin or nitrofurazone ointment). Gentian violet also works. Remember, unbroken blisters do not need burn ointment.
5. If fever or signs of infection develop, treat immediately for cellulitis (give flucloxacillin or another drug listed on pg. 74).

Third Degree Burns

If the skin has **no blisters** but **cannot feel gentle touch** (and often **looks wrinkled or cooked**), the burn is a third degree burn, and the burn has gone completely through the skin. These burns are often caused by fire.

Treatment of Third Degree Burns

1. Estimate how much skin is burned. If more than 1% of the skin has third degree burns (an area as large as can be covered with two five-dollar Liberian paper notes), send the patient to the hospital for treatment.
2. For smaller third degree burns you can try yourself, or send to hospital:
 - a. Remove any really loose dead skin with sterile instruments.
 - b. Dress with **burn ointment** (silver sulfadiazine) and bandage.
 - c. If any signs of fever or cellulitis develop, give flucloxacillin, (or give cefalexin or chloramphenicol if available).
 - d. Give tetanus prophylaxis if the burn was dirty or contaminated (p. 2).
 - e. When all the deeply burned skin is off, unless the burn is less than 2 cm. across, the patient will need to be sent to the hospital for skin grafting.

SPRAINS, DISLOCATIONS and FRACTURES

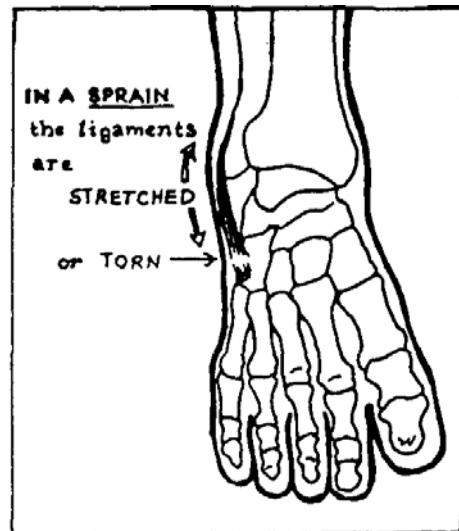
SPRAINS

Sprains are caused by stretching the ligaments around a joint too far. In severe sprains, part of the ligament is actually torn.

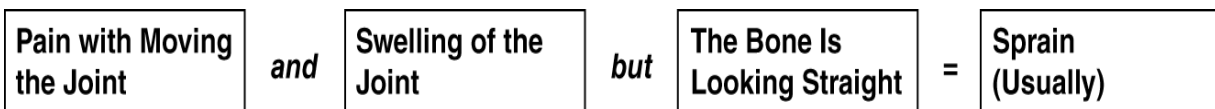
S—There will be a history of injury. Ask them how and when it happened and how painful the joint is now.

O—

1. A Sprain will have:
 - a. Pain when stretching the joint mildly, and often also with just moving the joint.
 - b. Swelling around the joint and maybe bruising—**but the arm or leg itself is straight**—the bone is not crooked or deformed.
2. LAB—If you are uncertain of the diagnosis and near a hospital, an X-ray can prove if it is a fracture or a sprain, but an X-ray is usually not necessary. (NOTE: Small undisplaced fractures of the small bones in the foot, ankle or wrist may not cause crookedness or deformity.)

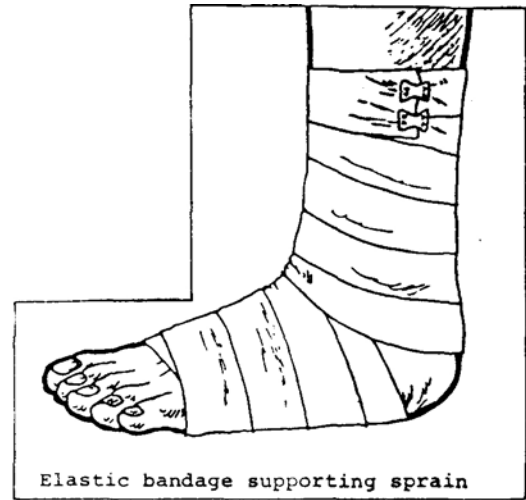


A—



P—

1. An elastic bandage is very good. If no elastic bandage is available, wrap it with an ordinary bandage to help support it and prevent it from being twisted again. Be careful not to wrap too tight. (Do not let it cut off the blood supply or injure nerves by being too tight.)
2. Elevate the limb if severe swelling.
3. Give **paracetamol** if needed for pain (1,000 mg QID for an adult, **not more**), or **ibuprofen**. Advise the patient to be careful not to injure the joint again before it is completely healed.



Elastic bandage supporting sprain

DISLOCATIONS

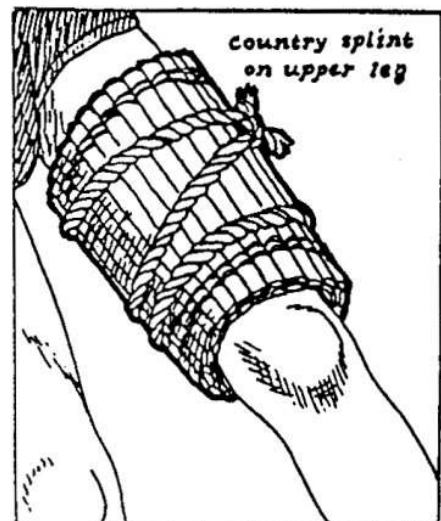
A bone is dislocated when it is not broken, but moved out of its place in the joint and has slid part-way over the other bone. The ligaments around the joint will be injured. The more frequent sites of dislocations are the finger joints, shoulder joint, elbow, and occasionally the knee. Dislocated fingers are usually easy to fix by having someone hold the hand while the clinician pulls the finger straight. Shoulders are also rather easy to put back in place, but the technique needs to be learned. Remember any dislocation can also have a fracture.

FRACTURES

S—Ask when and how the injury happened and which areas are painful.

O—A fracture will have:

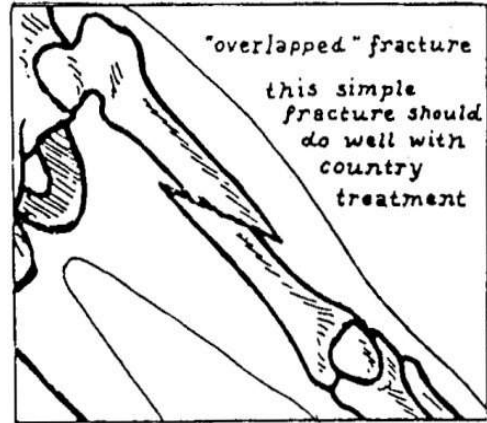
1. Pain, especially with any movement of a broken leg or arm.
2. Deformity—usually the arm or leg looks crooked where it is broken (Exception: No deformity for small undisplaced fractures, especially in the foot, ankle, or wrist).
3. Swelling—usually the area over the fracture is swollen.
4. LAB—An X-ray is not always necessary. But if the patient wants hospital treatment, an X-ray will clearly show most fractures.



Country splint on upper leg

A--PAIN WITH MOVEMENT + DEFORMITY + SWELLING = FRACTURE

P--Most fractures of the arms or legs in which the bone has not come through the skin are treated well by the “country bone doctor” who does simple splinting and starts the limb moving in a short time (leg fractures are walking in about 3 weeks). He usually gets the bone to heal, and most patients in rural areas will not permit anyone else to treat them. However, with country treatment in adults, the healed limb will usually be shortened somewhat and the bones may not heal in a perfectly straight position.



The “country bone doctors” do not do well with the following three kinds of fractures—convince these patients to be admitted and carry them to the hospital:

1. **OPEN FRACTURES** (the bone came out through the skin)—These must receive antibiotics, preferably in the hospital—high doses of IV antibiotics may be needed. If the patient refuses to go to the hospital, make sure he receives chloramphenicol caps. 500 mg QID to control the infection while the bone-setter is treating the broken bone in the village. (Get chloramphenicol from the hospital or health center if you have none.)

It may be more acceptable to the patient, if the hospital and bone-setter agree, for the bone-setter to come to the hospital to continue treating the fracture while the patient receives the needed antibiotics there.

2. **FRACTURES OF THE SPINE** must be moved carefully to the hospital. Keep the spine straight—do not bend it. The patient must be moved lying down and must not move from side to side. A very wide plank or board makes a good stretcher because it is flat and will not bend much. (Be sure the patient will not roll off of the plank—use appropriate straps or people on each side to help with transport.) Time is important—do not delay.
3. **COMMINUTED FRACTURES** (FRACTURES IN WHICH THE BONE IS BROKEN INTO MANY SMALL PIECES) also do better with hospital treatment. (Problem: It is hard to correctly diagnose such a fracture without taking an X-ray.)

DEHYDRATION

DEHYDRATION **usually** is caused by **diarrhea** and/or **vomiting**, but sometimes it comes from losing too much urine from **diabetes**, or from **not drinking water** in a patient who is unable, such as with a stroke.

**CHECK EVERY CASE of DIARRHEA or VOMITING
for POSSIBLE DEHYDRATION!**

Dehydration comes from **losing** too much **water**, **sodium**, and **potassium**; therefore, it **must be treated by replacing all three** of these.

NOTE: Dehydration with **too much sodium** or **potassium** is **very rare** in Liberia.

Correct treatment is lifesaving! It depends upon the next two things:

1. **Correct estimation of the degree of dehydration**—first degree, mild; second degree, moderate; or third degree, severe dehydration (see below).
2. **Giving proper fluids in the correct amount and manner.**

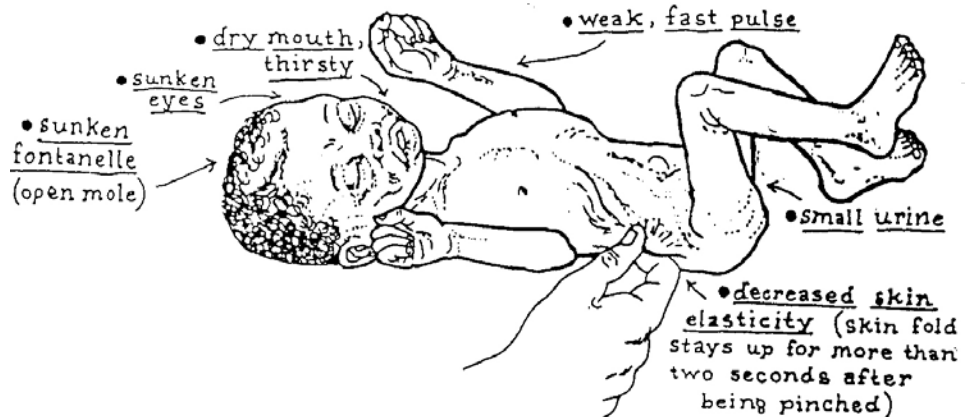
Therefore, first take a quick history, examine the patient, and estimate the degree of dehydration (also look for the cause and for any complications):

S--Ask the following questions to help you decide what do:

- 1) When did the illness begin?
- 2) Is the stool normal, loose, or watery?
- 3) Is the patient vomiting?
- 4) Is any blood or mucous in the stool?
- 5) How many stools is the patient having
- 6) and how large are the stools?

O--Now **examine** the patient:

1. Look for signs of dehydration (signs listed on this picture):



2. Take blood pressure (BP) and pulse. (low BP + weak pulse = third degree dehydration)
3. Check the abdomen for tenderness, distention, or lack of bowel sounds. If you find these, start rehydration with 0.9% saline or Ringer's lactate and send the patient straight to the hospital with the IV running (and with someone to tend it).

4. LAB—If having bloody diarrhea, or diarrhea for more than 2 weeks, examine the stool under a microscope (if available) to tell if it is bacillary dysentery, amebic dysentery, or giardia. See p. 44 & 45 and 58 & 59.

NOTE: With **severe dehydration**, if a lab is available, **never waste time waiting for lab results. Start rehydration immediately!** (Preferably with Ringer's lactate IV). Then adjust treatment after results come.

A—Now ASSESS the DEGREE of DEHYDRATION (correct treatment depends upon correct assessment). Learn the differences listed below:

1. FIRST DEGREE DEHYDRATION—The patient is **restless** and **thirsty**, the **pulse is increased somewhat**, but **skin elasticity and BP are normal**.
2. SECOND DEGREE DEHYDRATION—In addition to the symptoms of first degree dehydration, there are **also decreased skin elasticity, dry mouth, sunken eyes**, and in infants **sunken fontanel**. But the **BP is normal. Pulse is increased. Weight loss is about 5–10 %**.
3. THIRD DEGREE DEHYDRATION—In addition to the second-degree symptoms, **the patient is now in shock with a low BP and a pulse that is weak or cannot be felt**. The patient **looks very weak** and is **passing little or no urine. Weight loss is usually more than 10%**.

SUMMARY OF SIGNS OF THE DEGREE OF DEHYDRATION

First Degree—no good signs of dehydration, but restless, maybe thirsty

Second Degree—definite signs of dehydration (but normal BP)

Third Degree—definite signs of dehydration plus shock

FLUIDS FOR REHYDRATION

A health worker must understand IV fluids and oral rehydration solution (ORS) and their uses in order to choose correct fluids.

Severely-dehydrated patients have lost much water especially from the fluid that is between the body cells and in the circulatory system. We call this fluid **extracellular fluid**. This fluid has about 140 mEq of sodium and 4 to 5 mEq of potassium per liter. Dehydrated patients need to be given fluid rapidly very similar to this fluid that they have lost in order to expand (increase) their decreased fluid volume. We call such a fluid a **volume-expanding fluid**. In most dehydrated patients, we want a little more potassium because their potassium is usually low—we want about 8 to 10 mEq/L of KCl in the fluid. Volume-expanding fluid given rapidly IV will bring the BP back to normal in dehydrated patients in shock from severe fluid loss.

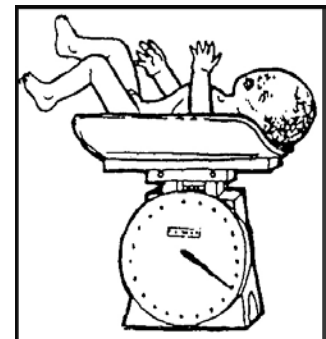
GOOD VOLUME-EXPANDING SOLUTIONS ARE:

- **RINGER’S or LACTATED RINGER’S**—use this whenever it is available.
- **NORMAL SALINE** (0.9% sodium chloride solution)—but try to add 8 mL of 10% potassium chloride (KCl) to each liter, if available.

After a dehydrated patient has his extracellular fluid increased to normal he needs to receive a fluid with less sodium and more potassium to continue making up for his losses. This should be given less rapidly than volume-expanding fluid. We call such a fluid **REPLACEMENT FLUID** since it is used to **REPLACE** the remaining sodium, potassium, and water losses.

GOOD IV REPLACEMENT FLUIDS ARE:

- **Half-strength Darrow’s solution with 2.5% dextrose**—the best IV replacement solution not requiring something added—(okay as is, but even better if 5 mL of 10% KCl is added per 500 mL of ½ strength Darrow’s). National Drug Service was keeping this in stock. It has 61 mEq sodium and 17 mEq potassium/Liter.
- **Dextrose 5% in half-normal saline**—add 10 mL 10% KCl per 500 mL (or 20 mL/Liter). This gives 77 mEq sodium and 26 mEq potassium/Liter.
- **Half-strength Ringer’s lactate in 2.5% dextrose**; add 8 mL 10% KCl to each 500 mL.
- If you have nothing else, you can use first Ringer’s lactate, then dextrose 5% with water (D5W), then Ringer’s lactate, etc. Add 10 mL of 10% KCl to each 500 mL of both the 5% dextrose and the Ringer’s lactate. Caution: Do not use D-5-W for small children or patients with cerebral malaria or meningitis, even with potassium added. It may cause brain swelling.
- **ORS makes good oral replacement fluid**—Use it if the patient is able to drink and not vomiting and diarrhea is no longer too severe. For making **ORS**, see pg. 232–235. (Also use it to **prevent** dehydration.)



Weigh all children being treated as outpatients with ORS once daily.

P—Now TREAT the PATIENT—PLAN OF TREATMENT:

Treatment of Children with Diarrhea

GENERAL RULES FOR ALL CHILDREN

- 1) **WEIGH** all children who are being treated as outpatients with ORS once daily.
- 2) If the child is **LOSING WEIGHT**, **ADMIT** child and **INCREASE FLUIDS**—perhaps IV.
- 3) **WEIGH** admitted children drinking ORS twice daily.
- 4) **CONTINUE BREASTFEEDING** all small children.

No Dehydration-Early diarrhea with no possibility or suggestion of dehydration as yet:

1. Treat this child as an outpatient.
2. Give ORS. You can open an ORS packet and add water, but it is best to teach the mother to make ORS. (See pg. 232–235.) Give at least the amount made with a soda bottle full of water daily to a small child (more if much diarrhea or if the child is larger). Make fresh ORS each day. If breastfeeding, remind the mother to continue to breastfeed.
3. See the child again the next day (remember to weigh daily).

Child with First Degree Dehydration

1. Treat as an **outpatient** with ORS (unless vomiting severely, in which case the child will need IV fluids instead of ORS).
2. Give Oral Rehydration Solution daily (for the amount, see the table on pg. 16) and continue to breastfeed.
3. **See and weigh** the child daily. If the **child does not gain weight** or the **abdomen becomes distended** or if **vomiting increases, give IV replacement fluid instead of ORS, or send the child to the hospital** or health center for IV fluids. With infants becoming more dehydrated on ORS but without a distended abdomen, **intraperitoneal (IP) fluid** can be used, if you are trained to use it—about 35 mL/pound of **Ringer’s lactate, without dextrose**, for a small infant.

Child with Second Degree Dehydration

1. **Start IV rehydration** (if no IV fluids, refer the child to a hospital or health center for IV fluid; give ORS to sip while going). **Exception:** If second degree dehydration is just beginning and the child is not vomiting, you may **try ORS** in the clinic with close supervision (find the correct amount on pg. 16), and change to IV fluid if not improving. If still not improving with IV fluid in the clinic, refer.
2. When referring a child with dehydration, it is best to run IV fluids while transporting to the hospital. If no IV fluids, give the child ORS to drink in frequent small amounts on the way.

Child with Third Degree Dehydration

Start rehydration with Ringer’s lactate IV. If unable to treat the child in your clinic both day and night, send the child (with IV running) to the hospital or health center where IV fluids can be given day and night. If no IV fluids, refer stat! Delay may cause the child to die. Help the people to find transportation to carry the child, and give ORS to drink in sips while going! The child should be transported lying down in the vehicle.

TREATMENT OF ADULTS WITH DEHYDRATION

FIRST DEGREE DEHYDRATION: (See these patients daily.)

1. If the patient is **not vomiting**, try **outpatient treatment with ORS**, 3,000–4,000 mL to drink completely in the first 24 hours. Drink a little at a time to try to avoid vomiting. (See table on next page.)
2. If the patient is vomiting and promethazine (Phenergan) is available, give an adult 25 mg stat., or Zofran 4 or 8 mg stat., and wait 30 minutes. Then, give ORS to be taken in frequent, small amounts. Look for other causes of vomiting (see page 57).
3. If the vomiting continues, give 1,000 mL Ringer’s lactate IV; then try ORS. If still vomiting frequently, give replacement fluid 1,000 mL IV over 6 hours. If the patient continues vomiting frequently, send him to the hospital or health center for IV fluids and further diagnosis.

ADULTS WITH SECOND DEGREE DEHYDRATION

1. If IV fluids are available, you can give 2 L of Ringer’s lactate within 2–3 hours; then continue with ORS (or IV replacement fluid if you can monitor patient during the night.) Send to the hospital if diarrhea is not stopping.
2. Or, start IV Ringer’s lactate and send the patient (with IV running) to the hospital or a health center that can give IV fluids day and night. Give ORS to drink on the way if you have no IV fluids.
3. If you have no IV fluids and there is absolutely no way to send the patient, you will have to try rehydrating with ORS (see table on the following page for the correct amount.) Be sure patient drinks it all!

ADULTS WITH THIRD DEGREE DEHYDRATION

1. Start Ringer’s lactate or 0.9% saline (add 8 mL/L 10% potassium chloride to 0.9% saline if available). Give first 1,000–2,000 mL rapidly (to get patient out of shock). Unless you are able to treat the patient both night and day, send the patient with IV running to the hospital or health center, where he can get IV fluids both day and night—hurry! Delay may cause the patient to die.
2. When sending a severely dehydrated patient to the hospital, have the patient lie down in the vehicle (because of low BP). If no IV fluids and the patient can swallow, send ORS to drink in frequent sips on the way.

FOR ALL PATIENTS WITH DIARRHEA

After rehydration is started, look for the **cause** of the diarrhea. Give the correct treatment for the cause. Amebic and bacillary dysentery, giardia, malaria, and some high fevers with diarrhea (Typhoid, Lassa) need special treatment. Most other causes only need fluids. (See pages 44 & 45 and 58 & 59 for deciding the cause for bloody diarrhea.)

ORAL REHYDRATION SOLUTION (ORS)

ORS amount to give—use all in 24 hours, and continue breastfeeding babies							
1st Dehydration		2nd Dehydration (Mild)			2nd Dehydration (Moderate)		
Weight in pounds	Amount in 24 hr (mL)	Wt. (lb)	Drink this amt. ORS (mL)		Wt. (lb)	Drink this amt. ORS (mL)	
			in 6 hr	In next 18 hr		in 6 hr	In next 18 hr
10	600	10	200	700	10	300	700
15	900	15	300	1,050	15	450	1,050
25	1,250	25	500	1,600	25	750	1,600
35	1,600	35	750	1,800	35	1000	1,800
50	2,000	50	1,000	2,000	50	1,200	2,000
75	2,500	75	1,500	2,400	75	1,800	2,400
110	3,000	110	2,000	3,000	110	2,500	3,000
150	4,000	150	2,750	3,500	150	3,500	3,500

- Teach all mothers to **make** and **use SUGAR-SALT SOLUTION** (a homemade substitute for ORS packets). (See pg. 232–235.)
- For **rehydration** in the **clinic**, open a pack of UNICEF ORS, or make your own, measuring more accurately than the way you teach mothers to make it. Take 6 level teaspoons of sugar (1 tsp = 5 mL), 1 level teaspoon salt, ¼ teaspoon baking soda if available, and the juice of 3 oranges or 1 grapefruit. Add water to make 1,000 ml. Make it fresh daily.

REHYDRATING WITH IV FLUID—FOR CLINICS AND HEALTH CENTERS

TREATING MODERATE or SECOND DEGREE DEHYDRATION with IV FLUIDS

1. Patients with second degree dehydration have lost fluid equal to 5–10% of their weight.
2. Therefore **first give volume-expanding fluid** equal to 5% of their weight IV. This is approximately 25 mL per pound or 50 mL per kg.
3. Give ½ of the volume-expanding fluid rapidly IV in the first 30 minutes. This is about 12½ mL per pound.
4. Then give the other half of **volume-expanding fluid** IV over the next 2 hours.
5. Check skin elasticity. If it is still poor, repeat step 4 above.
6. Then, **when skin elasticity is normal**, if able to drink, give **ORS**. See the amount to give on the ORS table above, OR
7. If vomiting or not able to drink, give **replacement fluid IV**. See the amount to give on the table on pg. 17. **Use ½-strength Darrow’s with 10 ml. of 10% KCl** added per liter if it is available. Or use the other replacement fluids listed on page 13.

TREATING SEVERE or THIRD DEGREE DEHYDRATION with IV FLUIDS

1. Severely dehydrated patients (especially children) in shock have lost more than 10% of their body weight as fluid. Adults may be in shock with weight losses of less than 10%.
2. Therefore give volume-expanding fluid equal to 10% of the weight IV. This is about 50 mL per lb or 100 mL per kg. Use Ringer’s lactate, or use 0.9% saline (preferably with 8 ml. 10% KCl added per liter) for volume-expanding fluid.
3. Give half of the volume-expanding fluid rapidly IV in the first 30–45 minutes. This is about 25 mL per lb.
4. Then, give the other half of the fluid IV over the next 2 - 4 hours. This will be another 25 mL per lb. (NOTE: When the patient’s skin elasticity and BP are normal, eyes no longer sunken, and patient is starting to pass urine, stop volume-expanding fluid before all is given and start ORS or IV replacement fluid.)
5. Check skin elasticity; if it is still poor, repeat step 4 above (give 25 ml more per lb.)
6. Then, if skin elasticity and BP are normal and if able to drink, give oral rehydration soln. See amount to give on table above on previous page, OR
7. If vomiting or not able to drink, give replacement fluid IV. See amount to give in table below.

Chart of the Amounts of IV Fluids Needed for Rehydration

Weight in Pounds	Volume-Expanding Fluid Needed (in mL)				Replacement Fluid Needed In Next 24 Hours (in mL)		
	2nd Degree Dehydration		3rd Degree Dehydration		1st Degree Dehydration	2nd Degree Dehydration	3rd Degree Dehydration
	First 30 min	Next 2 hr	First 45 min	Next 2-4 hr			
7	80	80	150	150	500	600	750
11	120	120	240	240	800	900	1,000
16	175	175	350	350	1100	1,200	1,400
22	200	200	400	400	1400	1,500	1,750
44	400	400	800	800	1,750*	2,000*	2,250*
66	600	600	1,200	1,200	2,000*	2,250*	2,500*
88	800	800	1,600	1,600	2,250*	2,500*	2,750*
110	1,000	1,000	2,000	2,000	2,500*	2,750*	3,000*
154	1,250	1,250	2,500	2,500	3,000*	3,250*	3,500*

*Heavier children and adults need less replacement fluid per pound than children weighing less than 25 pounds.

1. After the first 30 minutes of rapid administration of volume-expanding fluid, if still low BP and looking very dehydrated, run in the fluid volume scheduled to be given over the next 2 hours more rapidly--in only 45–60 minutes.
2. Replacement fluid may need to be adjusted upward (increased) if much loose stool is being passed.
3. **Maintain adequate urine output. Watch cardiac status; do not over-hydrate.**

Summary of IV Fluids

For Volume-Expansion

- Ringer's lactate
- Normal saline (0.9% sodium chloride solution—preferably with 8 ml 10% KCl added per liter)

For Replacement Fluid

- Half-strength Darrow's solution with 2½% dextrose in water—this is best if available. It has sufficient KCl without more being added (but even better with 5 mL 10% KCl per 500 mL added). NDS may have this solution.
- Half-strength Ringer's lactate with 2½% dextrose in water (okay if 10 ml of 10% KCl is added per liter.)
- Alternating 500 mL Ringer's lactate with 500 mL D5W is **okay for adults** if KCl 10% in 10 mL ampules is available—add 10 mL to each 500 mL of Ringer's and each 500 mL D5W. First, give 500 mL Ringer's with KCl added; then 500 mL D5W with KCl added; then Ringer's with KCl, then D5W with KCl, and so on. (NOTE: The D-5-W is not good for very small children, or patients with meningitis or cerebral malaria.)
- **ORS can be given by mouth instead of IV replacement fluid** if after volume-expansion fluid given IV the patient is able to drink sufficiently and is not vomiting. It can also be given orally for replacing potassium if Ringer's lactate (either half-strength or full-strength) is being given IV as replacement fluid and no 10% KCl ampules are available to add to the Ringer's.
- KCl 10% solution—10 mL ampules to add to Ringer's, normal saline, or to D-5-W.
- For intraperitoneal (IP) fluid, use **Ringer's lactate** (without dextrose).

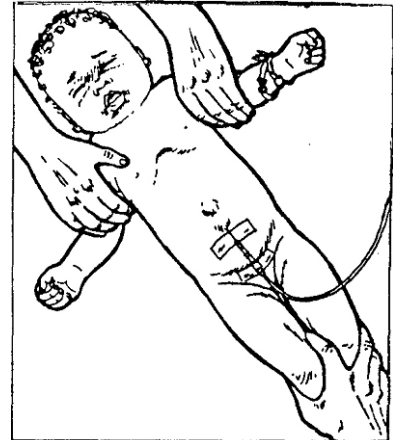
IP FLUID FOR REHYDRATION—

Severely dehydrated infants actually need volume-expanding fluid given rapidly IV to get them out of shock. But when starting an IV is impossible, giving fluid straight into the abdomen (i.e., IP) is the next best way. Perfectly isotonic fluids such as Ringer's Lactate without dextrose absorb within a few hours from the peritoneal cavity. Therefore, IP fluid works very well for second dehydration, and gives severely dehydrated infants a chance to survive. It is not hard to learn to give it. All you need is:

- A sterile needle
- Alcohol swab
- Sterile IV tube
- Plaster
- A 500 mL bag of **Ringer's lactate without dextrose**, or 0.9% **normal saline without dextrose** (**no other solutions**)
- Someone to help hold the baby

Steps in Giving a Child IP Fluid

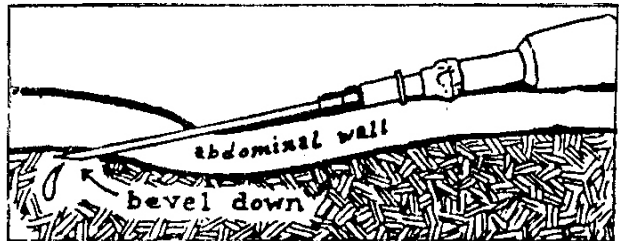
1. Feel the abdomen to be certain that a big spleen, a large liver, or a distended bladder is not in the area where the needle will go in.
2. Do not give IP fluid if the abdomen is distended or is tender.
3. Have one person hold the child's arms and shoulders and another hold the legs.
4. The fluid must be at body-temperature—(not cold and not hot). Warm it by setting the bag in some warm water if it is too cool.



Giving IP fluid to an infant

5. Connect the sterile IV tube with the needle to the bag; then, hang the bag of IV fluid and fill the tube with fluid. Then have someone pinch the IV tube to keep the fluid from running.

6. Clean the skin well just below the navel with an alcohol sponge.



7. Push the needle through the skin with the bevel turned down.

With the opening of the bevel pointing down fluid will flow into the abdomen when the needle is taped against the skin

8. Then with a quick motion push the needle through the peritoneum and about ½ inch into the abdominal cavity. When you start this push, your assistant must stop pinching the tube immediately for the fluid to flow.

9. Lay the needle on the abdominal wall and plaster it down.

10. Run in the correct amount of fluid rapidly within 10 minutes (about 35 mL per pound).

NOTE: If you have a severely dehydrated infant and no IV or IP fluid, send the infant to a hospital or health center that has IV fluids. Give the mother ORS to give to the infant in sips on the way. If no transportation, try hard in your clinic to rehydrate the infant with frequent sips of the ORS.

BLEEDING

General Treatment

1. Have the patient lie down and try to control the bleeding. Use direct pressure for a cut, and suture if possible.
2. If the bleeding is severe or continues, transport the patient to the hospital with 0.9% saline running IV—adjust the rate to increase BP if developing shock. All external bleeding should be controlled with direct pressure. A tourniquet may be needed for an amputation.

NOTE FOR HOSPITAL STAFF: (while waiting for the doctor)

- 1) Control the bleeding if possible; call the doctor if needed.
- 2) Take the BP and pulse and record them at least every 15 min.
- 3) If symptoms of shock are present (low BP, fast pulse), or if the bleeding is severe or continuous, maintain an airway,* start 0.9% saline (2 lines) if not already running with a large needle (see SHOCK), get a stat Hgb, type and cross-match, and find a blood donor immediately (always check all donors for HIV and other blood-borne illnesses).

With shock or unconsciousness—Be sure patient is breathing. Remove anything stuck in throat. To maintain airway, if airway is not obstructed and no breathing bag and oral airway are available, turn patient on **left side and tilt head back slightly with jaw forward.*

Treatment for Common Causes of Bleeding

3. CUT—Control the bleeding with direct pressure (tourniquets are dangerous) and suture the cut (pg. 1–4). Suturing usually stops bleeding.
4. NOSEBLEED—Nine out of 10 nosebleeds can be stopped by tipping the head back and pinching the soft part of the nose above the nostrils gently for 10 minutes. Tell the patient not to pick at his nose after it stops. If it does not stop, send him to the doctor for nasal packing. Always check BP in adults to rule out hypertension as the cause of the nosebleed.



Gentle pressure will stop most nosebleeds.

EMERGENCY ALTERNATIVE—

When transportation from the clinic is not available—Insert a Foley catheter into the bleeding side of the nose and back into the throat. Blow up the bag with a needle and syringe with 5 mL of air. Pull the catheter back gently until the air-filled rubber bag fits tightly into the opening where the back of the nose enters the throat. Hang a 3 or 4 oz weight on the catheter to keep it tight, and pack the front of the nose with gauze or cotton.

1. **HEMOPTYSIS**—coughing up blood from the lung
 - Do not confuse hemoptysis with bleeding from the back of the nose, the mouth, or the stomach. Bleeding from the back of the nose or mouth is spit out. If the patient is spitting blood instead of really coughing it up, check the mouth. Pressure will control a bleeding gum. Blood from the stomach is vomited up and often contains brownish-black “coffee-ground” digested blood.
 - Blood from the lung is brought up by actual coughing, and is **bright red**. It is usually caused by tuberculosis (TB), but sometimes by paragonimiasis. A patient with TB usually looks sick and has lost weight, but a patient with paragonimiasis usually looks less ill. For patients with blood-streaked sputum or coughing just small amounts of blood send sputum smears for acid-fast bacilli (TB). If negative, send smears for lung parasite eggs (paragonimiasis). (See pg. 50-51.)
 - **Transport patients coughing large amounts of blood immediately to the hospital for admission.** This is a serious emergency. Keep the patient calm. Diazepam 10 mg orally or IM (adult) may be helpful.
2. **HEMATEMESIS**—vomited blood—often black or brown like coffee grounds
 - Cause—this usually comes from a bleeding peptic ulcer, but sometimes from large veins in the esophagus (varices) with cirrhosis; or from Yellow Fever or Lassa Fever or Dengue Hemorrhagic Fever. Also, remember that swallowed blood from a nosebleed can be vomited back up and look brownish-black.
 - Treatment—transport the patient immediately to the hospital (with an IV of normal saline if BP is low, to keep BP from falling below 90), because his stomach may continue to bleed or bleed again severely at any time. Transporting is not necessary if the cause was only swallowed blood from a nosebleed that has stopped.

NOTE FOR HOSPITAL PERSONNEL:

- 1) Notify the doctor immediately when such a patient arrives.
 - 2) Get Hgb, type, and cross-match and find blood donors.
 - 3) Start an IV with a 16–18 gauge needle and hang saline. Run at 10 drops per minute if not in shock. If in shock, maintain an airway and run saline through 2 lines more rapidly to elevate the systolic pressure to 85 to 95, and transfuse blood as soon as possible.
 - 4) Record the BP and pulse frequently, at least every 15–30 min.
 - 5) If a bleeding peptic ulcer is suspected, start an antacid tablet (such as magnesium trisilicate) 2 tabs every 2 to 4 hours. Also give **omeprazole 20 mg. daily** if available—if no omeprazole, give **cimetidine 300 mg QID** (or ranitidine 150 mg BID).
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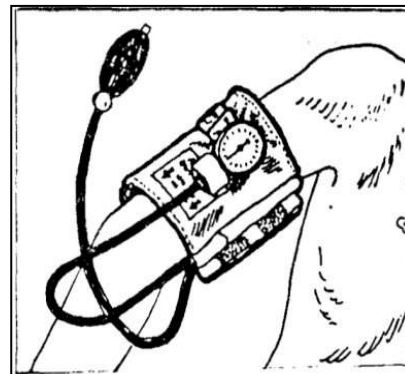
3. **MELENA**—black or tarry stool caused by the presence of digested blood
This has exactly the same causes and treatment as hematemesis above, except remember that iron tablets, Pepto-Bismol®, and some country medicine can cause normal stool to look black (but not sticky and tarry). Black stool from iron or Pepto-Bismol needs no treatment.
4. **RECTAL BLEEDING**—real red blood, not dysentery with loose stool, mucous, and blood. Often from hemorrhoids or cancer. If the bleeding is severe, send the patient to the hospital immediately. If not severe:
 - Newborn—May not have enough vitamin K; give 5 mg of vitamin K subcutaneously (SC), and repeat in 24 hours. Watch for weakness, pallor, or other signs of shock requiring immediate hospital treatment.
 - Adult—Look for external hemorrhoids. Examine the rectum with a gloved finger for an anal fissure or internal hemorrhoids. Small hemorrhoids can be treated with hemorrhoidal suppositories; larger hemorrhoids may require surgery. If no hemorrhoids are found or if a hard mass is felt, the patient may be bleeding from rectal cancer or from cancer higher in the colon. With possible rectal or colon cancer refer the patient quickly to the doctor.

SHOCK

Shock is very low BP. It has many causes. Check any patient who is weak and sweaty or semiconscious or unconscious for possible shock. First, lay the patient down; lower the head and elevate the feet. Act quickly. If unconscious, be sure the patient is breathing and airway is not obstructed.* Take BP immediately—it must be low for the patient to truly be in shock, often less than 80/40. Get the history and do the examination while you are treating the patient. Keep the patient warm. Start 1 or 2 IVs with 16–18 gauge needles and run 0.9% saline rapidly to elevate the BP.

S—Ask the following questions as you lay him down and check the BP:

- Did the patient fall a few minutes after receiving an injection (such as penicillin), or after a bee sting? If so, give epinephrine immediately. (See the first note under TREATMENT).
- When did the patient become ill?
- When did he begin to feel faint?
- Did he receive an injury?
- Is he having fever, diarrhea, vomiting, bleeding, or pain?
- Is he receiving treatment for diabetes?



O—You should have already taken the BP to prove he has shock. Continue to monitor BP and vital signs.

1. Look for blood loss—control any severe bleeding immediately before doing anything else.
2. Take the pulse—usually it is rapid and weak.
3. Feel the skin—usually it is cold and sweaty. Is skin elasticity decreased? Shock can be from severe dehydration.
4. Look at the color—often the patient in shock looks pale.
5. Check the abdomen—is it tender and distended? Are bowel sounds present and normal?
6. Are there any signs of an injury?

Symptoms and Signs of Shock:

- Patient feeling weak
- Sweating
- Low BP
- Looks pale
- May be semiconscious or unconscious

Treatment of Shock:

- Maintain airway and start IV.
- Take BP to prove shock.
- Then find the diagnosis and treatment from the table on pg. 24.

P—After emergency treatment, transport all patients in shock immediately to the hospital lying down, not sitting up. Go with the patient. Raise BP with 0.9% saline IV. (Common fainting and severe dehydration, if you have IV fluids to correct it, are exceptions not always needing transport to the hospital.)

NOTE FOR HOSPITAL PERSONNEL

First maintain airway* (and use Ambu bag if needed), then follow steps below:

1. Send for the doctor immediately, and get 2 IVs running.
2. Run saline or Ringer’s rapidly stat. If you suspect ruptured spleen, ectopic or bleeding ulcer, slow IV if BP rises above 90 systolic to prevent further bleeding before surgery.
3. Start oxygen nasally if the BP is below 90 systolic.
4. Get Hgb, and type and cross-match if bleeding is suspected. Start a unit of blood if shock is from bleeding and run the blood rapidly.
5. Take the BP and pulse every 5 minutes and record them until the doctor arrives.

*With shock or unconsciousness—Be sure patient is breathing. Remove anything stuck in the throat. Use Ambu bag or mouth-to-mouth if not breathing. To maintain airway, if airway is not obstructed and patient is breathing, and no breathing bag or oral airway is available, turn patient on left side and tilt head back slightly with jaw forward.

CAUSES and TREATMENT of SHOCK—maintain an airway and respirations, and start IV saline—run it rapidly to elevate pressure. Then treat the condition causing shock. If the cause or management is in doubt, check quickly through this list, asking the questions and looking for the findings listed under symptoms or signs in the table below. (NOTE: **All have low BP.**)

Symptoms and Signs of Shock	Assessment	Plan of Management
1. Did the patient fall 2–15 minutes following an injection or a bee sting?	Anaphylactic shock	1) Epinephrine 0.2–0.4 mL IV or 0.6–1.0 mL IM (and may repeat) 2) IV saline rapidly 3) Antihistamine tab orally if conscious 4) Transport stat to hospital.
2. Is any bleeding seen?	Blood loss	Stop the bleeding, start IV and transport stat to hospital with IV saline running to raise BP.
3. Are decreased skin elasticity, sunken eyes, and diarrhea present?	Shock from severe dehydration	Rehydrate with IV fluid if available (see pg. 11–19), or carry stat to the hospital (with an IV running or ORS to drink while going).
4. Are decreased skin elasticity and sunken eyes present, but no diarrhea? (See pg. 152) (If a glucometer is available, check a blood glucose.)	1) Possible diabetic ketoacidosis (if a known diabetic without meds or poor control), or might be 2) unable to drink for a few days--find out why	Carry patient with IV saline 0.9% running immediately to the hospital. Remember: patients in shock must be transported lying down.
5. Was he having fever? (but no diarrhea, severe vomiting or decreased skin elasticity)	Possible septicemic shock, or from severe malaria	Carry the patient immediately to the hospital (with IV Ringer's or saline running to elevate the BP). Check RDT, and start treatment for malaria and/or septicemia.
6. Does he have an odor on his breath, or mouth burns?	Possible poisoning	Carry the patient immediately to the hospital (with IV running to elevate BP).
7. Is there history or evidence of a severe injury to the lower chest or abdomen?	Ruptured spleen or other ruptured organ	Carry the patient immediately to the hospital (adjust 0.9% saline IV for systolic pressure of 85–90).
8. Is abdominal pain and tenderness with rebound present?	Shock from perforated abdominal viscus or peritonitis	Saline 0.9% IV to elevate BP and chloramphenicol—adults 1 gm and children 25 mg/kg IV. Carry patient immediately to hospital with saline running.
9. Is this a woman (age 14–45), pale, with abdominal pain? (and usually history of a missed period)	Ruptured ectopic pregnancy	Carry the patient immediately to the hospital (with IV saline). Monitor BP; do not raise BP above 90 systolic. (see pg. 33 & 34)
10. Is the patient passing black, tarry stools?	Bleeding peptic ulcer	Carry the patient immediately to the hospital (with IV, do not raise BP above 90 systolic)
11. Did he faint after fright or bad news just a few minutes ago?	Common fainting	Lay him down. He should recover in a few minutes. BP should quickly become normal.

UNCONSCIOUSNESS OR SEMICONSCIOUSNESS

If you find an unconscious patient, check immediately whether the patient is breathing all right—if he is **not** breathing all right:

1. Check for airway obstruction—if obstruction is present, clear the airway.
2. If not breathing, check quickly for a pulse or heartbeat.
 - a. If a heartbeat is present, breathe for the patient—with Ambu bag or mouth-to-mouth—until he is breathing by himself.
 - b. If you cannot detect any heartbeat, immediately start external cardiac massage and mouth-to-mouth breathing until the heartbeat returns and he is breathing by himself. (But **use common sense; if he has not been breathing for over 10 minutes before you arrived, there is no use breathing for him.**)
3. If he is breathing all right with no airway obstruction, **turn him on his left side** with his **head tilted slightly backward** to maintain an airway and continue as follows:

S—Ask someone who has been with the patient the following questions:

- How long has he been unconscious?
- Has he been having pain?
- Did he fall or was he injured?
- Has he been having fever?
- Did the unconsciousness develop rapidly or slowly?
- Did he have a seizure?

O—Take the BP, pulse, and temperature. Check the muscle tone and movement in all limbs, check the skin elasticity, and response to pain. Start IV 0.9% saline or Ringer’s if in shock or if poor skin elasticity, and see SHOCK.

A&P—Ask yourself the 16 questions in the table on the next page to assess the cause, and to manage the unconsciousness correctly.

Patient who is Semiconscious or Unconscious:

Semiconscious or Unconscious and:		Assessment:	Plan of Treatment: (Adult Doses)
1. Is patient semiconscious and trying hard to breathe but difficulty breathing & seems to be choking?		Object in trachea	Do a dislodgement maneuver (see method on next page.)
2. Semiconscious child with inspiratory stridor and difficulty breathing?		Croup (learn what this sounds like)	Steam breathed in at a distance or moist air helps, and Prednisolone may help in a few hours. Send him stat to the hospital.
3. Difficulty breathing and: Severe expiratory wheezing? (O ₂ sat usually < 92%)		Very severe asthma	1)Epinephrine 0.4 cc SC every 20 min X 3 2)or Salbutamol inhaler (or tabs-but slower) 3)and send stat to hospital.
4. Semiconscious—cough, difficult breathing and rales, fever and rapid respirations? (O ₂ sat usually <90%)		Severe pneumonia	1)Ampicillin 1 gm IV or IM stat. 2)Send him stat to the hospital 3)Needs oxygen and further IV antibiotics.
5. Is the BP Less than 80/50?		Shock	See SHOCK on pg. 22--24.
6. Is the patient unable to move arm and leg on one side of the body?		Stroke	Send him to the hospital.
7. Does he have fever and stiff neck (adult), or is this an infant who has quit nursing and now may also have a bulging fontanel?		Meningitis-also do RDT for malaria--it is possible to have both meningitis and malaria	1) See meningitis on pg. 91 2) Give ampicillin and chloramphenicol IV 3) or cotrimoxazole PO if no chloramph. 4) If RDT positive give artemether also 5) Then send patient stat to the hospital.
8. Is he dehydrated (with sunken eyes, decreased skin elasticity) and severe diarrhea?		Severe dehydration from diarrhea	Rehydrate with IV fluid (see p.11–19) Or send stat to hospital with an IV running, or ORS if no IV fluids and alert enough to swallow
9. Severe dehydration, history of diabetes, and no diarrhea?		Diabetic ketoacidotic coma	Send patient immediately to hospital with IV running of 0.9% saline.
10. Are there signs or a history of a head injury?		Brain injury	Send to hospital immediately.
11. Is there a breath odor?	Smells of alcohol?	Intoxication	1) Examine for signs of injury 2) If none, let him sleep it off 3) Be sure he is breathing okay
12. Or sign of an ingested toxin?	Other odor or mouth burns?	Poisoning	Send to hospital immediately (see POISONING pg. 30–33).
13. Is he unconscious 1 hour or less after having a seizure?		Unconsciousness From the seizure	Find the cause of seizure on pg. 29, and if epilepsy treat as directed on pg. 155–158.
14. Is patient taking insulin or tablets for diabetes and now is unconscious?	And on exam has no evidence of injury or dehydration & no fever?	Probably from hypoglycemia (insulin shock) If available, check glucose immediately with glucometer	Give glucose 5% 300 mL IV, or 50% 20 mL slowly IV, or sugar 5 tsp in water by NG tube. If awakens, feed patient. If doesn't wake up, send him stat to the hospital. May have another cause, and may need meds for diabetes adjusted.
15. Did the patient faint in the last 10 minutes from fright or from bad news?		Common fainting	1) Lay the patient down. 2) Patient should soon wake up without treatment.
16. Did the patient “fall out” or have psychological stress, and now is		Conversion disorder (hysteria)	1) Diazepam 10 mg IM or orally will help 2) Do not hurt the patient with any

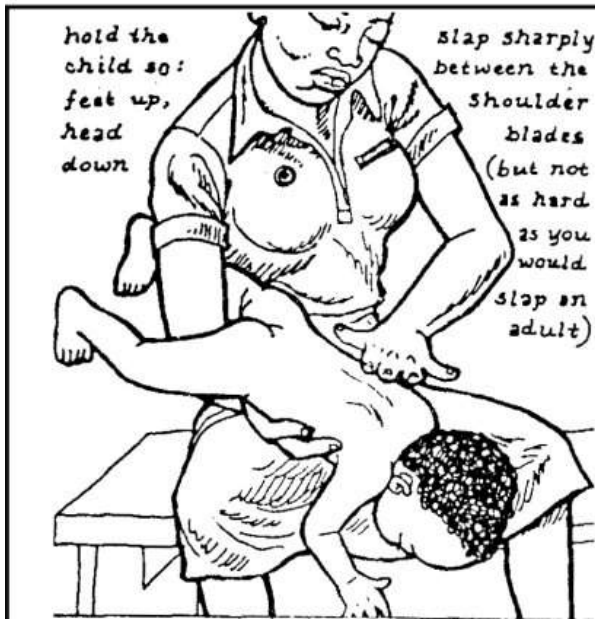
Semiconscious or Unconscious and:	Assessment:	Plan of Treatment: (Adult Doses)
consistently acting very strange?		dangerous treatment.

NOTE ON DISLODGE­MENT MANEUVER FOR CHOKING

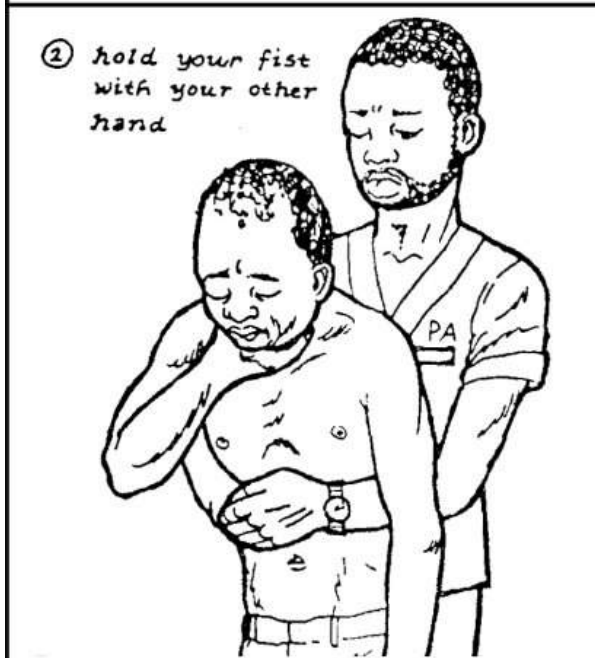
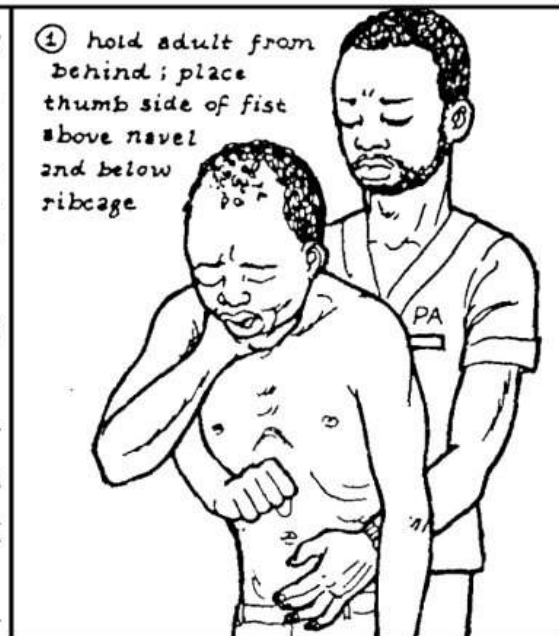
For a **child**—Hold him with feet up and head down, and slap his back sharply—The obstructing object may pop out. Sometimes an object can also be removed from a child’s larynx with a finger reaching deeply behind the tongue.

For an **adult**—Hold him from behind with both arms squeezing around the lower chest and drive one fist into the epigastric area. This suddenly drives air out of the lungs and may blow the object out of the larynx.

FOR A CHILD:



FOR AN ADULT:



SEIZURES (CONVULSIONS OR “JERKING”)

Immediate Emergency Treatment:

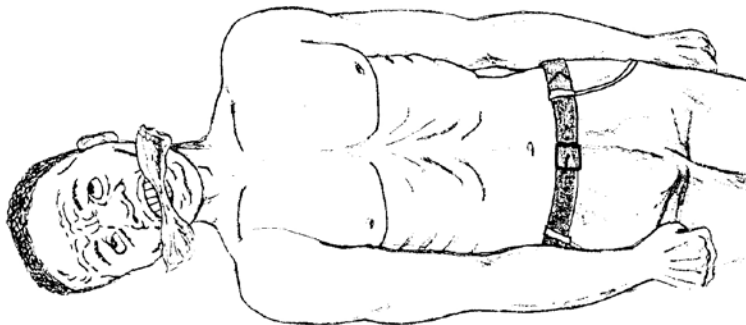
1. Lay the patient out flat on the bed or floor.
2. Turn him on his side so he won't aspirate (preferably the **left** side).
3. Place a padded tongue blade or rolled up cloth just between his teeth if possible to prevent him from biting his tongue. (**It may not be possible, or often is too late--don't break any teeth, don't push tongue back and obstruct airway and don't get your fingers bitten—the padded tongue blade isn't essential.**)
4. If the patient stops breathing for more than 30 seconds, clear the airway if possible and use an Ambu bag or give mouth-to-mouth respiration immediately.
5. **If the seizure hasn't stopped**, if IV diazepam 10 mg/2 mL is available, stop the seizure with 2 mL slowly IV for an adult or 0.3 mL per 10 lb in small children. May repeat every 10 minutes, up to 2 more times if needed.
6. **Assess the cause of the seizure**—see the chart on the next page.
7. If the seizure still doesn't stop in 5 minutes after third injection of diazepam, carry the patient to the hospital immediately where the doctor can stop the seizure with other IV medications. Prolonged seizures cause brain damage.

S—Ask the following questions:

- How long has the patient been ill?
- How long has he been seizing?
- Has he been having fever?
- Has this been happening to him often in the past?
- Was he talking normally before this seizure started today, or was he talking as if he was confused and not thinking straight?
- Is he taking any medicines?

O—Take the temperature (cool him by sponging him if it is over 104°F), and check his neck for stiffness.

Also check the fontanel in a baby (does it feel full and bulging?).



Lay the convulsing patient on the floor, turn him to one side (preferably left), and protect his tongue if possible.

Seizures are a symptom, **not** a disease. The symptom of seizures can often be controlled with emergency treatment as shown above, but the cause must be found and correctly treated. Some causes can be very serious. Find the diagnosis and treatment from the table below.

A&P—Assess the cause of the seizure and find the treatment by answering the following questions:

Seizures and the Following Other Conditions	Assessment	Plan of Treatment
1. Is this a child with fever who usually develops seizures with fever (& no stiff neck, wakes up well & oriented after seizure)?	Febrile seizures likely—but RDT for malaria, and spinal fluid if any question	1) Sponge with cool water. 2) Give paracetamol. 3) Find & treat cause of fever—be certain not malaria or meningitis.
2. Is this an infant with fever who is irritable and has stopped nursing from this illness and now has a seizure?	Meningitis, sepsis or severe malaria	1) Give Ampicillin & chloramphenicol--p. 91. (Amp & gentamycin-neonate) 2) RDT—if positive, give artemether. 3) Then send immediately to the hospital.
3. Is this an adult patient with fever, stiff neck, and headache who is not thinking clearly?	Meningitis Also check RDT—if positive, give artemether. Also give meds for meningitis	1) Ampicillin plus chloramphenicol (see p. 91) 2) If no chloramphenicol give instead 4 cotrimoxazole 400 mg tablets if able to swallow after the seizure. 3) Send stat to the hospital.
4. Is this a patient who is mentally clear with a stiff neck, back and limbs, and difficulty opening his mouth? (and usually jerks when touched)	Tetanus (adult) (ask about a cut or skin wound a week or two ago) See pg. 92	1) Human tetanus antitoxin 6000–9000 u stat.(give 2 x as much if horse TAT) 2) Diazepam 10 mg IM stat or 20 mg orally and phenobarbital 60 mg tabs 3 stat if possible. 3) Then send to the hospital stat.
5. Is this a newborn who is stiff and has stopped nursing and jerks when touched?	Tetanus neonatorum See pg. 249-250	1) Give human TAT 1,500–3,000 u stat-(give 3,000-4,500 u if horse TAT) 2) Give Diazepam 0.4 cc (2 mg) IM. 3) Send to the hospital stat.
6. Is this patient taking insulin, INH or niridazole? (but no fever) Or has patient been drinking alcohol heavily recently?	Probably a seizure from medication or from alcohol (but check RDT to be sure no cerebral malaria)	1) If taking insulin give glucose 20 gm IV, or sugar orally or by NG tube. 2) If still seizing stop with IV diazepam 3) If alcoholic and shaky, also give 10 mg diazepam. 4) Then send stat to the hospital.
7. Is this an older adult, not alcoholic, no previous history of seizures and no fever?	Possible brain tumor (but also check RDT)	1) If seizing stop seizure with diazepam 2) If RDT positive, give artemether 3) Refer to the hospital.
8. Has this patient been having seizures previously and now has no fever or stiff neck, & not taking insulin, INH, no alcohol or other cause? (Ask if taking medications for epilepsy)	Epilepsy (check RDT just to be sure malaria is not the cause)	Treat in your clinic. Patient will need phenobarbital or phenytoin all his life. If on medications for epilepsy did he forget to take meds? May need meds adjusted. See EPILEPSY-pg. 155–158

In the hospital or health center, if the doctor is not present:

1. If the patient has fever and the cause of the seizure is uncertain, do an immediate **rapid diagnostic** test for malaria (RDT), **malaria smear**, and **spinal tap** and **complete blood count** (a positive malaria test suggests cerebral malaria; the spinal tap can prove meningitis or encephalitis). Start treatment for probable meningitis immediately—Do not wait for spinal tap results.
2. Give a convulsing patient with fever and possible malaria artemether 3.2 mg/kg by IM injection (or other appropriate injectable antimalarial) for the possibility of cerebral malaria—you may wait for the results of a Rapid Diagnostic Test (RDT) for malaria, but do not wait for results of the malaria smear (give it immediately if no rapid malaria test is available). Then give paracetamol for fever when the patient is able to swallow. If unable to do a spinal tap but the patient is quite ill and meningitis could be the cause, treat for meningitis without the tap.
3. If the seizure has not stopped, stop it with diazepam IV—0.3 cc (1.5 mg) per 10 lb in children and 2 cc (10 mg) IV total for adults—repeat twice if needed at 10 minute intervals.
4. Give phenobarbital 200 mg (adult dose) orally or IM to prevent further seizures (children 15 mg for every 10 lb).
5. If meningitis (pg. 91) or tetanus (pg. 92) seems to be the cause, begin treatment immediately—use hospital protocol or directions on page 91 or 92.

POISONING

S—Symptoms and treatment both depend on what poison was taken. Try to find out what was taken and when. The bottle is often helpful. Ask about possible symptoms such as:

- Weakness
- Stomach pain
- Nausea/vomiting
- Seizures

O--Move quickly. Have someone get vital signs while treatment is being started. Look for mouth burns, smell the breath, and check the state of consciousness. Maintain airway if the patient is not conscious.

A&P—

1. **KEROSENE OR GASOLINE**—This poisoning most often happens with small children who drink kerosene that has been put in a soda or beer bottle. The breath of the child will smell like kerosene. The child will be **coughing** if kerosene has gotten into his trachea. After some time if he has taken a large amount he may become unconscious or convulse.
 - a. Do not cause vomiting—vomiting may cause the patient to aspirate kerosene into his lungs and he will develop the serious complication of hydrocarbon pneumonia.
 - b. Unless the amount is very small such as one swallow (and often it is very small), and unless no coughing is present, send the patient to the hospital.

NOTE FOR HOSPITAL PERSONNEL

- 1) If the **amount swallowed is rather small, do not lavage**, but if it was likely over 30 ml. within the last hour, **cautiously** insert a stomach tube with the patient's head lower than the body and with suction ready if he vomits. **No kerosene must be allowed to enter the lung!** Cautiously lavage the stomach. Epsom salts or bisacodyl may be given to move the kerosene through and out quickly.
 - 2) Observe the patient for 24 hours for detecting and treating central nervous system depression or the development of hydrocarbon pneumonia. Use antibiotics and oxygen for pneumonia.
-

2. **CAUSTIC SODA, WASHING SODA, OR LYE**—Most often this type of poisoning happens to small children who find caustic soda water in a dish for making soap. Usually the child has burns on the lips and in the mouth.
 - a. Do not cause vomiting.
 - b. Do not put a tube down to wash out the stomach.
 - c. If swallowed within the last 2 hours, **immediately give the child as much orange juice, lime juice, or dilute vinegar** (1 cup vinegar with 3 cups water) as the child will drink. This will destroy the poison. Use milk if nothing else is available—it may soothe the chemical burns, but does not neutralize lye.
 - d. Then send the child to the hospital. A later complication may be esophageal strictures (scarring) that will prevent the child from being able to swallow food. Some chest surgeons can treat this.
3. **PRESCRIPTION MEDICINES** (in overdose or taken by child): If conscious, cause the patient to vomit immediately. Then send the patient to the hospital. In the hospital wash out the stomach with an NG tube, and admit him for the doctor to treat complications from the medicine.

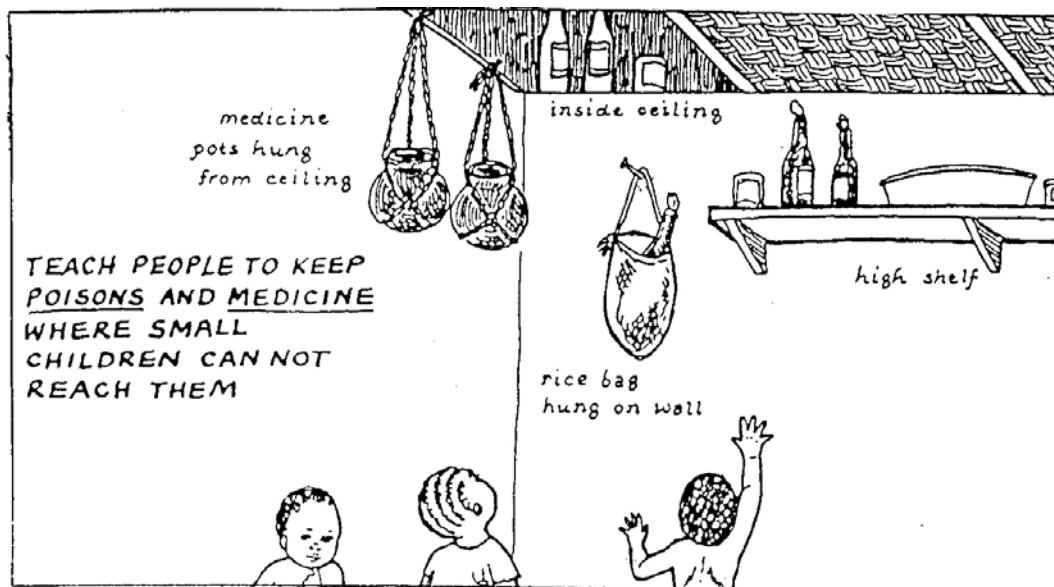
4. **PLANTS**—Some plants are poisonous. If a child eats a plant that you do not know to be safe, cause him to vomit immediately. Send him to the hospital if he has any symptoms.
5. **COUNTRY MEDICINES**—Some country medicines are poisonous, especially in large doses. The most common complications of poisoning from country medicines are acute kidney failure, jaundice from liver damage, and toxic colon—all of which can cause death. Most patients with poisoning from too much country medicine do not come to the clinic until they are very sick. Send them to the hospital.
6. **COMMON MEDICINES** (which are usually thought of as safe) can cause poisoning—
 - a. **Aspirin** in large amounts can cause death—cause vomiting immediately.
 - b. **Too much iron** can be poisonous—a few iron tablets or many vitamin tablets also containing iron can cause a child to die—cause vomiting immediately, and send the person to the hospital.
 - c. **Paracetamol** in amounts larger than 4,000 mg/day (adult) can destroy the liver and cause liver failure and death. Paracetamol is dangerous in smaller amounts if the liver has been damaged by hepatitis B or excessive alcohol—induce vomiting and send the patient to the hospital. After gastric lavage and activated charcoal, hospital personnel should give the antidote, N-Acetylcysteine periodically P.O. or IV for 24 to 72 hours. (Caution: If given IV, 5 percent of the patients develop anaphylaxis.)
7. **DIELDRIN**-- This is a dangerous insecticide or “bug-a-bug medicine” commonly used in Liberia. It damages the liver and brain. It causes jaundice, excitability, shakiness, and convulsions, and may cause death. It doesn’t even have to be swallowed—it is very rapidly absorbed through the skin.
 - a. If swallowed, lavage the stomach with the head down, and suction to avoid aspiration if possible. Otherwise cause the patient to vomit (although not usually recommended), and send him immediately to the hospital even if he has no symptoms.
 - b. If wasted on the skin, scrub the skin with soap and water. No more may be needed, but if any signs or suggestions of symptoms develop, send him to the hospital.

NOTE FOR HOSPITAL PERSONNEL for DIELDRIN INGESTION (before the doctor arrives)

- 1) If within 2 hours, wash out the stomach with an NG tube and plenty of water, avoiding aspiration with head down and suction available.
 - 2) Then instill a slurry of activated charcoal (if available).
 - 3) Give Epsom salts or bisacodyl to move dieldrin out quickly.
 - 4) Treat convulsions in the usual manner (see pg. 30—give diazepam and phenobarbital).
-

Prevention of Poisoning in Children

Never place kerosene in a beer or soda bottle. Always keep kerosene, caustic soda powder or water, and all medicines where children cannot reach them.



RUPTURED ECTOPIC PREGNANCY

Occurs in a woman of childbearing age, usually age 14–45. The patient will **die if not correctly diagnosed**.

S—Typical complaint: abdominal pain and weakness. The woman usually has missed 1 or 2 periods, then felt sudden abdominal pain when straining (going to the toilet, beating rice, etc.), and then immediately became faint.

O—

- The low abdomen is usually somewhat tender and appears distended. (Examine it gently so you do not cause more bleeding.)
- The BP is usually low with the pulse increased (such as: BP 90/50, pulse 116).
- The patient's conjunctiva almost always looks pale.
- LAB—Hgb is usually less than 10 gm %.

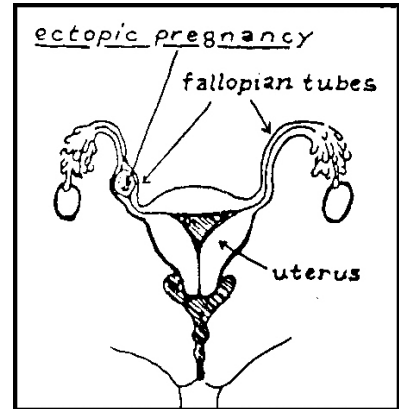
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DR. KELLER'S LAW
Any woman of childbearing age with low abdominal pain and anemia is an ectopic pregnancy unless proven otherwise.

For other conditions that may cause low abdominal pain see pg. 64–66.

P—CLINIC STAFF—If trained to do, confirm the diagnosis with an abdominal tap or cul-de-sac tap. Then send the patient **immediately** to the hospital **lying down** in the vehicle (the patient who is sitting up may go into deep shock and die before reaching the hospital). If the BP is low, start IV saline, run slowly, and accompany the patient to the hospital to control the IV and BP (Hold BP somewhere between 85 and 95 systolic—slightly above the significant shock level but not so high as to cause more bleeding.)

HOSPITAL PERSONNEL—If this is truly an ectopic pregnancy, emergency surgery is needed immediately!



1. Get a stat Hgb, and type and cross-match for blood.
2. Start IV saline with a large needle, but run it slowly (unless BP is less than 80/50) to support BP but not so rapidly as to raise the BP high enough to cause more bleeding before surgery starts.
3. Call the doctor. While he is coming get a sterile needle and syringe and vaginal speculum ready for him to do an abdominal or cul-de-sac tap (or better yet, an **ultrasound** if available) to prove the diagnosis of ectopic pregnancy (if not already done).
4. Set out ketamine or local anesthesia (ketamine is good because it raises the BP). Do not use spinal anesthesia since it will cause deeper shock.
5. The safest blood for any patient is her own blood. The surgeon may dip free blood from the patient's abdomen with a small sterile container and pour it through a sterile gauze (to remove clots) into a sterile bowl, and then siphon it into a blood bag, or siphon blood directly from the pool of blood in the patient's abdomen, and transfuse the blood back to the patient. This is known as an **autotransfusion**. Have equipment ready to collect the blood from the patient's abdomen.

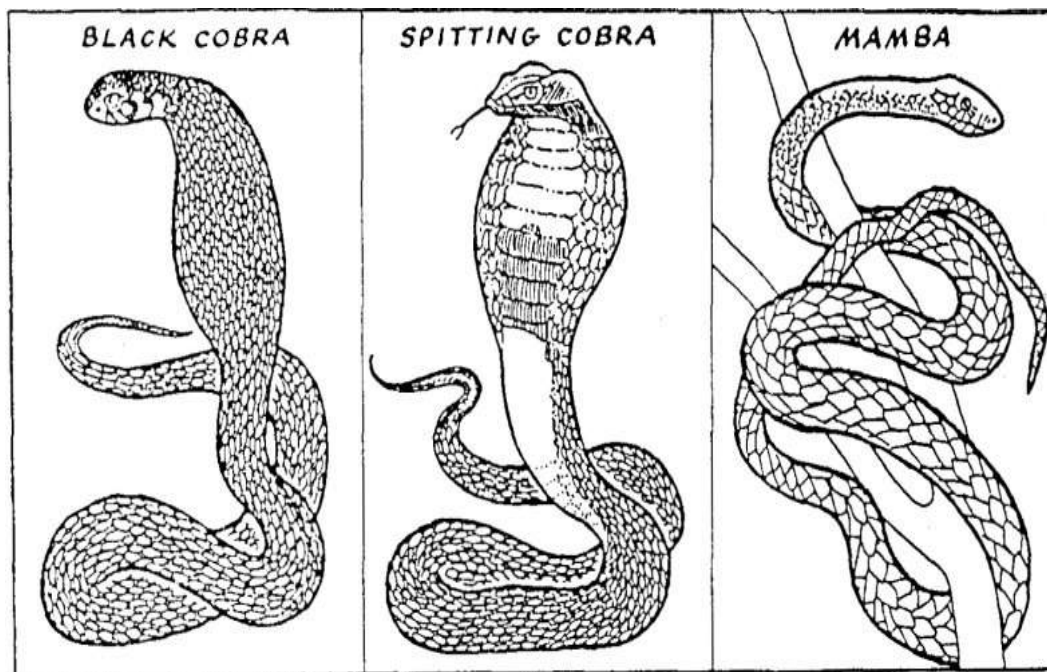
SNAKEBITES

About 100 different kinds of snakes live in Liberia. Most are not poisonous and their bites need no treatment. Harmless snakes have short teeth but no long, poisonous teeth called fangs. Poisonous snakes all have two long fangs, and their bites can often be identified by the two definite fang marks in the skin of the patient. There are about 15 kinds of poisonous snakes in Liberia, only seven of which are common enough to be important.

Important Poisonous Snakes

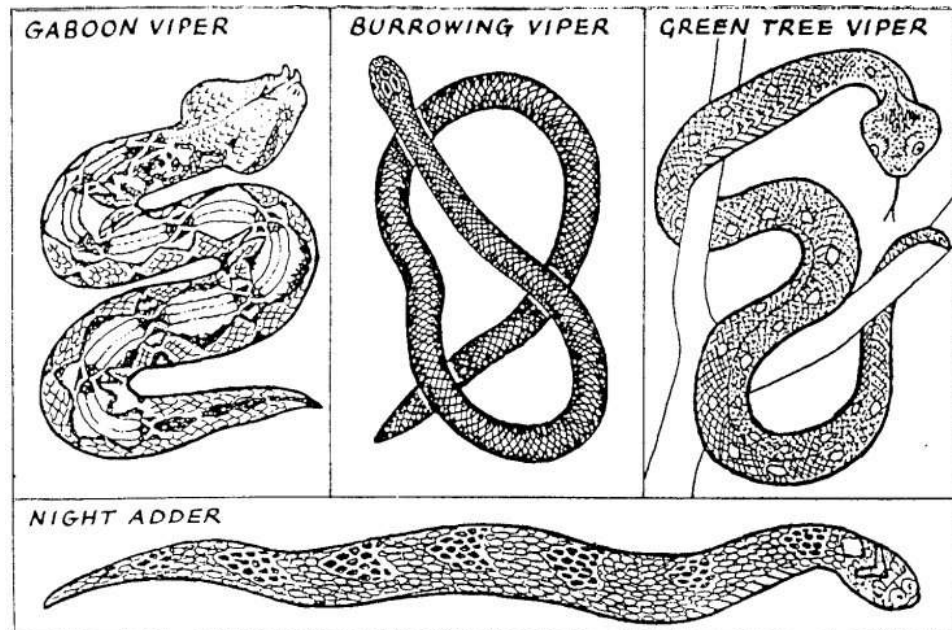
ELAPIDAE—Large snakes with fixed, grooved front fangs. Their venom is very strong and generally neurotoxic; neurotoxic venom does not cause swelling, but affects the nerves, causing vomiting, sleepiness, drooping eye lids, difficulty speaking, and respiratory paralysis that can cause death. Three of these poisonous snakes are important:

- **SPITTING COBRA** (*Naja nigricollis*)—This is a large, dull black snake with a hood and red throat. It is 4 to 7 feet long, and spits poison straight at the eyes. Its neurotoxic venom is also cytotoxic, both affecting the nervous system and causing the bite to swell.



- **BLACK COBRA** (*Naja melanoleuca*) Or “black snake”—A 5 to 8 foot long black snake with a hood and white throat. Its bite is **neurotoxic and very dangerous**. It causes no swelling.
- **GREEN MAMBA** (*Dendroaspis viridis* and *jamesonii*)—A long (4–7 feet) green snake with an almost yellow tail. It is **very poisonous**, very fast, and quick to bite; may chase people, and likes to climb trees. Farmers may meet it at the top of a palm tree. It is **neurotoxic, causing no swelling, and often causes death**. (There is also a less common black mamba.)

- **VIPERIDAE** (the Vipers)—Have front fangs which are “hinged” (fold back into the mouth) and hollow like a hypodermic needle, through which they inject their poison. (Viper fangs are longer than elapid fangs.) The poison is **cytotoxic** (destroys tissue and blood cells), **causing swelling**. The following 4 Liberian vipers are worth discussing:
 - **GABOON VIPER** or cassava snake (*Bitis gabonica*)—A thick snake with a brown, black, and white diamond pattern, large triangular head, and very large fangs. The **venom is very poisonous and both cytotoxic and neurotoxic and may cause bleeding**. Length of 2 to 5 feet.
 - **BURROWING VIPER** (*Atractaspis spp.*)—A black rod-like snake about a foot long. It may have a white tail. It rarely comes out of its burrow except at night during a rainstorm.
 - **GREEN TREE VIPER** (*Atheris chloraechis*)—A 1 – 3 foot, sluggish green snake with yellow spots that may sit in one place on a branch for many weeks. Definitely poisonous but does not cause many bites.



- **NIGHT ADDER** or yard snake (*Causus maculatus*)—A 1 – 2 foot long snake with a black and brown diamond pattern and triangular head with a black “V” marking. It is the **most common source of poisonous snakebite in Liberia**, but **rarely causes death**.
- **COLUBRIDAE**—There are a number of mildly poisonous tree snakes in Liberia with fangs in the **back** of their mouth, such as Blanding’s Tree Snake (Banana Tree Snake). Their poison can cause bleeding, but because they usually bite with the front teeth only, they rarely actually poison anyone.

Treatment

- TREATMENT FOR A COBRA SPIT—Wash the eyes out immediately with much water. Use antibiotic eye ointment QID if eye inflammation develops.
- TREATMENT immediately after a poisonous snakebite occurs—
 - a. **Calm the patient**—have him lie down. Excitement and walking about increase the heartbeat and make the poison spread faster.
 - b. **Be sure the person has actually been bitten by a poisonous snake**—look for 2 fang marks. Also note if any swelling (viper bite). If no evidence of the snakebite (no fang marks), don't do anything—watch the patient! (Except perhaps give 5 mg. diazepam to calm the patient.)
 - c. If **definite fang marks** are present, **put on a BP cuff** between the bite and the body and keep it at 30 to 40 mm pressure. Call **for an ambulance or send someone to look for transportation to a hospital that has antivenin**. If the trip is long, release the pressure for one minute every 10 minutes. If transportation is available, do nothing more—send the person immediately! **Antivenin is the only good treatment!** (But remember, an adult bitten by a yard snake will get swelling but usually needs no antivenin.)
 - d. **If no transportation is available** and there are **definite fang marks from a cobra or mamba** and the bite is less than 20 minutes old (5 minutes or less is better), use a BP cuff as a tourniquet with 30 to 50 mm of pressure, and cross-hatch the fang marks with a sterile blade (be careful not to cut tendons, nerves, arteries, or veins) and apply suction with a suction cup; or, if the patient can, he may suck with his mouth and spit out what he sucks out. Release the tourniquet for one minute every 10 minutes. Continue suction for one hour. Continue to look for transportation—transport to the hospital as soon as it is possible.
 - e. **In the hospital:** Remove any tourniquet, and protect against tetanus and give antibiotics if the patient was cut. **Give polyvalent antivenin only if:**
 - There are **signs of neurotoxicity, cardiotoxicity, or bleeding**. (Check every 15 minutes for difficulty breathing, drooping eyelids, double vision, weak muscles, abnormal pulse, low BP, or bleeding to make sure no problem develops.) OR
 - If there is **severe swelling** and the bite is less than 12 hours old. A doctor may choose to give antivenin with severe swelling even if later than 12 hours. (Note: Cassava Snake venom is so dangerous that bites with less swelling still deserve antivenin.)
 - With either of the above, give 4 vials of polyvalent antivenin very slowly IV. Repeat in 3 hours if no better. Have epinephrine on hand in case of allergic shock from the antivenin.

SEVERE CHEST PAIN

We worry that chest pains may be myocardial infarcts and cause death. Myocardial infarcts (heart attacks) are rare in patients eating a rural traditional diet, getting plenty of exercise, not overweight, not smoking, and not diabetic. They occur most often in older persons. Check all chest pains to find the cause and treat appropriately.

S—Ask:

- Where is the pain?
- When did it start?
- How severe is it?
- Was it **caused by an accident?**
- Is it **constant** or does it **come and go** (intermittent)?
- Does the pain come **only after exercise?**
- Does the pain **run into the neck** or **either shoulder or arm?**

O—Get vital signs. Examine the chest for bruises, rash or areas of tenderness. Listen for breath sounds, rales, wheezes, and heart sounds and rhythm. Is the patient weak or diaphoretic?

A&P—Severe chest pain can have many causes. Choose from those listed below.

- **INJURY—**There should be a history of injury: auto accident, fall, or a blow to chest. A bruise, cut, or area of tenderness should be present. With much tenderness over 1 point of a rib, the rib may be broken. If breath sounds are normal on both sides and vital signs are normal ibuprofen may help. If the injury is severe, send the patient to the hospital.
- **PLEURISY—**The chest hurts worse when taking a deep breath. The patient usually has a viral respiratory infection. Be sure he does not have pneumonia (pg. 76). With normal breathing and little or no fever and lungs sounding normal he may only need ibuprofen or paracetamol.
- **SHINGLES—**Pain for 1 to 7 days in a band, back to front, following a rib on one side of the chest only. After a few days a rash breaks out only in the band resembling chicken pox (it is caused by the same virus). Acyclovir 800 mg 5 times a day for 7–10 days may shorten the course if started within the first 3 days of rash. May need narcotics for severe pain. Shingles often develops in the elderly or with HIV—request permission to test for HIV.
- **COSTOCHRONDRITIS—**Anterior chest pain where one or more ribs join the sternum, and pain and tenderness when pressing over the junction(s) of ribs to the sternum. Give ibuprofen. Limit lifting until it improves. Breath sounds are normal.

- **CANCER**—Chest pain, chronic cough, and perhaps some difficulty breathing or low oxygen (test an O₂ Sat if you can), and **little or no fever**-- may be cancer--more likely cancer if the patient smokes. Usually middle-aged or older. Be sure the patient does not have pneumonia. If he has a history of cancer it may be metastatic to the lung. If you suspect cancer refer the patient to a hospital for a chest x-ray and treatment.
- **CARDIAC ANGINA**—This patient usually complains that with a little exercise he gets chest pain, which then soon goes away when he stops exercising. It is usually from a narrowed artery supplying blood to the heart muscle. Long-acting nitroglycerin taken daily may be helpful. Coronary artery bypass surgery or an arterial stent may be needed, but these require treatment outside of Liberia. Refer to a physician, preferably an internal medicine specialist who can do an EKG and cardiac stress test.
- **PULMONARY EMBOLISM**—Usually from a clot in a vein in the calf of either lower leg that breaks loose and gets stuck in the arteries in the lung, decreasing the circulation of blood through that part of the lung. Patient complains of sudden onset of chest pain, has dyspnea, tachypnea, tachycardia, decreased oxygen, and may cough up some blood. **Check for a swollen tender calf.** If any fever, it usually is not high. This is a true emergency. It requires continuous IV heparin. If suspected, **refer the patient immediately to the hospital.**
- **MYOCARDIAL INFARCT**—This is another true emergency. The pain is usually intense and often in the central chest or slightly to the left, and may run into the neck or either shoulder and arm (usually the left). The patient often feels weak and may be sweating. A sublingual nitroglycerin 0.4 mg tablet may relieve the pain if it is only from a narrow artery in spasm, but if a clot has formed over an atherosclerotic plaque in a heart artery and is blocking the artery, the pain will not be relieved. Two 325 mg aspirin tablets may help to dissolve the clot or prevent further clotting. Proper diagnosis is made with typical EKG changes and elevated cardiac muscle enzymes. If suspected, give nitroglycerin and aspirin (and oxygen if possible), and send the patient **immediately** to the hospital—by ambulance if possible.

HIGH FEVER (HYPERPYREXIA)

1. Fevers higher than 104° F (40°C) axillary or 105° F orally are dangerous and may cause death. Remove blankets and clothing and sponge such a patient immediately (with ice added to the water if necessary). Fanning the wet patient may also help. Give ibuprofen or paracetamol to lower the temperature.
2. Search for the cause of the fever (see pg. 70-72).
3. Malaria can be treated in the clinic. Most other causes of hyperpyrexia must be sent to the hospital. **And any patient who seems severely ill should be sent immediately to the hospital.**

OTHER MEDICAL EMERGENCIES DISCUSSED IN OTHER SECTIONS

- PNEUMONIA—pg. 76.
- SEVERE ANEMIA—pg. 79--81.
- CONGESTIVE HEART FAILURE—pg. 135–139.
- TETANUS—pg. 92.
- MENINGITIS—pg. 91.

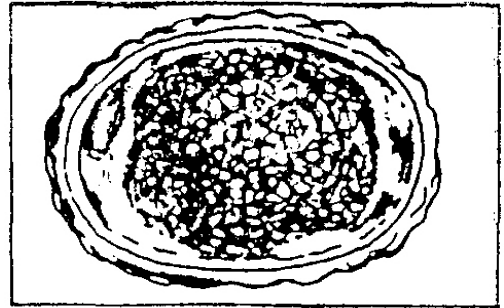
CHAPTER TWO—TREATMENT OF PARASITIC DISEASES

NOTE ON TREATING PARASITES DURING PREGNANCY: Chloroquine is safe anytime during pregnancy. Metronidazole, praziquantel, and mebendazole are also safe, but **avoid the first trimester** if at all possible. Do not give other drugs for parasites during pregnancy (except other antimalarials for malaria, see pg. 285).

INTESTINAL WORMS—NOTE: When no microscope is available for making a lab diagnosis, just give children age 1 to 5 years mebendazole 5 tabs of 100 mg every 6 months to deworm—**never** give to children under 1 year of age! See p. 262.

ASCARIASIS (*Ascaris Lumbricoides*) (Roundworm)

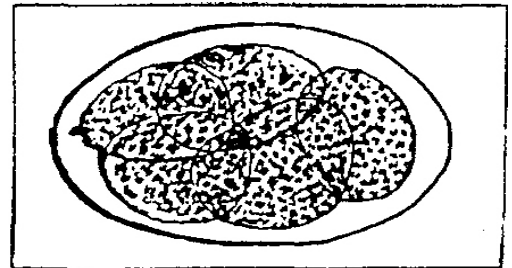
- **S**—Ascaris often causes no symptoms. Sometimes it causes mild stomach pain. Sometimes a worm is passed in the stool or vomited. When a worm is actually seen, no lab examination of stool is needed.
- **O&A (LAB)**—Diagnose by Ascaris eggs seen in a stool specimen.
- **P**—Give either:
 - **Mebendazole** (Vermox®) tablets 100 mg, 1 tab BID x 3 days. All ages: adult or child, but not children less than 1 year (U.S.-not less than 2 yr), OR
 - **Mebendazole** 5 tablets stat (single supervised de-worming dose), OR
 - **Piperazine** 500 mg tablets or elixir 500 mg per teaspoon; give 1 stat dose.
 - Adult—7 tablets or 7 teaspoons (35 mL)
 - Child-1 tab or 1 tsp per 7 pounds (maximum 7 tabs or 7 tsp (35 mL)
- **PREVENTION**—Use latrines to prevent eggs in the stool from getting into the dirt. Wash dirt from hands, fruits, and vegetables before eating.



Ascaris Egg

Hookworm Infestation (*Necator Americanus* and *Ancylostoma Duodenale*)

- **S**—Hookworm frequently causes anemia because hookworms suck blood from the duodenum. Sometimes it causes burning epigastric pain, which may worsen after eating.
- **O&A (LAB)**—Stool specimen—hookworm eggs. Check the hemoglobin (Hgb) if the patient is at all pale. If no microscope to check stool, treat anemic patients for hookworm anyway because hookworm is a likely cause.



Hookworm egg

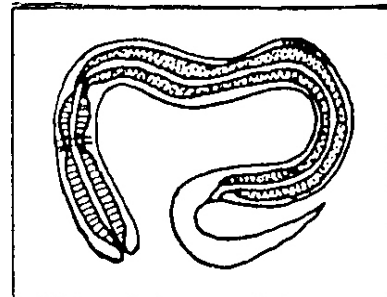
- **P**—Give one of the following:
 - **Mebendazole** 100 mg tablets (best). Give 1 tab BID x 3 days. All ages except small children less than 1 or 2 years, or **Mebendazole** 5 tablets stat (single dose), OR
 - **Bephenium** (alcopar)—One 5 gm packet BID x 2 days (adults), children less than 50 lbs—½ packet BID for 2 days, OR
 - **Pyrantel pamoate** 125 mg tablets—1 tablet per 20 lbs (maximum 6 tablets)—one single dose only. (Alcopar and pyrantel pamoate may not be available in Liberia.)

If anemic, also add **ferrous sulfate**—see Anemia--pages 79 – 81.

- **PREVENTION**—Use latrines to prevent eggs in the stool from getting into the dirt. Wear shoes to prevent larvae in the ground from entering the feet.

Strongyloidiasis (*Strongyloides Stercoralis*)

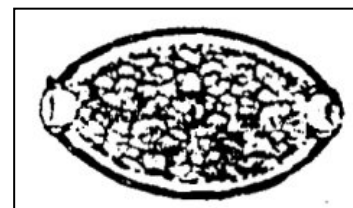
- **S**—Strongyloides often causes no symptoms, but sometimes there is mild epigastric pain. There may be diarrhea in severe cases, or anemia from the worms sucking blood.
- **O&A (LAB)**—Larvae seen in stool specimen.
- **P**—**Mebendazole** (Vermox) 100 mg tablets—1 tab BID for 3 days, preferred course, or 5 tablets stat (both child and adult, except small children less than 1 year).
- **PREVENTION**—Use latrines to prevent larvae in the stool from getting into the dirt. Wear shoes to prevent larvae in the ground from entering the feet.



Strongyloides larvae

Trichuriasis (*Trichuris Trichiura*) (Whipworm)

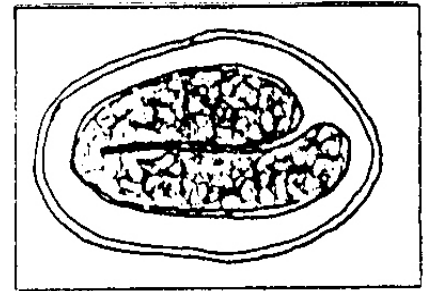
- **S**—Usually none. Sometimes diarrhea occurs if many worms are present.
- **O&A (LAB)**—Eggs found in a stool specimen.
- **P**—Mebendazole 100 mg tablets—1 tab BID for 3 days (for both child and adult, but not children less than 1 year), or 5 tablets stat.
- **PREVENTION**—Use latrines to prevent eggs from the stool from getting into the dirt. Wash dirt from hands, fruits, and vegetables before eating.



Trichuris egg

Enterobiasis (*Enterobius Vermicularis*) (Pinworm)

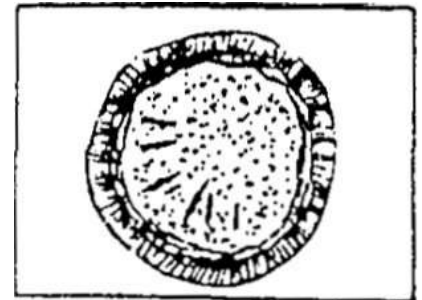
- **S**—Itching around the anus usually at night. This parasite is more often found in children than in adults.
- **O&A (LAB)**—If the mother looks carefully at the anus at night she will often find these little worms. The eggs can sometimes be seen if cellophane tape is placed against the anal skin, then stuck on a slide and sent to the lab for microscopic exam. Eggs are **not** found in the stool.
- **P**—**Mebendazole** (Vermox) 100 mg tablets—give only 1 tablet as a single dose to a child or an adult. **NOTE: not for small infants!** If the mother actually sees the very small worms around the anus late at night, it is not necessary to see eggs on cellophane tape under the microscope.
- **PREVENTION**—This is the only intestinal worm not prevented by using latrines, since the eggs are laid on the skin around the anus and not in the stool. Prevention is by washing hands after passing stool and washing hands before eating.



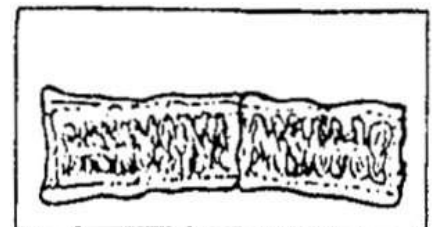
Pinworm egg

Taeniasis (*Taenia Saginata* and *Taenia Solium*) (Beef and Pork Tapeworm)

- **S**—Usually there are no symptoms until segments of a worm are passed in the stool. Occasionally it causes mild stomach pain.
- **O&A (LAB)**—Eggs are sometimes seen in the stool with a microscope, but **proglottids (worm segments) can easily be seen in the stool without a microscope.**
- **P**—**Niclosamide** (Yomesan®) 500 mg tablets
 - Adults: 4 tablets taken in a single dose
 - Children, 25–75 lbs: 2 tablets
 - Children weighing more than 75 lbs: 3 tabs (Tablets are to be taken after eating a light meal.)
- **PREVENTION**—Using the latrine prevents eggs in the stool from infecting cows or pigs. Cooking meat well prevents humans from developing tapeworm.



Tapeworm egg as seen in microscope

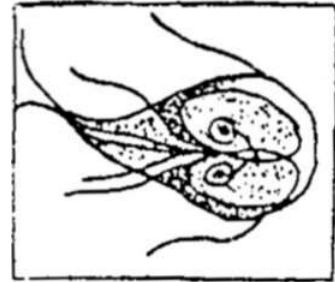


Proglottid (actual size)

INTESTINAL PROTOZOAL PARASITES

GIARDIASIS (*GIARDIA LAMBLIA*)

- **S**—Often there are no symptoms, but sometimes mild epigastric discomfort occurs. In heavy infestations there is diarrhea with bloating and gas, and this may come and go every few days. It does **not** cause significant fever—either no fever or very low-grade (< 38° C). **CAUTION:** Giardia is often found in the loose stools of patients with diarrhea from other causes—when found with diarrhea, treat giardia but always look for another possible cause for the diarrhea.
- **O&A (LAB)**—Cysts or flagellates can be seen in the stool specimen. Look at a fresh stool within 5 minutes after it was passed to see the moving flagellates. Blood and pus in the stool are **not** caused by giardia; if found, look for bacillary dysentery (fever + blood and pus in stool), or ameba (blood only in stool specimen).
- **P—Metronidazole (Flagyl)** 200 or 250 mg tablets—Give as follows:



Giardia lamblia (enlarged view under microscope)



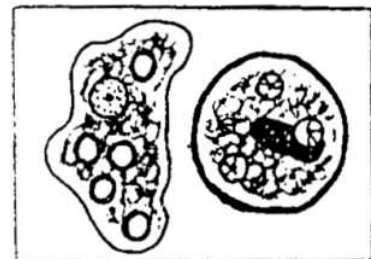
Giardia in liquid stool

Weight	Dosage
15–25 lbs	1/4 tab TID x 7 days
26–35 lbs	1/2 tab BID x 7 days
36–50 lbs	1/2 tab TID x 7 days
51–75 lbs	1 tab BID x 7 days
More than 75 lbs	1 tab TID x 7 days
Adults	1 tab TID x 7 days

- **PREVENTION**—The disease is caused from food or water that has been contaminated by stool from humans (usual source) or animals (especially pigs). Prevent giardiasis by using safe drinking water, handwashing, and washing of fruits and vegetables before eating.

AMEBIASIS (*ENTAMEBA HISTOLYTICA*)

- **S**—These vary from a carrier state with no symptoms to severe dysentery with fever and stool with blood and mucous that may come and go for weeks. Some mild cases will have stomach pain without diarrhea. Amebic hepatitis and amebic liver abscess cause pain and tenderness over the liver.



Trophozoite and cyst

■ **COMPLICATIONS—**

- Dehydration from severe dysentery
 - Debilitation from chronic diarrhea
 - Amebic hepatitis or liver abscess
 - Ameboma—abscess of the colon or other part of the body
 - Peritonitis from perforation of the colon
- **O&A (LAB)—**With diarrhea, the stool specimen must be **very fresh** to see moving trophozoites with the microscope (try looking at stool in less than 5 minutes after it has been passed). Cysts may also be seen in the stool.

DIFFERENTIAL POINT—Microscopy of **amebic stool** usually shows many red blood cells (RBC) but few or no white blood cells (WBC). Stool from **bacillary dysentery** usually shows both many RBC and many WBC. NOTE: *S. mansoni* and *Balantidium coli* may also cause bloody stool, and hemorrhoids and cancer can cause blood on otherwise normal stool.

- **P—**The best single drug is **metronidazole**. If this drug fails or the patient is critical, refer him to the hospital. Liver abscess or severe disease often requires prolonged treatment and the addition of other special drugs.

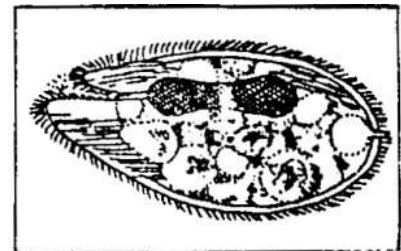
Metronidazole, 200 or 250 mg tablets	<i>(See dosage pg. 44 for giardia, but give 3 times as much for amebiasis.)</i>
Adult—3 tablets TID for 10 days	
Child—7 mg/lb (15 mg/kg) TID for 10 days	

- **PREVENTION—**Amebiasis is usually caused by drinking water contaminated with stool, although cysts can also be found on contaminated food such as vegetables. Prevention consists of using latrines, drinking safe water, and washing hands, fruits, and vegetables before eating.

BALANTIDIASIS (BALANTIDIUM COLI)

A rather uncommon human parasite—often a parasite of pigs.

- **S—**Also causes bloody diarrhea, but may cause no illness. If found in diarrheal stool think of possible other causes, especially if stool not bloody.
- **O&A (LAB)—***B. coli* (paramecia) will be seen in the stool with a microscope.
- **P—**Adults: **tetracycline** 250 mg 2 QID x 10 days if available. Children: Do NOT use tetracycline except in emergencies. Instead use **metronidazole** in the same dosage as for amebiasis for 10 days (3 times as much as for giardiasis). (See the table for the dosage for giardiasis on pg. 44).
- **PREVENTION—** Same as amebiasis—from stool contamination which may be from humans or from pigs infected with the balantidium parasite. Patients with debilitating diseases more often develop diarrhea with balantidium infestation.



B. coli paramecium

SYSTEMIC PROTOZOAL PARASITES

MALARIA (*PLASMODIUM FALCIPARUM*, *P. VIVAX*, *P. MALARIAE*, *P. OVALE*)

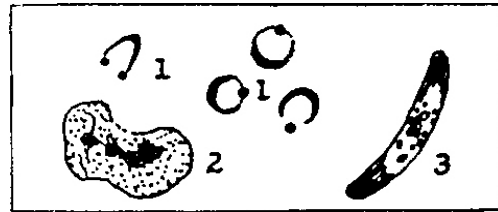
More than 90% of cases of malaria in Liberia are caused by *P. falciparum* (the severe kind). *P. malariae* is next most common.

NOTE: No *Plasmodium vivax* malaria has been identified in Liberia.

- **S**—Malaria causes **chills, high fever, headache, and some body pain**. The spleen may be enlarged. Children often also have diarrhea. Cerebral malaria, most common in children, has these same symptoms plus sleepiness, delirium, coma, or convulsions. Anemia may be present. Children less than 5 years of age and pregnant women have the most severe malaria. At first the fever may be continuous, but later it occurs every second or third day.

CAUTION: Many things cause fever besides malaria. Not every fever is malaria—look for other diseases. Also it is possible to have malaria and another illness.

- **O&A (LAB)**—The **Rapid Diagnostic Test (RDT)** makes diagnosis easy. The RDT that Liberia uses only detects *falciparum*. It remains positive for 14 days after treating malaria. Parasites may also be seen with a microscope in a blood smear, so use a blood smear if further checking is needed within 2 weeks after treatment. A thick smear is easiest for making a diagnosis. The patient is often anemic. The WBC is often slightly low.



Malaria seen in thick Field's stain
1. Falciparum rings
2. White blood cell
3. Gametocyte

- **A**—When **no RDT or microscope** is available—
First **check for other causes of fever** (pneumonia, sore throat, ear infection, kidney infection, measles, etc.) Treat these if found (See pg. 70–72). **If no other cause is found, then:**

IF FEVER + ONE OR MORE SYMPTOMS BELOW, TREAT FOR MALARIA
But continue to look for other possible or additional causes
When unable to tell if cerebral malaria or meningitis treat for both

- 1) Headache
- 2) Chills (adults with malaria usually have both headache & chills)
- 3) Body pains
- 4) Vomiting
- 5) Diarrhea
- 6) Large spleen or liver, and/or
- 7) Pallor

In children in addition to symptoms above:

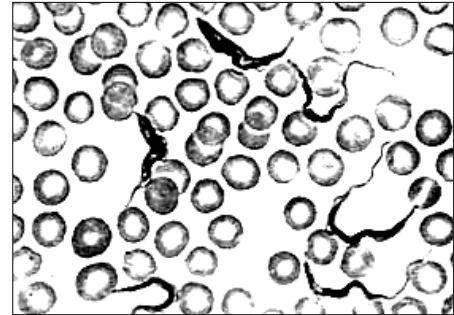
- 1) Not drinking, nursing or eating
- 2) Semi-consciousness or unconsciousness
- 3) Respiratory distress (if respiratory distress, consider pneumonia plus malaria)
- 4) Being unable to sit up
- 5) Seizure

- **P**—Use one of the following, preferably the first option AQ+AS or the second, artemether):
 - **AMODIAQUINE (AQ) 153 mg + ARTESUNATE (AS) 50 mg tabs**—Calculate dose by weight—10 mg amodiaquine plus 4 mg artesunate per kg—an average 60 kg adult needs 4 tablets daily x 3 days, or 2 tablets BID x 3 days. A 15 kg (33 lb) child could take 1 tablet daily x 3 days. **Not for first trimester pregnant women or infants less than 5 kg—use quinine instead.**
 - **ARTEMETHER INJECTABLE** if vomiting or unconscious—3.2 mg/kg IM first day, then 1.6 mg/kg daily at least 2 more days; followed by AQ+AS (usual dose) x 3 days when able to take oral meds. (Quinine IV over 4 hr or IM may be used instead of artemether; see quinine below.)
 - **QUININE DIHYDROCHLORIDE** if vomiting or if unconscious—20 mg/kg loading dose in an IV drip given slowly over 4 hours, then 10 mg/kg IV slowly over 2 - 4 hours every 8 to 12 hours may be used instead of artemether. After 3 days change to oral medication if possible, or limit quinine IV to every 12 hours (limit: 7 days total treatment with quinine.) Quinine dihydrochloride may also be given IM in 2 divided doses in thighs—not buttocks—if 2 mL is diluted in 8 mL of normal saline.
 - **QUININE SULFATE 300 mg tabs**—10 mg/kg/dose—For 60 kg adult—2 TID x 5–7 days. Quinine is good for pregnant women in the first trimester and small children less than 5 kg who cannot take (AQ+AS), or for whom that combination is not working. For children it is easier to calculate the dose using the 200 mg tablets. For non-pregnant women or men, or older children, adding **tetracycline 250 mg QID** or **doxycycline 100 mg BID** x 7–10 days adds a little to the effectiveness. But tetracycline and doxycycline are not for children less than 8 years of age—they spoil developing tooth enamel.
- **MALARIAL CHEMOPROPHYLAXIS** (prevention) should be given to anyone who has recently come to the tropics. Use one of the following medications:
 - **Mefloquine** (Larium®) 250 mg tablets, Adult—1 tab weekly (Excellent to prevent all malaria, rather expensive, and rarely causes psychosis). Can be used for children, but one must carefully divide the tablets:
 - Newborn— 1/16 tab weekly 10–20 lbs—1/8 tab weekly
 - 20–40 lbs—1/4 tab weekly 40–80 lbs—1/2 tab weekly
 - **Doxycycline 100 mg.** Adults—1 daily (not for children)
 - **Pyrimethamine** (DARAPRIM®) 25 mg tablets—This is **less effective**. Adults—1 weekly, children 15–75 lbs— ½ tablet weekly
 - **Atovaquone 250 mg + proguanil 100 mg tablets** (Malarone®). Adults—1 daily. Children’s tablets also available: atovaquone 62.5 mg + proguanil 25 mg (Very expensive! But very good; may not be available in Liberia.)

- **PREVENTION**—Prevent mosquito bites by screening houses, draining puddles where mosquitoes breed, and using mosquito nets (e.g., long-lasting insecticide-treated nets [LLITN]). These nets, treated with pyrethrin, a mild insecticide which is quite safe for humans, give better protection. (But also give medication prophylaxis to newcomers to the tropics.) For pregnant women who seem well, give Fansidar 3 tablets once only in the second and again in the third trimester. (If HIV-positive, give Fansidar monthly unless on cotrimoxazole.)
- **SPECIAL PROBLEMS in patients with malaria**—See protocols and doses in the *Training Manual for Management of Malaria* (pg. 47) and following pages for full information on these problems:
 - **Cough and rales**—also treat for **pneumonia**—ampicillin 50 mg/kg IV Q 6 hours, or if taking oral medications and not vomiting, Amoxicillin 500 mg orally 3 times a day for an adult, or 250 mg 3 times a day for a 25 lb child. For adults **doxycycline** 100 mg. b.i.d. may be used instead of amoxicillin and helps to treat the malaria.
 - **Seizures, coma, or severe prostration**—Stop seizures with IV diazepam 0.3 mg/kg, and may repeat twice if needed. In addition to treating for cerebral malaria, do a **lumbar puncture** to check for **meningitis**. If the lumbar puncture is not available, also treat for meningitis anyway: ampicillin 50 mg/kg (or benzyl penicillin 60 mg/kg) IV + chloramphenicol 25 mg/kg IV—both every 6 hours. (For adults or older children do not give more than 2 grams ampicillin (or 3 grams benzyl penicillin), and 1 gram chloramphenicol every 6 hours.)
 - **Severely ill or shocked**—ampicillin 50 mg/kg IV Q 6 hours + gentamycin 7.5 mg/kg IV once daily (for possible sepsis), and 50 percent glucose 1 mL/kg by slow IV push for children and 20–50 mL slow IV push for adults. With shock also give Ringer’s lactate as below.
 - **Dehydrated**—Ringer’s lactate or normal saline IV: 20 mL/kg over 15 minutes for children, and 1,000 mL over 30 min. for adults. Repeat twice if needed. If shock does not improve, transfer to a hospital and give 20 mL/kg of blood over 1 hour.
 - **Severe anemia** (Hgb <5 gm)—Refer to hospital for transfusion.
 - **Severe malnutrition**—After treating malaria, refer to a therapeutic feeding center.
 - **Supply adequate maintenance fluid** for all critically ill patients, via NG tube or IV.

TRYPANOSOMIASIS (SLEEPING SICKNESS) – another SYSTEMIC PROTOZOAL PARASITE: *TRYPANOSOMA GAMBIENSE*—Currently rarely seen in Liberia (or not at all)

- **SYMPTOMS**—In the early stage, fever and swollen lymph nodes develop. The nodes at the back of the neck may become very large (Winterbottom’s sign). In the late stage the parasites get into the brain, causing central nervous system symptoms such as headache, inability to concentrate, lack of interest in things that are happening, and mental confusion. These become more severe, causing increasing sleepiness leading finally to coma. Suspect trypanosomiasis in any person with fever and very large posterior cervical nodes, especially if central nervous system symptoms such as drowsiness are developing.
- **LAB**—The trypanosomes can be seen with the microscope in blood, spinal fluid, or fluid aspirated from a lymph node. This should be done at a hospital.
- **TREATMENT**—Send any suspected cases to the hospital. The treatment is very complicated and dangerous. Early cases usually get well with **suramin**, but late cases are very hard to cure and need very special drugs with dangerous side-effects. **If not treated, all patients with trypanosomiasis will die.**
- **PREVENTION**—Spread by the bite of tsetse flies, whose larvae develop in rapid-flowing rivers and streams. **Do not allow the large tsetse flies to bite you.** Prevent deaths by identifying and referring cases early.



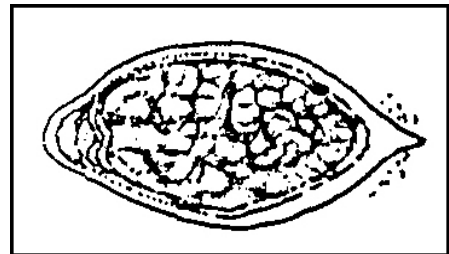
Trypanosomes in blood smear
(from a WHO picture)

PARASITIC FLUKES AND NEMATODES

SCHISTOSOMIASIS (*BILHARZIA*)

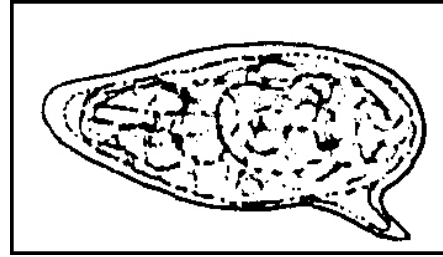
(PARASITES: *SCHISTOSOMA HEMATOBIIUM* AND *S. MANSONI*—*blood vessel flukes of the urinary tract and colon*)

- **SYMPTOMS**—
 - *S. hematobium*—Bloody urine and dysuria. Chronic infections can cause bladder cancer.
 - *S. mansoni*—Often it causes no symptoms. Sometimes causes loose stool or bloody dysentery. Long time infections can cause ascites and death from liver cirrhosis.
- **LAB**—requires use of a microscope:
 - *S. hematobium*—Eggs found in urine, also often WBC and RBC are present in urine.



S. hematobium egg

- *S. mansoni*—Eggs found in stool specimen, but often needs a stool concentration test to find them. WBCs and RBCs also often seen in the stool.



S. mansoni egg

- **TREATMENT**—

- *S. hematobium*—

- **Metrifonate** 100 mg tablets if available. Give adults 130 lbs or heavier 6 tablets (single dose). Give children 1 tablet for every 10 kg or 22 lbs (a 44 lb child gets 2 tablets), OR
- **Praziquantel**—it also cures hematobium, but is more expensive Use the same dose as for *S. mansoni* (see dose below). Use it if metrifonate is not available, and use praziquantel for pregnant women with hematobium but after the first trimester—it is safer than metrifonate during pregnancy.

- *S. mansoni*—Give **praziquantel** 600 mg tablets:

- Adult—4 tablets as a single dose
- Child—20 mg/lb as a single dose
 - 15–25 lbs = ½ tab 41–55 lbs = 1½ tabs 70–89 lbs = 2½ tabs
 - 26–40 lbs = 1 tab 56–70 lbs = 2 tabs 90–110 lbs = 3 tabs

- **PREVENTION**—Use latrines to prevent schistosome eggs in the stool or urine from hatching in streams or rice paddies and infecting snails. Avoid working in streams or flooded rice paddies as much as possible in the counties where schistosomiasis is found.

PARAGONIMIASIS (LUNG FLUKE)

(PARASITE: *PARAGONIMUS UTEROBILATERALIS*)

- **S**—This disease has been suspected in Liberia for years, but finally proved by Monson and Buck about 1987 at Zorzor, where it is very common, especially in children. The patients cough, do not feel well, and have episodes of coughing up some blood and sputum with little orange flecks in it. It is commonly mistaken for tuberculosis, but the patients do not look as thin or as ill as with TB.



P. westermani egg

(Picture altered from original on paragonimiasis home page by Christina Baumann.)

- **LAB**—Eggs seen with the microscope in sputum coughed up from the lungs, or in stool from swallowed sputum. (NOTE: Sputum must not be acid-fast stained for TB because acid-fast stain destroys the eggs so they cannot be seen.)

- A CHEST X-RAY in the hospital may show ring-like opacities where the parasites are in the lungs, or nodules, cavities, infiltrates, pleural effusions, or even a pneumothorax may be seen—but usually the X-ray also is not really typical for adult Tuberculosis.
- TREATMENT—Praziquantel 600 mg tablets
 - Adult—2 tablets TID for 2 days
 - Child—12 mg/lb TID for 2 days (25 lbs = ½ tablet TID x 2 days)
- PREVENTION—Caught by eating crabs from the rivers and streams that have not been cooked well, or by sucking their juices. Wash your hands after handling crabs from the streams and do not let children play with them. Always cook them very well. (NOTE: This illness cannot be caught from ocean crabs—only from freshwater crabs.)

BANCROFTIAN FILARIASIS (ELEPHANTIASIS)

(PARASITE: *WUCHERERIA BANCROFTI*—a systemic nematode)

- SYMPTOMS—Many patients with light infections have no symptoms. Fever, fatigue, swollen painful testicles, and red tender areas of skin may come and go. Swollen lymph nodes may develop. Elephantiasis (a greatly and permanently swollen leg, scrotum, or occasionally breast or arm) sometimes occurs a few years later.
- LAB—Blood drawn late at night often shows microfilaria.
- TREATMENT—Diethylcarbamazine (DEC) 50 mg tablets—brand name Hetrazan (Note: DEC is not given to clinics)
 - Adult—2 tablets TID x 14 days
 - Child—1 mg/lb TID x 14 days (50 lbs = 1 tablet TID x 14 days)

CAUTION: Do a **skin snip** for **onchocerca** before giving such a high starting dose. If negative, do a **Mazotti test (DEC--½ tablet daily x 3 days-causes severe itching if onchocerciasis is present)**. If either test is positive, **treat onchocerciasis first with Ivermectin 3 tablets stat**. Then wait 4 months, and start DEC with ½ tablet daily and **gradually increase if no reaction—STOP IF REACTION OCCURS**. A high dose of DEC will cause a severe reaction with onchocerciasis. Reactions include eye pain (even blindness), severe itching, and edema, anywhere (legs, arms, face, scrotum, breasts). Edema may be mild or severe. Therefore **be careful with DEC—start cautiously with a very low dose (½ tablet daily x 3 days)** to be sure no onchocerca are present.

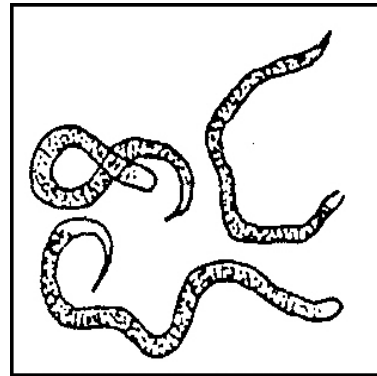
- PREVENTION—Carried by mosquitoes. Prevent bites by screening houses, draining puddles where mosquitoes breed, using mosquito nets (LLITNs) impregnated with pyrethrin insecticide, and spraying.

ONCHOCERCIASIS (BLINDING FILARIAL DISEASE)

(PARASITE: *ONCHOCERCA VOLVULUS*—a subcutaneous nematode)

■ SYMPTOMS—

- **Itching skin.** After many years **wrinkled skin** called “lizard skin” may develop.
- **Subcutaneous nodules** containing adult worms are often found over the iliac crests, greater trochanters, and coccyx.
- Eye damage and failing vision may occur, but this is less common in the rainforest areas of Africa than in the grasslands.

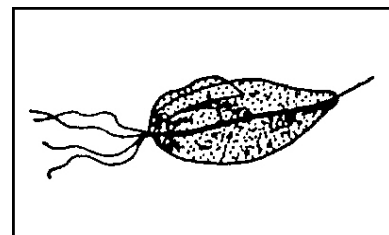


Microfilaria in a skin snip

- **LAB—A skin snip** often shows microfilaria. If 3 skin snips are negative but onchocerciasis is strongly suspected, do a **Mazotti test**—give diethylcarbamazine (DEC) ½ tablet daily for 3 days; with onchocerciasis, severe itching occurs. NOTE: if severely itching after the first or second day, stop the DEC immediately! (NOTE: The physicians can obtain DEC—it is not distributed to clinics—ask your doctor.)
- **TREATMENT—**
 - **Ivermectin 3 tablets stat once each year** is best. It doesn't kill the adult worms but prevents them from producing microfilaria.
 - Diethylcarbamazine (DEC or Hetrazan) was used in the past. It causes too many severe reactions, including blindness. **Do not use Hetrazan.** (Not given to clinics.) DEC is only for treating Bancroftian filariasis.
 - If subcutaneous nodules with adult worms are troubling the patient, the nodules may be excised.
- **PREVENTION—**Avoid bites from *Simulium* gnats (black buffalo gnats) by screening houses and wearing shoes, socks, and long pants since most biting occurs below the knees. Stay away from fast-moving streams where the gnats breed.

TRICHOMONIASIS (PARASITE: *TRICHOMONAS VAGINALIS*—a protozoal parasite of the vagina and urethra)

- **SYMPTOMS—**This parasite may infect the vagina, urethra, prostate, and epididymis. All men and many women have no symptoms. Women may have a thin bubbly white or pale yellow discharge with itching.
- **LAB—**Under a microscope the swimming flagellates can be seen moving about in the vaginal discharge.



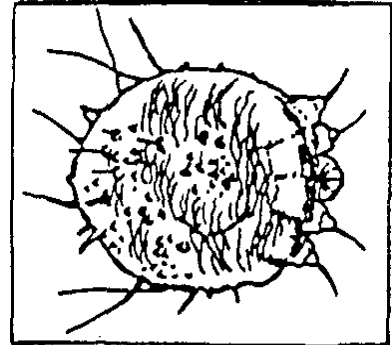
T. vaginalis

- **TREATMENT**—metronidazole 200 or 250 mg tablets—1 TID for 7 days for both husband and wife. If both are not treated, the wife will be re-infected by the husband.
- **PREVENTION**—This is a venereal disease, so avoiding sex with anyone except the person's own husband or wife helps to prevent infection with this parasite.

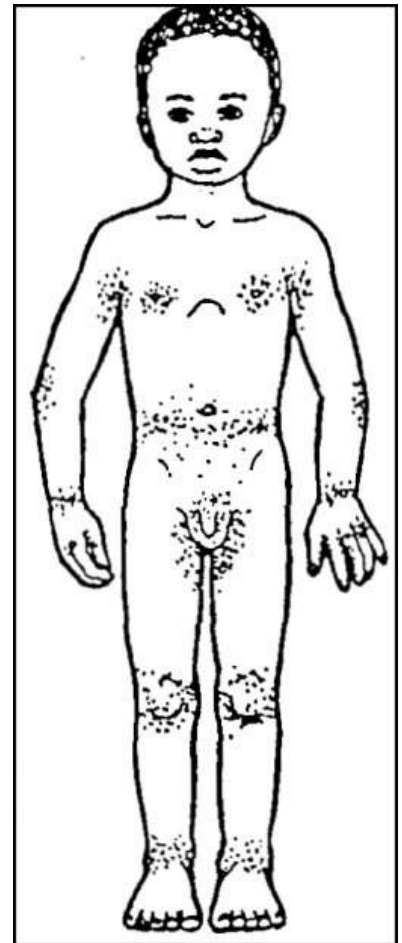
ECTOPARASITES—PARASITES AFFECTING THE SKIN

SCABIES (Craw-Craw) (PARASITE: *SARCOPTES SCABIEI*)

- **CAUSE**—A small mite which tunnels into the top layer of the skin. The waste products of the mite cause the severe itching.
- **SYMPTOMS**—Itching, which is often worse at night. A rash with small vesicles and small scabs with pus under them often develops, and is most commonly found between the fingers and on the wrists, ankles, elbows, knees, waist, buttocks, groin, arm pits, or breasts.
- **LAB**—Mites can be scraped from their tunnels in the skin and identified with the microscope, but this is usually not needed.
- **DIAGNOSIS**—Diagnose scabies from the typical “craw-craw” rash found in the usual places along with the itching.
- **TREATMENT**—(Treat **everyone** in the family the same day—Use one of the following three:
 - **Benzyl benzoate** 25% emulsion—Use this the same way for an adult or a child: wash the body first with warm water and soap. Then apply benzyl benzoate over the entire body below the neck and leave it on for 24 hours. Then wash it off and apply it a second time. Wash it off the next day. After treatment it takes time for the itching to cool down. Change and wash all clothing and bed sheets.
 - **Gamma benzene hexachloride** 1% (Lindane) Follow the same directions as for benzyl benzoate, except apply it only one time in the evening and wash it off in the morning. (May not be available in Liberia, and is mildly toxic.)



Scabies mite

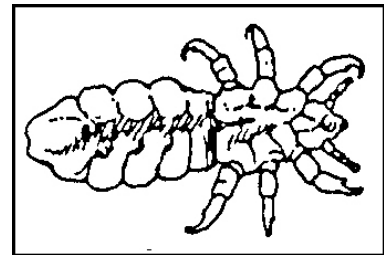


Common areas for scabies rash

- **Permethrin** 5% cream (Elimite)—Massage into the skin of the entire body except not the face and hair. Bathe to wash it off in 12 hours. (May not be available in Liberia.) Ivermectin 3 tablets as a single dose may be added for additional effect.
- **PREVENTION**—Scabies is spread mainly by skin contact, and crowded living conditions permit easy spread. Sufficient living space and cleanliness help to prevent spread.

PEDICULOSIS--INFESTATION WITH LICE

- There are three human kinds of lice:
 - *Pediculus humanus corporis*—the body louse
 - *Pediculus humanus capitis*—the head louse
 - *Phthirus pubis*—the pubic or “crab” louse



Human louse

- **SYMPTOMS**—Itching (which is caused by the irritating louse saliva in the bites), small red elevated spots around the bites, infected scratch marks, and very small white eggs called nits, which look like little white dots on hairs.
- **DANGER**—Body lice may carry typhus, trench fever, and relapsing fever.
- **DIAGNOSIS**—By finding nits on hair shafts or lice on a person who is itching.
- **TREATMENT**—Benzyl benzoate rubbed into the affected area (hair for head lice, pubic area for pubic lice or entire body for body lice) followed by a bath in 24 hours. Or gamma benzene hexachloride 1% lotion used the same way and bathed off in 12 hours. Ivermectin 3 tablets once can also be used. With any treatment also wash all clothes and sheets in hot water.
- **PREVENTION**—Cleanliness and good living conditions in which people are not crowded help to prevent the spread of lice.



Nit on hair shaft

BEDBUGS (PARASITE: CIMEX HEMIPTERUS)

These red-brown bugs hide in the cracks of the walls and furniture and come out to suck blood at night. The bites cause small, red, swollen areas that often itch severely. Diagnosis is by seeing the bugs. Cure can be obtained by spraying bedbug hiding places with



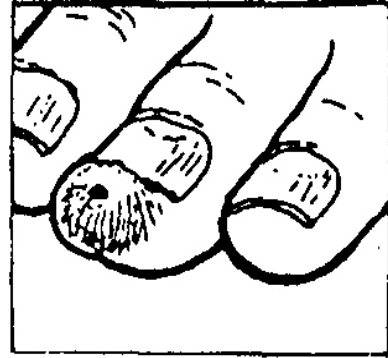
Bedbug (enlarged x 8)

insecticides. (But resistance to insecticides is developing).

TUNGIASIS (*TUNGA PENETRANS*) (CHIGOE FLEAS)

When this female flea is developing eggs she burrows into the skin (usually of the toe). There, her abdomen swells to the size of a small pea as the eggs grow. The toe becomes very tender and may become infected. Some people have developed tetanus from such a flea in the toe. The flea's body is seen as a black dot in the swelling.

- **TREATMENT**—Enlarge the opening in the skin carefully with a needle around the black dot and gently squeeze the flea and eggs out without breaking the large abdomen with the eggs in it.
- **PREVENTION**—Wear shoes to protect the toes from chigoe fleas in the dust.



Chigoe flea in a toe

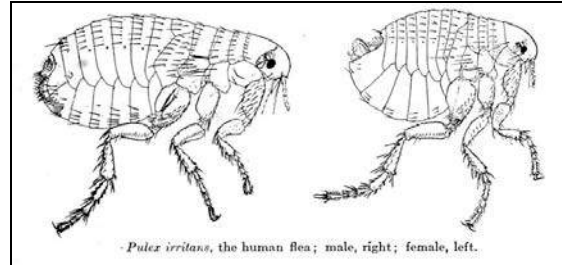
MYIASIS

- **CAUSE**—The tumbu fly (*Cordylobia anthropophaga*) lays eggs on clothes hung outside or on leaves. Larvae hatch from the eggs. If a person comes in contact with the larvae they burrow through the skin and start to grow as maggots, causing surrounding inflammation and swelling.
- **SYMPTOMS**—There is a swollen painful area, which looks like a boil. There is usually a small breathing hole in the center of the “boil.”
- **DIAGNOSIS**—Look for the hole in the raised red area. The maggot can be seen sticking his head up to breathe every few minutes. Do not mistake it for a boil, since antibiotics will not cure it.
- **TREATMENT**—Cover the hole with white petrolatum (Vaseline®). This causes the maggot to come out further to get air. Stick a needle through the maggot when it sticks its head up and lift it out. Sometimes simple gentle squeezing will cause the maggot to pop out. When the maggot is out the swollen area will soon improve.
- **PREVENTION**—Ironing clothes kills eggs. Myiasis cannot always be prevented. Recognition of the cause of the swelling is important in order to treat it early and correctly since antibiotics will not cure it.

HUMAN FLEAS (*Pulex irritans* and five other *Pulex* species)

This ectoparasite actually lives on a number of animals besides humans—monkeys, dogs, cats, pigs, some species of rats, and some bats. Other species of fleas (cat fleas, rat fleas and others) also bite humans, but prefer to live on the species for which they are named. Fleas do not have wings, but can jump with their strong back legs for about 1 foot.

S—The flea bites appear as a reddened area with a little red dot in the center where the bite occurred. They often occur in a group of 3. They may itch for a number of days.



Human fleas - enlarged x 20

A--No lab is needed for identification.

The little black-brown fleas are large enough to be seen and can be observed jumping. The itchy reddened bites are fairly typical.

DANGER—Fleas can carry **Bubonic Plague**, which has a significant mortality rate (about 50 – 60%). The Plague bacteria are normally found in rats and other small rodents. Fleas that bite infected rats or humans ill with Plague can spread it to other persons when they bite. Plague is not currently being reported in Liberia, but watch for it. Symptoms include high fever, chills, muscle cramps, and large swollen painful lymph nodes in the area of the bite, often in a groin, armpit, or neck. Gangrene of the fingers, lips, nose and other areas is common, and coma, seizures, vomiting and cough may occur. Death often occurs in 4 days. Treatment with gentamycin, cipro or doxycycline is effective if started early.

P—Fleas lay eggs on persons and animals which often fall off into clothing or floors and furniture. Fleas can be killed by spraying with insecticides, but this does not kill the eggs, so repeat spraying at 2-week intervals—at least twice more is needed to kill eggs when they hatch. There are dips and insecticide powders to kill fleas on animals.

CHAPTER 3—ACUTE ILLNESSES

This section is organized mainly by **body systems** (digestive system, endocrine system, circulatory system, etc.) The complaints and symptoms belonging to each system are found under it. Following each complaint and symptom are the correct diagnosis and treatment. Therefore, **when a patient gives you a complaint, you decide in which system that complaint belongs and find it under that system in this section.**

GASTROINTESTINAL ILLNESSES

Vomiting

Most cases of vomiting are not serious and can easily be treated. **A few cases are very serious conditions which must be referred stat. If such serious conditions are not recognized, the patient will die!** Check every vomiting patient to detect and refer serious conditions.

- S**—Ask: When did the vomiting begin?
 How severe is the vomiting?
 Is the patient having diarrhea?
 Is he having any pain or fever?
 Is he able to pass flatus or stool?



- O**—Look for signs of dehydration and check the abdomen for distention, masses, or tenderness. **A distended or tender abdomen is a danger sign in a vomiting patient**
 Check the groin for an incarcerated hernia.

A&P—Now, match the complaints, the symptoms, and observations you have found with the different groups below. After each group, you will find the most probable diagnosis (or assessment) and the correct treatment.

Symptoms/Observations Vomiting with:	Assessment	Plan of Treatment (adult doses)
1. Vomiting with distended abdomen, cannot pass stool or gas	Intestinal obstruction	Refer to hospital stat, with Ringer's lactate IV running
2. Vomiting, distention, and a hernia that will not reduce	Incarcerated hernia	Refer to hospital stat, with Ringer's lactate or normal saline (NS) IV running
3. Vomiting and painful abdomen with rebound tenderness present	Peritonitis	Refer to hospital stat, with NS IV with IV ampicillin and chloramphenicol.
4. Vomiting and shock (not dehydrated, but weak, sweating, and low BP)	Abdominal emergency	Refer to hospital stat, with IV Ringer's running (lying down in car).
5. Vomiting and signs of dehydration (poor skin elasticity, sunken eyes and fontanel, dry mouth, restlessness and weakness)	Dehydration from vomiting	Rehydrate with IV fluid, or refer stat (lying down in car) with IV, or ORS to drink on the way. (See pg.11–19.)
6. Severe vomiting, but not yet dehydrated, and none of the danger signs listed above	Danger of becoming dehydrated	Give promethazine 25 mg IM,* or give Zofran 8 mg. (most effective) [#] see p.109 After 1 hour start sips of ORS, then start IV fluids if still vomiting, or refer.
7. Mild vomiting (with none of the symptoms of dehydration or emergency conditions listed above)	Gastroenteritis or food poisoning or systemic illness	Give promethazine 25 mg IM or PO -- 1 dose only (if needed).* Frequent sips of ORS.** Check twice a day and refer if not better.

*Promethazine reduces nausea. Do not overdose—Limit: 25 mg IM for adult. Often promethazine is not needed. It is not a substitute for ORS or IV fluids.

Chapter Three—Acute Illnesses

**With severe vomiting, but no findings requiring referral, you could also try IV fluids in the clinic.
Zofran (if available) will usually stop vomiting. Note precautions page 109.

Diarrhea

Diarrhea itself does not kill anyone. But the **dangerous dehydration that it causes is what kills** many children and also adults every year. Therefore **it is important to:**

- 1) **Prevent dehydration with ORS** (pg. 14--16).
- 2) **Recognize dehydration and correctly treat it** when it occurs (pg.11–19).

S—Record: 1) When did the diarrhea start? 2) How many stools in 24 hours?
 3) Are the stools each time very large or rather small in volume?
 4) Is he vomiting? 5) Is there any blood in the stools?

O—

1. Look for signs of dehydration: weakness, dry mouth, sunken eyes or sunken fontanel, or decreased skin elasticity.
2. Look for signs of shock: low BP and weak rapid pulse.
3. Weigh all children and record the weights.

A&P—Match the symptoms and observations with the groups below.

Symptoms/Observations with Diarrhea:		Assessment	Plan of Treatment
1. Diarrhea with signs of serious dehydration—restless, weak, poor skin elasticity, dry mouth, sunken eyes, sunken fontanel, low BP		Severe dehydration (exact cause is not important at this time-rehydrate first)	Start IV rehydration stat (or refer stat for IV fluid) (lying down in car). (See pg. 11–19.) Check for cause after rehydration is progressing.
2. Diarrhea with very mild signs of dehydration, and not vomiting much (diarrhea for less than 7 days)		First degree or early second degree dehydration	Give ORS. See daily and weigh BID (pg. 14–16).
3. Diarrhea with very mild signs of dehydration, but also much vomiting (for less than 7 days)		Danger of developing severe dehydration	Promethazine 25 mg (adult)—1 dose only. Then ORS, or normal saline IV. If vomiting doesn't stop, to hospital.
Diarrhea of less than 7 days, but not dehydrated, and:	Little or no fever, and no bloody or mucous stools and no severe vomiting	Common viral or <i>E. coli</i> diarrhea	1) ORS (pg. 14–16) 2) Weigh children daily. 3) Check all patients daily.
	Bloody or mucous stools & often fever (If also dehydrated see # 1 above)	Bacillary dysentery (See "note following this table.)	Treat as above, but add for adult ciprofloxacin 500 mg BID x 5 days or chloramphenicol x 7 days (not likely available in health posts)
Diarrhea of more than 7 days duration with:	Bloody or mucous stools (if dehydrated see # 1)	Likely amebic dysentery	Metronidazole 3 tablets TID x 10 days (adult) (pg. 45)
	Repeated periods of chronic diarrhea with loose or mucous stools	Either giardia or ameba (use microscope)	Metronidazole 3 tablets TID x 10 days cures either sickness (pg. 44-45).
	Child with diarrhea and signs of malnutrition (discolored skin, light thin hair, ankle edema)	Diarrhea from malnutrition (Kwashiorkor) See pg. 100–103.	Help the mother feed the child 5 x/day with much protein and adequate nutrition, or refer to feeding center. (Also treat dehyd. if present.)
	Diarrhea of more than 7 days with a high fever	Typhoid, Lassa fever or salmonella	Refer to the hospital.
	Diarrhea more than 1 month with fever and weight loss	Possible AIDS See pg. 167–172. (or might be ameba)	Refer to the hospital.

Bloody Diarrhea (Dysentery)

Usually this is caused by amebic or bacillary dysentery, but occasionally by *Schisto. mansoni* or *Balantidium*. The microscope will tell. (See pg. 44 and 45.) Also see the chart on the previous page for diagnosis and treatment.

NOTE: Bacillary dysentery and amebic dysentery both cause bloody mucous stools. Bacillary dysentery usually lasts less than 7 days, while amebic dysentery often will not stop unless treated. The microscope will show the difference. The county hospitals have oral Ciprofloxacin and chloramphenicol for bacillary dysentery—the clinics may only have chloramphenicol injectable.

AMEBIC DYSENTERY STOOL HAS MANY RBCs AND FEW WBCs, AND OFTEN MOVING TROPHOZOITES IF LOOKED AT PROMPTLY WITHIN A FEW MINUTES

BUT BACILLARY DYSENTERY STOOL HAS MANY RBCs AND MANY WBCs AND NO MOVING TROPHOZOITES

Constipation

S—Be certain that constipation is the **only** problem—ask about other symptoms such as pain or vomiting. Although most cases of constipation are simple cases and easily treated, a few cases in which the patient cannot pass stool are caused by very serious conditions such as obstruction, peritonitis, or appendicitis. If these are not recognized, the patient will die. Therefore, check every case of constipation to detect any of these conditions. Ask when the last stool was passed and if any pain or vomiting.

O—Examine the abdomen for **tenderness** or **distention**. In children and in the elderly check for fecal impaction with a rectal exam.

**WARNING: HAVE YOU CHECKED THE APPENDIX?
LAXATIVES MAY CAUSE AN INFECTED APPENDIX TO RUPTURE!**

A&P—Now, match the symptoms and observations with the groups below.

Symptoms and Observations (S&O)	Assessment	Plan of Treatment
1. Constipation with a distended abdomen and not passing gas	Obstruction	To hospital immediately—IV if dry or low BP, no laxatives.
2. Constipated with rebound tenderness (rebound in whole abdomen or the right lower quadrant)	Peritonitis or appendicitis	To hospital immediately with IV saline running—adjust for BP. Give no laxatives.
3. Rectal exam with glove—very much firm stool. Not tender or distended.	Fecal impaction (child or elder)	Remove stool with glove If child, also see doctor.
4. In a baby—looking well and nursing well, but does not have stool each day (no vomiting and no abdominal distention)	Well baby—not usually really constipated (worried mother, or a nonsense complaint)	1) Maybe vitamin syrup 2) Advise small orange juice if the mother is worried 3) Do not give laxatives to babies!
5. Adult—no abdominal pain, vomiting, or distention, and passing flatus	Simple constipation	Give a laxative such as bisacodyl--1 or 2 tablets

Abdominal Distention

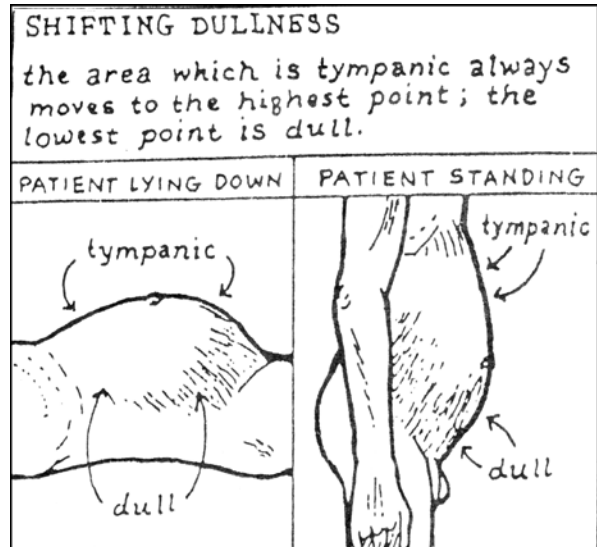
This usually requires referral to the hospital.

S—Ask:

- 1) When did the distention begin?
- 2) Has the patient been vomiting?
- 3) Having pain or fever?
- 4) Able to pass stool or gas?

O—Check the abdomen for:

- 1) Bowel sounds—Normal?
Absent? Hyperactive?
- 2) Tenderness—not tender?
If tenderness is present:
 - Generalized tenderness?
 - Localized?
 - Rebound tenderness?
- 3) Is **shifting dullness** present?
- 4) Any evidence of a **hernia**?



A&P—Find the correct assessment and treatment in the table below.

Symptoms/Observations Distention with:	Assessment	Plan of Treatment
1. Abdominal distention with rebound tenderness present	Peritonitis	To hospital immediately (with IV saline if BP low or if dry).
2. Abdominal distention with vomiting or constipation (and can't pass stool or gas)	Intestinal obstruction	To hospital immediately with IV saline for surgery.
3. Distended, but not tender, and not vomiting or constipated, but shifting dullness present	Ascites— from cirrhosis? Or cancer? Or TB peritonitis?	1) Refer to the hospital to find the cause. 2) Must not drink alcohol 3) No paracetamol

Melena (Black, Sticky, Tarry Stool from Digested Blood)

NOTES ON MELENA--The most common cause of melena is a bleeding peptic ulcer. The reason you must send such a patient to the hospital is because the patient is in danger of bleeding severely at any time. If he should start to bleed severely in the village at night with no transportation available, he might die!

S—Ask:

- 1) When did the black stool begin?
- 2) Is the patient feeling weak?
- 3) Is he having stomach pain?
- 4) Is (or was) he having fever?
- 5) Did he have a recent severe nosebleed?
- 6) Has he been taking iron tablets or Pepto-bismol?
- 7) Or drinking much alcohol or taking much aspirin or ibuprofen?

O—Examine the abdomen for tenderness or masses. Check to see if the patient is looking pale. Check the Hgb if you are able.

A&P—Match patient’s symptoms and your observations with the groups below.

Symptoms/Observations--Melena:	Assessment	Plan of Treatment
1. Is the patient taking iron tablets or Peptobismol but having no abdominal pain? (and stool is not sticky or tarry)	The black color is from iron or bismuth in meds	No treatment is needed for the black stool.
2. Black sticky stools following a severe nosebleed (no abdominal pain)	Swallowed blood from nosebleed	Check if anemic, take BP. Do not treat if normal.
3. Melena starting just after drinking too much alcohol, or after taking much aspirin or ibuprofen for some time. May have upper abdominal pain also (but was not having upper abdominal pain before this)	Probably Gastritis from alcohol or aspirin or ibuprofen (Could be starting to have an ulcer)	Stop aspirin, ibuprofen and alcohol. Give cimetidine if it is available, and antacid tablets. Refer to hospital if anemic. Refer if melena lasts more than 2 days or patient seems very ill.
4. Melena with history of pain in right upper abdomen and looking pale	Peptic ulcer is a common cause	Refer to hospital stat (danger of severe bleed) with IV saline running <u>slowly</u> if BP is normal.
5. Melena with a large liver and ascites	Bleeding esophageal varices	Refer to hospital stat. with IV saline running <u>slowly</u> if BP is okay.
6. Melena starting after 3 or more days of fever	Possible Lassa or Yellow Fever	Refer to hospital stat.

Send any patient with melena who has symptoms of peptic ulcer, or is looking weak or ill, or has a hemoglobin level of less than 9 gm% to the hospital stat!

Red Blood on Hard or Normal Stool

This is frequently hemorrhoids or a break in the anal surface from hard stool, but occasionally from *S. mansoni* or a rectal polyp, and rarely cancer. Feel inside the rectum with a gloved finger for a hard mass (cancer) or soft hemorrhoidal veins. Do stool microscopy to find *S. mansoni*. Refer any large hemorrhoids or hard masses to the hospital. Small hemorrhoids are often helped by hemorrhoidal suppositories and Sitz baths, and also often improve by themselves. If you cannot find the cause of bleeding, refer the patient.

Jaundice--Patients with jaundice must not drink alcohol or take paracetamol!

Viral hepatitis is a common cause. It usually begins with fever, weakness, and nausea. After about 1 week the liver becomes tender, the patient becomes jaundiced, and the fever goes down. Jaundice may last less than 1 week or more than 2 months. The patient may feel weak for even a longer period. With such a history, send the patient to the hospital only if he is vomiting severely or looking very ill. Certain country medicines can also cause jaundice.

S—Ask: When did the jaundice begin? Is the patient able to eat good? Was he having fever? Is he still having fever? High fever? Is he having abdominal pain? Is he nauseated or vomiting? Is he having any other pain? Is he always drinking alcohol? Has he been taking any medicines? Is he feeling weak and sick?

O—Check the color of the white of the eye. Check for liver tenderness and for any evidence of abdominal or liver masses. If appears anemic do a Hgb test, but do not contaminate yourself with blood.

A&P—Find the correct diagnosis and treatment for jaundice below.

Symptoms/Observations Jaundice, with:	Assessment	Plan of Treatment
1. With liver tenderness after a recent fever	Likely hepatitis A or B, consider Yellow Fever*	B vitamins, and avoid fatigue No alcohol, and a low-fat diet
2. With a hard irregular large lump on the liver	Probable liver cancer	Refer to the hospital
3. With attacks of severe right costal margin pain and right shoulder pain	Probable gallstone obstructing bile duct	Refer to the hospital
4. With bone and joint pain since very young, and is looking pale	Sickle cell anemia	1) Give aspirin and folic acid. 2) Give penicillin tablets or amoxicillin 250–500 mg TID when having fever: 3) Refer to hosp. if very ill. or very pale
5. Patient taking INH, rifampicin, pyrazinamide, or dapsone	Possible drug reaction	Stop the drug, and send the patient to the hospital.

***Yellow Fever also causes jaundice, and Lassa Fever may cause mild jaundice. Send any very ill jaundiced, febrile patient to the hospital to check whether either of these illnesses is the cause.**

Gastritis and Peptic Ulcers

Gastritis is an irritation of the stomach lining from too much stomach acid. A peptic ulcer is a crater eaten into the wall of the duodenum or stomach from too much stomach acid and digestive juice. Gastritis and ulcers more easily develop with aspirin, ibuprofen, alcohol, and smoking, and if **Helicobacter pylori** bacteria are present in the stomach. If an ulcer is not treated the patient may die from bleeding or from a perforated duodenum or stomach.

S--This patient will usually have epigastric or right upper quadrant pain, which often better after eating. With ulcers the patient may bleed and become anemic, and vomit black brown material or pass black stools from the digested blood. Ask if the patient has vomited dark, brownish blood or had any black tarry stools.

O--Check to see if the patient looks pale. Feel the abdomen for other causes of pain (tender liver, abdominal mass, etc.) Check the stool for hookworm. Give a few antacid tablets to see if the pain cools down for an hour or two every time the patient takes them. Ask during his next visit if they help. (Only pain from gastritis or ulcers will cool down for an hour or two with antacids).

A--Upper abdominal pain that improves each time the patient takes an antacid tablet is most usually caused by **gastritis** or **ulcer** (ulcer pain is more severe and more likely to cause anemia, black stools, or vomited blood).

P--Rule #1: Avoid all irritants (aspirin, ibuprofen, alcohol, pepper, smoking).

Rule #2: Give cimetidine or ranitidine, (or omeprazole) and also give antacid tabs.

- 3) Never give aspirin or ibuprofen for upper abdominal pain—they make ulcers bleed.
- 4) Stop all pepper, alcohol, coffee, sodas, cola nuts, aspirin, ibuprofen, and smoking (anything that can irritate the stomach).
- 5) Give cimetidine 300 mg tablets 1 QID [or ranitidine (Zantac®) 150 mg tablets 1 BID (adult)] if these are available, for at least 2 months (longer if symptoms don't completely go away, or if they develop again), otherwise:
- 6) Give antacids (magnesium trisilicate tabs) 2 QID—1 hour after meals and at bedtime, and whenever the patient gets stomach pain. If cimetidine or ranitidine has been given, the patient may take 2 antacid tablets only when having pain.
- 7) Refer the patient to the hospital quickly if the pain is not improving, or if the patient develops black stools or anemia. The patient may also need treatment for H. pylori. Tests to diagnose it are not yet available in Liberia but many ulcer patients have it, and improve if it is treated. Let the doctor decide.

NOTE: The proton pump inhibitor medications (PPIs, such as omeprazole), are even better than cimetidine or ranitidine, but much more expensive, and less likely to be available.

Abdominal Pain

S—Ask:

- 1) When did the pain begin?
- 2) Where does the patient feel pain? Is it mild or severe?
- 3) Vomiting or having diarrhea?
- 4) Is the pain present all the time or does it go and come back?
- 5) If this patient is a woman, ask if she missed any of her periods.
- 6) Does anything make the pain better or worse?
- 7) Any fever?

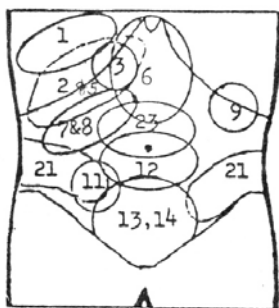
O—Check the abdomen for bowel sounds, distention, masses, tenderness or rebound tenderness, or guarding. Take the pulse, blood pressure, and temperature.

A&P—General rules for assessment and management—

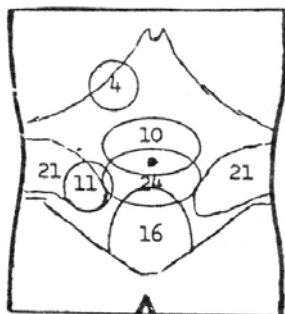
- 1) If the abdominal pain is severe, or if rebound tenderness, shock, distention, or a lack of bowel sounds is present, the condition is usually serious. Send the patient **immediately** to the hospital (with IV saline running if BP is low).
- 2) Abdominal pain with vomiting may also be serious (see pg. 57).
- 3) If the pain is mild, and no tenderness, distention, shock or vomiting is present, determine the location (upper, lower, or periumbilical), and check stool and urine (if microscope is available). Treat any parasites found.
- 4) With upper abdominal pain, suspect gastritis or ulcers (pg. 63).
- 5) Lower abdominal pain:
 - Right lower abdominal pain might be **appendicitis**. Check for rebound tenderness—if it is present, send him to the hospital. Do not give laxatives; they may cause the infected appendix to rupture and the patient to die.
 - Any low abdominal pain in a woman of childbearing age might be **ruptured ectopic pregnancy**. If so, the woman usually will have missed a period and will feel weak. The pain usually started suddenly, and the woman usually is looking pale. If suspected, send the woman immediately to the hospital lying down in the car to prevent death from shock, with IV saline running slowly to keep BP at 85 - 90. (See pg. 33--34.)
 - **Pelvic inflammatory disease (PID)** will cause low abdominal pain in women, often with some rebound tenderness. It may cause infertility. It requires prompt treatment with antibiotics. See page 85.
 - Be sure **infertility** is not the cause in women. The woman who is having difficulty becoming pregnant often will complain of low abdominal pain and small black menstrual periods, but her low abdomen is usually not really tender. Ask how many children she has had and when the last child was born. Refer her to a fertility clinic at a hospital that is good at treating infertility.

Causes Of Abdominal Pain

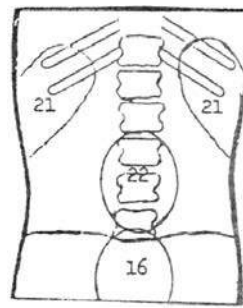
Note the probable causes of abdominal pain in the different places of the abdomen and low back, as shown on the following pictures. Compare the numbers on the pictures both with the numbers on the notes below the pictures, and with the numbers on the chart on the next page. Notice that “crampy” (come and go) pain often has different causes than constant pain.



Constant abdominal pain



Colicky (crampy) pain that comes and goes



Mid- and lower-back pain

For an explanation of numbers 1–20, see the table on pg. 66. Additional notes for some of the numbers and for numbers 21 – 24 are given directly below.

1. Right lower pneumonia may cause pain close to the right costal margin, which can be confused with liver or ulcer pain. The pain increases with a deep breath, and the patient has fever, cough, and sometimes rales in the right lower lung.
2. Liver pain and tenderness may be caused by viral or amebic hepatitis, amebic or bacterial liver abscess, or an abscess just below the diaphragm. Cirrhosis and cancer may also cause liver pain.
6. In addition to gastritis and peptic ulcer, neurosis may also cause epigastric pain. Burning high epigastric and low substernal chest pain (heartburn) is often caused by gastric reflux—stomach acid entering the esophagus. (See pg. 82.)
10. With cramping periumbilical pain and distention, consider obstruction.
11. Pain with appendicitis can be either cramping or constant.
13. and 14. In addition to pelvic inflammatory disease (PID) and ectopic pregnancy, constant low abdominal pain can be caused by peritonitis, abscess of the fallopian tube, or an ovarian cyst that has leaked fluid.
16. Uterine cramps occur with menstrual periods and just after delivery and run to the low back. Pain from a distended bladder does not radiate to the low back.
21. Pain from a kidney may radiate from the back around to the front. Pain from pyelonephritis is constant; with renal stones, it is severe and may come and go. Low left abd. pain with rebound may be diverticulitis and require amoxicillin (or metronidazole) and cipro for 7 – 10 days, or referral to hospital.
22. Pain in the lumbar spine is usually caused by osteoarthritis, muscle strain (usually resolves in 1–3 weeks), or a herniated spinal disc (less likely to resolve).
23. Constant pain around the navel may be peritonitis or obstruction of the small intestine.
24. Cramping pain just below the navel usually comes from the large intestine. It occurs with hyperperistalsis (gas pains), dysentery, and obstruction of the colon.

Any severe abdominal pain that doesn't stop soon is often a surgical emergency—send such a patient stat to the hospital.

Assess the cause of abdominal pain from this chart and treat as directed:

Abdominal Pain: Symptoms/Observations	Assessment	Treatment (adult doses)
Upper Abdominal Pain		
1. Recent onset of right costal margin pain, fever, cough, and rales in right lung	Pneumonia (in the right lower lung)	Amoxicillin, erythromycin or ampicillin 500 mg QID x10 days
2. Recent right costal margin pain and tender liver with jaundice	Hepatitis	Vitamins, low-fat diet, rest, avoid fatigue, no alcohol or paracetamol
3. Right costal margin pain and fever and fluctuant tender liver mass	Amebic or bacterial liver abscess Best to refer to Hosp.	Amebic-Metronidazole 250 mg tabs 3 TID x 10 days. (See pg. 45.) Bacterial needs IV antibiotics
4. Severe episodes of RCM pain with right shoulder pain	Cholelithiasis	Refer to hospital stat for surgery.
5. RCM pain, jaundice, and a hard irregular liver mass	Probable liver cancer	Refer to hospital.
6. Burning epigastric pain—not severe. Better after eating.	Gastritis (rule out ulcer)	Cimetadine or antacids, and stop alcohol. Is Hgb normal?
7. Burning epigastric or right upper quadrant (RUQ) pain (pain is moderate to severe) it seems better after eating; often pale with black stools	Probable peptic ulcer See pg. 63.	Give cimetidine 300 mg QID and antacids after meals. Send to hospital if black stool or pale. Stop alcohol, aspirin, & ibuprofen.
8. Mild right upper quadrant burning, but seems worse after eating; often pale but no black stool	Hookworm (look in microscope if available) Check Hgb if pale	Mebendazole 100 mg tablets 2 BID x 3 days for adult or child (or 5 tabs stat). See pg. 41. (Not for child <2 yr.).
9. Left upper quadrant pain and shock—recent accident to the left lower ribs	Ruptured spleen	Send to hospital (lying down in car). Go with patient; adjust IV saline to hold BP at 80 - 90.
10. Periumbilical pain—with cramping but not distended or tender (cramps for 1 day or less)	Hyperperistalsis (gas cramps)	Promethazine 25 mg PO often gives relief. (Give only one dose) may also try antacid tablets.
Lower Abdominal Pain		
11. Right lower abdominal pain with rebound tenderness	Appendicitis	Send to hospital stat (with IV saline running if dry or low BP).
12. Lower abdominal pain with rebound tenderness	Peritonitis	Send to hospital stat (with IV saline running if dry or low BP).
13. Very low abd. Pain and rebound in female (no periods missed)	Pelvic inflammatory disease (PID)	If severe, to hospital. If mild, see pg. 85 for Rx. (Be sure no ectopic.)
14. Female, age 14–45, pale, weak, low abd. pain, missed a period	Ectopic pregnancy	To hospital stat (lying down in car), with IV saline to hold BP 80–90.
15. Female, low abd. pain and black small periods (and not pale or tender)	Infertility Ask about children	Refer to a hospital with a good fertility clinic.
16. Female who gets “crampy” low abdominal and low back pain occurring with her periods	Menstrual cramps	Ibuprofen 600 mg QID during her period. If no ibuprofen, give aspirin 2 TID.
Generalized Abdominal Pain		
17. With distention of abdomen and vomiting or constipation	Intestinal obstruction	Send to hospital stat with IV saline running
18. With rebound tenderness	Peritonitis	To hospital stat. See #12.
19. Abdominal pain with shock—weak, sweating, and BP is low	Ruptured organ or hemorrhage	To hospital stat with IV saline to hold BP about 80–90.
20. With fever and history of bone pain now and ever since a child, looking pale	Likely sickle cell crisis—also check RDT for malaria	Refer if severe. Aspirin for pain, and penicillin for infection. Be sure it is not peritonitis.

Abdominal Mass (Something Hard In the Abdomen)

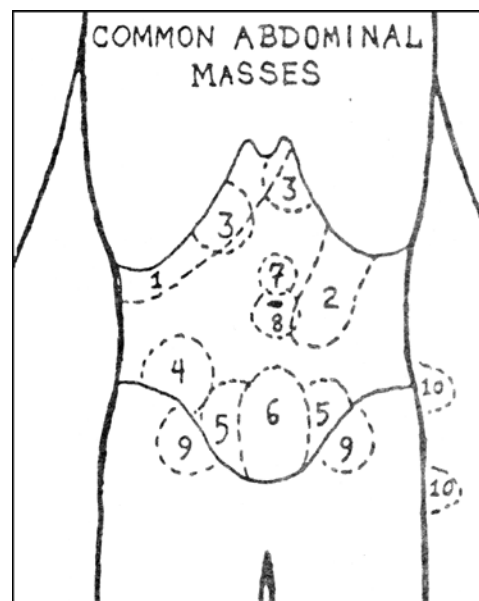
S—Ask: Where does the patient feel the mass?

- Is the mass painful?
- How long has it been present?
- Is the mass getting bigger?
- Is the patient vomiting?
- Is he losing any weight?

O—Examine the abdominal mass. Notice its location, size, and shape.

- Is the mass hard, soft, or fluctuant?
- Is it tender to palpation?
- Can it be moved about in the abdomen?
- Is the abdomen distended?

A&P—Study this diagram showing the usual location of the common abdominal masses: **(Numbers in the list below refer to the numbers in the picture.)**



- 1) ENLARGED LIVER—may be caused by:
 - Congestive heart failure (CHF): liver is soft, not bumpy, and may be slightly tender.
 - Schistosomiasis: look in stool and treat if *S. mansoni* is found—pg. 49-50
 - Hepatitis: viral or amebic. The liver is tender (pg. 45 and 62).
 - Cirrhosis: A firm, slightly bumpy liver. Send him to the doctor to confirm it.
- 2) ENLARGED SPLEEN—Usually from chronic malaria. Give patient malarial prophylaxis for 1 year (perhaps Fansidar 3 tabs once monthly). Also look for schistosomiasis (stool and urine)—treat if found (pg. 49--50).
- 3) AMEBIC or BACTERIAL LIVER ABSCESS—a soft liver mass is usually palpable. It is fluctuant and tender. Amebic--Give metronidazole (pg. 45). (May need to follow with chloroquine which concentrates in the liver and kills ameba there.) Bacterial requires IV antibiotics. Best to refer liver abscesses.
- 4) APPENDICEAL ABSCESS—In right lower quadrant (RLQ), very tender, usually fluctuant. Refer to the hospital.
- 5) TUBAL or OVARIAN MASS (low pelvic area)—May be caused by:
 - **Pyosalpinx** (abscess in tube): tender, painful, fluctuant. **Refer.**
 - **Ovarian cyst** or **tumor**: usually not very tender. **Refer to doctor.**
 - **Ectopic pregnancy**: woman, age 14–45, missed period (pg. 33-34).

- 6) UTERINE or BLADDER MASS—May be caused by:
- **Normal pregnancy:** Has she missed any periods? (With a pregnancy she should have missed periods.) This mass is smooth, symmetrical, and not tender. Send to a midwife if uncertain.
 - **Fibroid uterus:** firm, irregular, moveable and not tender. Refer to doctor.
 - **Distended bladder:** Ask if the patient can pass urine properly. A distended bladder feels fluid-filled (pg. 83-84). Send to the hospital.
- 7) EPIGASTRIC HERNIA—in the midline just under the skin. When pressed it may disappear, then come out again later. Send to the hospital if troublesome.
- 8) UMBILICAL HERNIA—Does not need to be repaired unless the patient insists. It usually reduces very easily.
- 9) INGUINAL HERNIA—A fluctuant inguinal mass. It may go inside the abdomen with pressure or when the patient sleeps. Refer to doctor. This is an emergency if it won't reduce and the patient is vomiting—in which case send the patient stat to the hospital with IV saline running.
- 10) ONCHOCERCAL NODULES—Many small 1 or 2 cm nodules over the iliac crest, the trochanter of the hip joint, or the coccyx. Have them removed if they are troublesome. (Control onchocerciasis with Ivermectin 3 tablets given once each year.)

TUMORS—May occur anywhere in the abdomen, but are more common in the area of the liver or pelvis. They are usually firm and not very tender, although they may cause abdominal pain or obstruction. If suspected, refer the patient to the hospital.

ENDOCRINE DISORDERS

Goiter

This is usually a **common goiter** caused by **lack of iodine**. With a common goiter:

- The eyes do not bulge.
- The pulse is not rapid.

But sometimes **toxic goiter** is present. It is not caused by lack of iodine. With toxic goiter:

- The eyes are usually bulging, and the pulse is increased or rapid.

S—The patient will have slowly developed an enlargement of the thyroid over the front of the neck. Sometimes only one side enlarges, but often both sides enlarge. Ask how long it has been present, and if it is still growing bigger.



Large iodine-deficiency goiter

O—Record the pulse, and notice if the eyes are bulging. With a one-sided thyroid mass the doctor will need to rule out thyroid cancer.

P—Send patient to the doctor—may need surgery to remove most of the thyroid.

PREVENTION—**Common iodine-deficiency goiter** can be prevented by **eating ocean fish** (ocean fish contain iodine), and by using **iodized salt**. **NOTE: Iodine, however, does not prevent toxic goiter**—toxic goiter (hyperthyroidism with thyroid enlargement) is not caused from iodine deficiency.

Hyperthyroidism

Caused by too much thyroid hormone. Pulse increases, eyes may bulge, heart may fail from overwork. The thyroid stimulating hormone (**TSH**) test is **low**. Atenolol or propranolol will slow the pulse. Propylthiouracil will cool down the overactive thyroid, but surgery or radioactive iodine to destroy the thyroid may be needed if propylthiouracil treatment does not sufficiently reduce thyroid activity.

Hypothyroidism

Caused by **too little** thyroid hormone. Symptoms—slower pulse, dry skin, weight gain, slower thinking, sometimes myxedema. **TSH** will be **elevated**. Treatment—levothyroxine 100 mcg (average dose) daily—dose must be adjusted. In an infant or small child, hypothyroidism causes mental retardation. If not developing mentally normally, check TSH and place child on levothyroxine if TSH is elevated. If levothyroxine is started early, the child will become mentally normal.

If hypo or hyperthyroidism is suspected, let the hospital check the TSH (if available).

**IODIZED SALT AND OCEAN FISH
PREVENT COMMON GOITER—BUY IODIZED SALT**

DIABETES

For more information see the chronic disease section (pages 147 – 154). The information below is just a brief summary.

S—The following is the classic history with Type I, or with Type II diabetes that has significantly developed. The patient will often complain of:

- Always being thirsty and drinking much water
- Always feeling hungry in spite of eating much food
- Passing too much urine

But as diabetes starts to develop and blood glucose is only mildly elevated, symptoms may be mild or nearly absent, and **not** classic.

O—For anyone with classic symptoms of significant diabetes:

1. Look for an abscess or other type of infection (diabetics become worse with infection).
2. Check the skin elasticity for possible dehydration (this occurs with developing diabetic ketoacidosis).
3. Weigh the patient.
4. LAB—Check a fasting glucose (no food for at least 8 hours) with a glucometer. Be sure the test strips are good. If 126 or higher on at least 2 tests, the patient has diabetes. If no glucometer, test urine for sugar with a dipstick .

A—**FASTING GLUCOSE greater than 125 on at least 2 occasions, or POSITIVE URINE for SUGAR = DIABETES** (even without a classic history!)

P—

1. Send diabetics to the doctor for regulation with diet, insulin, oral medications for diabetes, or often a combination of these.
2. For follow-up treatment, see the CHRONIC DISEASE section, pg. 147–154.

FEVER

This is a **general symptom**; (not a complaint from one system).

S—Ask: How long has the patient had the fever?
Does he have any of the following?:

- Headache, earache, stiff neck, sore throat, diarrhea, vomiting, cough, abscess, back pain, burning urine, or other pain elsewhere?

O—When in doubt what is causing the fever, look for the following: draining ear, red throat, tender cervical lymph nodes, stiff neck, rales, or wheezes in the lungs, tender abdomen, kidney tenderness, skin rash, or an abscess anywhere. Obtaining a WBC and malaria test (when possible) is helpful.



Fever is a symptom, not an illness; find its cause.

General Discussion of Fever

- The antibiotics (such as penicillin) and antimalarials are the two most misused groups of drugs in Africa. Antibiotics do not cure all illnesses—they are only good for certain bacterial conditions. Yet they are given for all kinds of viral illnesses and even for malaria. Antimalarials do not bring a fever down unless the fever is from malaria. Yet anyone with fever, even when the cause is known to be something else, receives antimalarials.
- There are three main causes of fever:
 - Viruses
 - Bacteria
 - Malaria

Viral Causes

If the fever is viral the WBC count is usually less than 10,000, RDT is negative, and the malaria smear is also negative or 1+. (A 1+ malaria smear can be confusing; sometimes it is malaria, but sometimes lab assistants write 1+ when they are uncertain if they are really seeing malarial parasites or only precipitated stain.)

Some viral causes are:

- | | |
|----------------------------|--------------------|
| 1) Common cold | 5) Influenza |
| 2) Chickenpox | 6) Measles |
| 3) Viral hepatitis A and B | 7) Lassa Fever |
| 4) Yellow Fever | 8) And many others |

Antibiotics and antimalarials will not help viruses; give **paracetamol** only to lower the fever and to relieve discomfort—but it also will not cure the virus. The limit of paracetamol for an adult with no liver problem is 4 gm per day (500 mg tabs—2 QID).

Bacterial Causes

The WBC count is usually more than 10,000, the RDT negative, and the malaria smear negative or 1+. Some bacterial causes are:

- | | |
|------------------------------|---|
| 1) Streptococcal pharyngitis | 6) Abscess |
| 2) Pneumonia | 7) Cystitis |
| 3) Pyelonephritis | 8) TB |
| 4) Meningitis | 9) Many others |
| 5) Otitis media | 10) Typhoid—but typhoid causes low WBC |

The correct antibiotic is needed. Antimalarials will not help. But remember that the patient could have both a bacterial infection and malaria.

Malaria

The WBC count is less than 10,000, the RDT is usually positive*, and the malaria smear often 2+ to 4+. An antimalarial is needed—antibiotics will do nothing to help. Correctly diagnose the cause of a fever. Then, give the correct drug for it.

ANY PATIENT WITH FEVER WHO LOOKS CRITICALLY ILL SHOULD BE SENT TO THE HOSPITAL IMMEDIATELY!

*The usual RDT in Liberia only detects falciparum malaria, which accounts for 90% of malaria in Liberia.

**A&P—Match the symptoms and observations with the groups below.
If the cause is doubtful, also do a WBC and RDT if possible.**

Symptoms/Observations Fever over 37.6 C with:	Assessment	Plan of Treatment (adult doses)
Fever of less than 1 week, and:		
1. Sore throat and mild fever but no swollen tender neck nodes	Likely a viral pharyngitis	Give paracetamol and try salt-water gargles
2. Fever, red sore throat and swollen tender anterior neck nodes	Streptococcal pharyngitis?	Penicillin or amoxicillin 500 mg tabs TID x 10 days or penicillin 2 cc IM x 7 days
3. Fever, headache, stiff neck, not able to think clearly (or even comatose) (and sometimes a seizure)	Meningitis See pg. 91	Ampicillin 2 gm & chloramphenicol 1 gm. IV or Cotrimoxazole 4 tabs stat (adult) & Send patient stat to hospital.
4. Significant fever, cough, breathing fast, rales but no difficulty breathing	Pneumonia	Amoxicillin 500 mg or erythromycin 500 mg QID or penicillin 4 cc IM x 7–10 days
5. Cough, breathing fast, rales and having difficulty breathing	Severe pneumonia	Ampicillin 1 gm IV/IM stat and send straight to hospital.
6. Cough, definite fever, but normal breathing and no rales	Flu? or maybe early pneumonia?	If not too ill—paracetamol and observe daily. If more ill or worsening, start amoxicillin. Refer if not improving.
7. Fever, and back pain with much tenderness to percussion over right or left kidney	Pyelonephritis	Cipro. 500 mg BID X 10 days or cotrimoxazole 2 BID x 14 days (Send to doctor if not better in 4 days)
8. Warm painful red swelling anywhere on limbs or body	Cellulitis or abscess	See CELLULITIS pg. 73-74. Use an anti-staphylococcal antibiotic.
9. Fever and abdominal pain with rebound tenderness	Peritonitis	Send stat to hospital (with IV Ringer's if dry or dehydrated).
10. Fever, headache, and chills (none of these other symptoms)	Probable malaria (RDT if available)	Antimalarial—amodiaquine + artesunate. See pg. 46–48.
11. Only fever—not looking too ill and none of the above signs (and negative RDT)	Probably a viral illness	Give paracetamol for fever and watch for other symptoms.
12. Fever, but does not match any of the above categories (RDT neg.)	Fever of unknown origin	If very ill, send to the doctor; also send if not improving quickly.
Fever of more than 1 week and:		
13. Cough more than 3 weeks and weight loss (perhaps blood streaks in sputum?)	Probable TB	Sputum to TB control for diagnosis. See the diagnostic and treatment protocols on pages 129–132.
14. Diarrhea and fever 1–4 weeks (a Widal titer >1:160 by day 8 or later indicates probable Typhoid)	Enteric fever? (Often false pos. Widal first week)	May try cipro. or chloramphenicol, but to hospital if not improving quickly.
15. Fever, headache, muscle pain, sore throat, and gastroenteritis	Possible Lassa Fever	Refer to the hospital (with IV Ringer's if dry or dehydrated).
16. Fever and diarrhea more than 1 month, weight loss, often cough	Possible AIDS, & possible TB	Request HIV test & refer to the hospital (with IV Ringer's if dry or dehydrated).

Send any patient who is not improving quickly with treatment to the doctor at the hospital immediately!

ABSCESSSES, CELLULITIS, COUNTRY SORES, AND SKIN INFECTIONS (AND HOW TO TREAT RESISTANT STAPHYLOCOCCAL INFECTIONS)

Abscesses

Abscesses are **dangerous** on the **face** since these infections may spread into the brain through the small veins that run in around the eyes or nose and cause death.




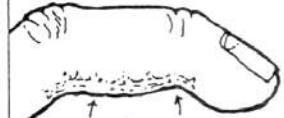

- Send large abscesses of the face straight to the doctor.
- But you may treat a **small** abscess of the face with amoxicillin (or with erythromycin) 500 mg QID x 10 days, but if it is not improving in 3 days, send the patient immediately to the doctor.
- Abscesses are **dangerous** on the **finger or toe**; the pressure from the swelling may stop the blood from flowing in the finger and cause gangrene. Drain finger abscesses immediately and then give anti-staphylococcal antibiotics (or refer if not trained or unable to drain it).



A swollen abscess may cut off the blood supply in the finger.

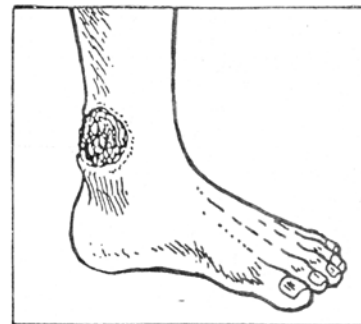
- Abscesses are very dangerous if the body is not resisting the infection well. Send abscess patients to the hospital if:
 - The patient is **looking very ill**, or
 - The infected area is **very large**, or
 - The patient has **many deep abscesses**. This is usually pyomyositis and will need chloramphenicol and blood transfusions.

How to Drain a Finger Abscess

<p>do not cut around the finger: you will cut arteries, veins and nerves NEVER CUT LIKE THIS</p>  <p>the blood vessels and nerves run ← lengthwise →</p>	<p>do not cut the front or back of the finger: the scar will form a contracture</p>  <p>scar band preventing full extension</p>	<p>do cut the finger lengthwise on the side (between the joints) and probe the abscess with a hemostat</p>  <p>correct position of incision to drain abscessed finger</p>
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“COUNTRY SORES”--**Tropical ulcers** are usually on the ankle or leg, frequently have been present for a month or longer and may reach to the bone. (Often caused by *Fusobacterium* with *Borrelia* bacteria). They are very painful. Give amoxicillin or penicillin tablets 500 mg QID and dress it until the ulcer looks clean. Then send the patient to the hospital for skin-grafting. Refer if not improving--can be confused with other kinds of skin ulcers.

Buruli ulcers are different. They also may have been present for months, but are usually painless and have **undermined skin edges**. Caused by *Mycobacterium ulcerans*, an **acid-fast** organism related to TB and Leprosy. Treated with rifampicin and streptomycin, followed by grafting if needed. Notify the Leprosy control person and arrange treatment.



Tropical ulcer or “country sore” of the ankle

CELLULITIS is a skin infection that has not yet formed an abscess. (Staph infections usually form abscesses. Streptococcal infections usually do not, and may spread rapidly.)

Treatment of abscesses and skin infections (cellulitis)—If the infection is not on the face or finger, and not very large, and there are not many deep abscesses, it can be treated in any clinic or health post. It will need:

- **Drainage** if it is an abscess
- **Antibiotics**—most abscesses and other skin infections are caused by staphylococcal germs. They usually do not do well any more with amoxicillin or penicillin or tetracycline because most of the staphylococcal germs have become resistant to these medicines. (However, many **abscesses of the face** and **country sores** are **not caused by staphylococci** but by other kinds of germs and **still do well with large doses of penicillin or amoxicillin.**) If the abscess is on the arms, legs, or body, use one of the other antibiotics listed below instead of penicillin, amoxicillin, or tetracycline and treat for 10 to 14 days.

Drugs for Resistant Staphylococcal Abscesses and Skin Infections

- Flucloxacillin caps, cloxacillin or dicloxacillin, 250 mg, 1 or 2 caps QID—these are special types of penicillins made to treat resistant staphylococci.
- Cephalosporins, such as cefalexin 500 mg caps, 1 TID or QID (supplied to county hospitals).
- Chloramphenicol tabs, 250 mg, 1 QID—usually works very well for staph, but chloramphenicol tabs are often not available in the health post, and in a few very unusual cases can cause the person to die from aplastic anemia. (Tablets are scheduled for supply only to the county hospital, but often clinics have IV chloramphenicol.)
- Cotrimoxazole (Sulfa-trimethoprim or Septrin or Bactrim), single-strength tablets, 400 mg sulfa and 80 mg trimethoprim, 1 QID, or double-strength, 800 mg and 160 mg, 1 BID. Sometimes this works well, but the cloxacillins or cefalexin are usually better choices.
- Erythromycin tablet, 250 mg, 2 QID. Good for some resistant staph abscesses (but does not help others). Sometimes causes nausea; take it with food to help prevent nausea.

DRAINAGE—Skin over the abscess gradually becomes yellow and thin so that the abscess can break and the pus can come out. When it is getting thin, open it with a needle-point, scalpel, or clean new razor blade. When the pus drains out it will get well faster. (Some abscesses need drainage **immediately** without waiting (such as **finger abscesses**).

RESPIRATORY SYSTEM ILLNESSES

Nose and Throat Complaints (such as runny nose, sore throat, pain in cheek and upper teeth, or colored nasal discharge)

S—Ask:

- How long has the patient had this complaint?
- How severe is the complaint?
- Does the patient have a runny nose?
- Or a cough?
- Sore throat?
- Ear pain?
- Fever?

O—Examine the nose, throat, ears and cervical nodes. Take the temperature.

A&P—Match your findings of the symptoms and observations with the groups below:

Symptoms/Observations Nose and Throat Complaints	Assessment	Plan of Treatment (adult doses)
1. FRESH COLD (runny nose) with little or NO FEVER (& throat not sore or slightly sore)	Rhinitis (Viral)	PARACETAMOL or decongestants or nose drops if available
2. RUNNY NOSE, WATERY EYES, & MUCH SNEEZING (Recurring--usually at the same time every year)	Allergic rhinitis	Antihistamine tablets or syrup
3. SORE THROAT but little or NO FEVER and no swollen tender neck nodes	Viral pharyngitis	Paracetamol or salt-water gargle (penicillin will not help)
4. SORE THROAT and FEVER with YELLOW PAPULES in throat	Viral (echo?) pharyngitis	Paracetamol or salt-water gargle (penicillin is useless here)
5. SORE & VERY RED THROAT, FEVER and TENDER SWOLLEN NECK NODES, & sometimes also a white exudate throat & tonsils	Likely strep pharyngitis	Penicillin tabs or amoxicillin caps 500 mg TID for 7–10 days (or try erythromycin 500 mg t.i.d. x 10 days)
6. SORE & VERY RED THROAT, FEVER, and TENDER SWOLLEN NECK NODES and SWOLLEN TONSILS (white exudate may be present)	Tonsillitis	Penicillin tabs or amoxicillin caps 500 mg TID, or penicillin 2 cc IM x 7–10 days
7. Similar to above with white exudate, but also fatigue, & usually age 13 to 30. If posterior cervical lymph nodes enlarged, increased likelihood of Mononucleosis	Likely STREP or possibly MONO-NUCLEOSIS —a viral illness*	With Mono, antibiotics won't help, & amoxicillin or pen. will cause an itchy rash like an allergy. For Strep. try erythromycin 500 mg t.i.d. instead
8. PAIN—CHEEKS & UPPER TEETH, & 1 or both cheeks often tender to percussion COLORED NASAL DISCHARGE, sometimes with blood in it	Sinusitis	Amoxicillin or cephalexin 500 mg QID usually x 10–14 days (sometimes to 21 days if severe) or Augmentin 875 mg BID x 10-14 days
9. SORE THROAT, FEVER, HEADACHE, MUSCLE PAIN, VOMITING, and DIARRHEA for more than 1 week	Possible Lassa Fever	Refer to hospital for correct diagnosis and treatment (pg. 332–333.)

***Mononucleosis** is a viral infection, usually found in teenagers and young adults, which starts with fever, a sore red throat (often with white exudate), and swollen lymph nodes (often **posterior** instead of anterior cervical), with significant fatigue and often headache. Spleen may enlarge 2nd week. Fever and sore throat usually resolve in 2 weeks, and lymphadenopathy in 4 weeks, but fatigue and feeling just not well may last for a number of months. Often caught from the saliva of an infected person.

Cough of Less than Two Weeks Duration

S—Ask: When did the patient start coughing? How severe is the cough? Is he having fever? Coughing up sputum? What color? Any difficulty breathing? Any wheezing?

O--Take temperature and respiratory rate, BP and pulse. Observe for difficulty breathing (dyspnea), and listen to the chest for rales, ronchi, decreased breath sounds, wheezes or other abnormalities.

A&P—Match your findings with the groups of symptoms below.

Symptoms/Observations Cough Less than 2 Weeks, and:	Assessment	Plan of Treatment (adult doses)
1. Cough, but no fever and no rapid or difficult breathing	Common cold (no rales heard)	Paracetamol and/or cough syrup (do not give antibiotics)
2. Definite fever, but has no rapid or difficult breathing, and no rales*	Flu? Or early pneumonia?*	If not too ill—give paracetamol and observe daily. If more ill or worsening, give amoxicillin. Refer if not soon better.*
3. Cough, fever, breathing fast but without any difficulty	Pneumonia (often rales are present)	Amoxicillin or erythromycin 500 mg. QID x 10 days or penicillin 2 cc IM BID x 7 days
4. Cough and fever with both rapid and difficult breathing (usually rales and/or ronchi can be heard)	Severe pneumonia	Penicillin 4 cc IM or ampicillin 1 gm IM or amoxicillin 4 caps stat, and send immediately to the hospital.
5. Child over 6 months old with cough, runny nose, red eyes, and fever for 1–4 days, and no previous measles or vaccine	Measles developing (expect rash in 1 or 2 days)	1) Paracetamol (& cough syrup if available) 2) Later add ampicillin or penicillin if pneumonia develops. 3) Watch state of hydration.

*With cough, fever, normal breathing, no rales, patient not very ill, and neg. RDT, it may be viral. Try paracetamol and observe daily. If worsening, or if still fever or not better in 3 days, start erythromycin or amoxicillin.

Cough of More than Two Weeks, or Recurrent Cough or Wheezing

S—Ask:

- | | |
|---------------------------------|---------------------------------|
| 1) When did the cough begin? | 8) Wheezing? |
| 2) Is the patient having fever? | 9) Losing weight? |
| 3) Coughing with blood? | 10) Ankles swollen? |
| 4) Having night sweats? | 11) Any difficulty breathing? |
| 5) Short-of-breath? | 12) Does the cough come and go, |
| 6) Appetite poor? | 13) or coughing every day? |
| 7) How severe is the cough? | |

O—Note whether the patient is thin, and whether he is pale or cyanotic. Observe if he breathing easily or with difficulty. Take the blood pressure, pulse, temperature, and respirations. Look for edema or distended neck veins. Listen to the lungs for wheezes, rales or ronchi.

It is better to prevent pertussis and TB than to have to treat these serious illnesses. Be sure all infants get Pentavalent and BCG vaccines.

A&P—Match the symptoms and observations with the groups on the next page.

Chronic Coughs

Symptoms/Observations Cough over 2 Weeks, and:	Assessment	Plan of Treatment (adult doses)
1. Cough for more than 3 weeks (sometimes cough with blood) losing weight, night sweats	Probable TB also rule out AIDS	1) Sputum to TB control to diagnose. 2) If TB is diagnosed, see section on TB for protocols and meds.
2. Cough with orange specks and small blood but no or little fever or weight loss (and sputum negative AFB)	Paragonimiasis?—check sputum for parasite (Do not stain for AFB to see paragonimus parasites)	Note: Parasites are destroyed by AFB stain & not visible—try H & E stain or plain sputum smear. If paragonimus parasite is found, treat with praziquantel (pg. 50-51).
3. Expiratory wheezing and real difficulty breathing—has had such attacks of wheezing in the past (recurrent episodes)	Asthma—see note below* (a salbutamol inhaler QID or PRN would be excellent to treat, but expensive and likely not available.)	1) Epinephrine 0.4 cc SC—may repeat in 20 min. 1–3 times, or if available, use a 2) Ventolin MDI inhaler with spacer, or 3) Aminophylline or salbutamol tablets QID (pages 107 & 109 for child's dose).
4. Child—spasmodic cough and whoop, may vomit after cough**	Pertussis	To hospital if under 1 year. Erythromycin QID if older.
5. Short-of-breath, ankle edema, cough, and distended neck veins	Congestive heart failure	1) To hospital for treatment. 2) See CHF in chronic diseases pages 135-139.
6. Smoker with chronic cough—no fever or weight loss	Irritated lungs from smoking (May need a chest x-ray)	Needs to stop smoking! (hopefully he is not yet developing cancer or emphysema)
7. Cough continuing for more than 3 weeks after a respiratory infection—no weight loss, little or no fever	Bacterial bronchitis, or viral bronchial damage	If colored sputum, try erythromycin. If doesn't stop soon, refer to the doctor.
8. Congested nose and cough more than 5 weeks—no blood, fever, or weight loss	Allergic rhinitis or post-nasal drip	Try chlorpheniramine. Also check for low-grade sinusitis and treat if found.

*NOTE ON ASTHMA—Acute episodes are best treated with 2 to 4 deeply breathed-in puffs of a Salbutamol (Ventolin) MDI (Metered Dose Inhaler) with a spacer. If no Ventolin MDI, SC epinephrine often relieves a severe episode. Lesser frequent symptoms are often controlled with 2 breathed-in puffs of a corticoid MDI daily or BID, which also often prevents some acute episodes. Sometimes for more severe cases it is necessary to use a corticoid MDI twice a day and salbutamol MDI 2 to 4 times a day. **MDI inhalers and spacers are expensive and often not available in Liberia**—therefore theophylline or aminophylline or salbutamol tablets are often used, but more dangerous. An inexpensive spacer can be made from a plastic water bottle with a hole cut in the base to fit in an MDI held in place with duct tape. Send difficult-to-control asthmatics to the doctor.

**NOTE ON PERTUSSIS—Small infants less than 1 year do not whoop early, but easily block off their bronchial tubes with thick mucus. Send infants suspicious for pertussis to the hospital. Chloramphenicol or erythromycin are effective if started early. Therefore, it is very important to diagnose pertussis in infants less than one year of age as early as possible. Also add cough syrup for older children if available.

CARDIOVASCULAR ILLNESSES (HEART, BLOOD, AND BLOOD VESSELS)

Heart Palpitation—Complaint of “My heart is beating”

This usually means the patient’s heart is beating fast, or with an irregular rhythm.

S—Ask: When did this first begin? Is the patient having fever or night sweats? Is he short-of-breath? Does he have any difficulty breathing when lying down? Is he coughing? Are the symptoms present all the time, or only occasionally?

O—Check the color for anemia. Check the lungs for rales. Take the temperature, blood pressure, and apical and radial pulse. Listen to the heart rhythm. Is it irregular or rapid or normal? Look for ankle swelling or distended neck veins.

A&P—Match the symptoms and observations with the groups below.

Symptoms/Observations Heart Palpitation with:	Assessment	Plan of Treatment (adult doses)
1. Edema, distended neck veins, short-of-breath, and often cough	Congestive heart failure (CHF)	1) To hospital for CHF meds. 2) See CHF—chronic diseases.
2. Fast regular pulse & looking pale , no cough no fever, and no (or very little) edema	Fast pulse from anemia	See ANEMIA on pg. 79-81.
3. Fast pulse with fever (no edema and not pale)	Fast pulse is from fever	Treat the fever, see pg. 70-72 for FEVER.
4. Headache, nervousness, cannot sleep. Not short-of-breath or pale, no edema or fever, pulse not irregular, not fast when not anxious	Anxiety (chronic)	Diazepam 5 mg TID x 3–5 days may help when most severe. See ANXIETY, pg. 317–319.
5. Bulging eyes, enlarged thyroid, pulse fast & sometimes atrial fib.-heartbeat very irreg.	Hyperthyroidism (also AF if irreg.)	To hospital for meds or surgery. (Hyperthyroidism may cause AF)
6. Pulse fast, and very irregular (thyroid size and eyes normal)	Probable Atrial Fibrillation (See AF-page 140)	To hospital-needs diagnosis-may need digoxin (or beta blocker) and low-dose aspirin continually.
7. Occasional periods of very fast pulse—may last hours—then normal rate again	Paroxysmal tachycardia?	To hospital (sometimes just periods of nervousness).

Shortness-of-Breath with Mild Exercise or with Mild Exertion

S&O—Ask the same questions and do the same examination as for heart palpitation above.

A&P—Now, Match your findings with the groups below.

Symptoms/Observations Shortness-of-Breath with:	Assessment	Plan of Treatment (adult doses)
1. Short-of-breath and looking pale (no cough or edema or distended neck veins)	Anemia	See “Anemia,” pg. 79-81.
2. Short-of-breath with fever No edema or cough and not pale	Fever	See “Fever” on pg. 70-72.
3. Short-of-breath, fever, and cough Rapid breathing and rales--recent	Pneumonia	Amoxicillin or erythromycin 500 mg QID or penicillin 4 ml IM x 10 days.
4. Short-of-breath with weight loss and with chronic and usually productive cough	Probable TB	See TB in Chronic Diseases. Sputum to TB control for diagnosis.
5. Short-of-breath with edema and distended neck veins	Congestive Heart Failure	1) To hospital for treatment. 2) See CHF in Chronic Diseases.

Congestive Heart Failure (CHF or Cardiac Decompensation)

This is an illness and not a complaint, but CHF needs fuller explanation.

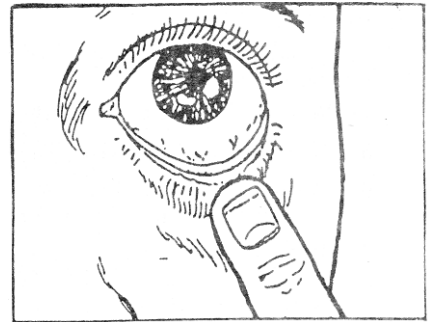
S&O—The patient usually complains of shortness-of-breath and dyspnea with any little work, and sometimes has to sit up to sleep, and a has fast and sometimes irregular heartbeat, cough, and swollen ankles.

A— **SHORTNESS-OF-BREATH + EDEMA + DISTENDED NECK VEINS = CHF**

P—

- Check BP for hypertension and send patient to the hospital for CHF medication.
- He will need to take medication for the rest of his life.
- See CHF in the CHRONIC DISEASE section, pg. 135–139.

Anemia (Looking Pale)—From lack of sufficient Hgb in the blood. Frequent causes are malaria, blood loss, hookworm, and a diet low in iron. Anemia is common, but more so in small children and pregnant women.



Anemia can be easily detected by looking at the color under the eyelid.

S—Suspect possible anemia with any of the following signs or symptoms: tiredness, weakness, heart palpitations, or looking pale. Ask:

1. How long has the patient had these symptoms?
2. Is there any history of significant blood loss, such as:
 - Severe nosebleed?
 - Severe cut that bled much?
 - Bloody urine?
 - Black stool?
 - Excessive bleeding with monthly periods?
 - Hemorrhage after delivery?

O—Look for evidence of anemia: With anemia the color is pale, and the pulse rate is often increased; with chronic malaria the spleen is usually enlarged. Be sure heart failure is not present—check for distended neck veins and ankle edema.

LAB—

- Check the stool and urine for schistosomiasis or hookworm (if microscope)
- Prove the degree of anemia with a Hgb. test (if available).

A&P—

1. First, find the degree of anemia from the choices below:

Degree of Anemia	Hgb gm%	Color Under Eyelid
Normal adult	13–16	Normal color
Mild anemia	10–12.5	Mildly pale
Moderate anemia	7–9.5	Pale
Severe anemia	6.5 or less	Very pale

It is best to send the severely anemic patients to the hospital for treatment as soon as possible (with donors--patient may need a blood transfusion).

2. **With mild or moderate anemia, determine the cause from the table below and treat as directed. (Iron Deficiency Anemia is most common.)**

Symptoms/Observations Anemia with:	Assessment	Plan of Treatment (adult doses)
1. Anemia, weakness, sweating and low BP (often less than 90/40)	Shock (from recent blood loss?)	Send to hospital stat with IV saline to raise BP—lying down in car. See p. 22–24.
2. Since small—bone and joint pain and fevers (and has always been pale)—sometimes jaundice	Sickle cell anemia (but check RDT also)	Aspirin for pain, penicillin if fever and refer if severely ill (pg. 163–166). Usually do not give iron.
3. Anemia with jaundice but no history of bone pain	Hemolytic anemia?	Refer to hospital.
4. Anemia and a very large spleen (coming down below the navel)	Possible hypersplenism	Refer to hospital.
5. Anemia with mildly enlarged spleen (no other symptoms)	Often from Chronic malaria	Treat malaria monthly for 3 months; give iron tablets (or syrup for child) x 2 months.
6. Anemia, black stool, and epigastric pain	Bleeding peptic ulcer	To hospital stat with IV saline in case BP gets low. See pg. 61 and 63.
7. Female age 14–45, sudden onset of weakness and low abdominal pain, and missed periods	Ectopic pregnancy	To hospital stat with IV saline to hold BP at 80–90 (lying down in car). Pg. 33 – 34.
8. Anemia with continuing chronic blood loss from any cause	Such as from menorrhagia	Refer to hospital.
9. Anemia with a pregnancy (also check the stool for hookworm and treat if found)	Anemia of pregnancy	1) Iron tabs until delivers 2) Malarial prophylaxis 2) Folic acid tablets 1 daily
10. With none of above symptoms (Note: look for hookworm; if no microscope, treat anyway just in case hookworm is present)	Probable iron deficiency anemia (Dietary, hookworm or other causes)	1) Iron tablets for 2 months 2) Give mebendazole for possible hookworm (pg. 41). 3) Advise foods containing iron

3. Outpatient treatment schedule for iron preparations: continue for usually 2 months. Remember to reduce the dosage as the anemia improves.

Degree of Anemia:	Adults (give ferrous sulfate- 200 mg tabs)	Child (20 lb) (Use children's iron syrup)
Severe anemia	1 tablet TID	½ tsp BID
Moderate anemia	1 tablet BID	½ tsp daily
Mild anemia	1 tablet daily	¼ tsp daily

(Too much iron is toxic; stop when Hgb is normal (stop after 1–2 months)).

4. With **iron deficiency anemia**, advise eating foods containing iron, such as greens, meat and eggs. Brown (unpolished) rice or iron-fortified white rice and ground peas also have iron.
5. Always treat hookworm or schistosomiasis if either is found.
6. Recheck Hgb. in 2 and 6 weeks to be sure it is improving.
7. Send severe anemic patients to the health center or hospital. It is safest to admit them and treat them as inpatients.
8. With very severe anemia or anemia with CHF refer the patient to the hospital immediately and send relatives to give blood.

NOTE FOR HOSPITAL PERSONNEL:

- Caution—the patient with CHF will die with increasing heart failure from fluid overload if blood is given rapidly; give sedimented cells very slowly (more fluid worsens failure) and do not give too much at one time.
 - Give furosemide 20–40 mg slowly IV, then give the blood very slowly.
 - Use only the **sedimented red cells**—do not give the plasma.
9. With **Sickle Cell Anemia, do not usually give iron**. (But if hookworm is found, 1 or 2 months of iron may be given—use dosage for mild anemia). The Hgb will not continue to rise to normal with iron, and continually giving iron causes death from hemosiderosis (chronic iron poisoning) in the patient with sickle cell anemia. But **do give folic acid**—sickle cell patients need additional folic acid. See pg. 163 – 166. This is genetic—caused by a recessive gene.
10. In an adult with no Sicklemia (and not a pregnant woman) who does not improve with iron and hookworm and malaria treatment, send the patient to the hospital for diagnosis. Other causes may be **Thalassemia** (very small RBC's on stained blood smear—also a genetic condition), or **Pernicious Anemia**—caused by Vitamin **B-12 (cyanocobalamin) deficiency** usually from lack of **intrinsic factor** in the stomach, which is necessary for B-12 to be absorbed. **Lab diagnosis:** RBC's are very large (macrocytic), but pale on a blood smear,

whereas with iron deficiency RBC's are small (microcytic)). The patient may also develop a smooth red tongue, weakness, and tingling hands and feet. To treat B-12 deficiency the patient should get an injection of 1000 mcg B-12 every month until he finally dies. Ferrous sulfate will not help his anemia. Folic Acid deficiency can also cause a similar macrocytic anemia.

NOTE: It is normal for young children to be slightly anemic with a Hgb level of 10.5 to 11.5 gm%. Do not treat this level in children.

Hypertension

This is a cardiovascular **illness**, but **not** usually a **complaint**.

S—Suspect hypertension if the patient:

- Has **frequent headaches**, dizziness or nosebleeds—also look for other causes
- Is **obese**—hypertension is more common in obese (overweight) people
- Has had a **stroke** (paralyzed arm and leg), heart failure, or kidney damage—hypertension is often the cause of the trouble in these conditions

O—Every adult patient must have his BP recorded on his record card at least once yearly. This is the only way to find hypertension before it can cause severe damage and to bring it under control at an early stage.

A&P—See HYPERTENSION in the CHRONIC DISEASE section, pg. 141–145.

ATTENTION:

Have you prevented needless deaths from stroke, heart failure, and kidney failure by checking the BP of every adult at least once this year?

Chest Pain

Possible **heart attack**; see EMERGENCY section, pg. 38 and 39. But there are many other possibilities.

“Heartburn”

Burning feeling anterior lower or mid-chest; often it is not severe. Rapid relief can usually be achieved with an antacid, but the burning feeling may come back after some hours. It is usually **caused by esophagitis from stomach acid reflux into the esophagus and not by the heart at all**. For relief give antacids such as magnesium trisilicate 1–2 tablets as needed (the patient should chew the tablets), or cimetidine 300 mg QID (more expensive) if it is more severe and frequent. (Ranitidine and omeprazole may be even more effective but are expensive and may not be available—they are not supplied by National Drug Service.)

URINARY SYSTEM SYMPTOMS

S—For any urinary system complaint, ask how long the patient has been ill, how severe are his symptoms, how frequently he urinates, if he has pain with urination, or in the bladder or kidney areas, and whether he has fever, or blood in his urine.

O—Feel the lower abdomen for bladder tenderness or masses. Percuss over the kidneys for tenderness (picture of kidney percussion on the next page), and examine the urine with the microscope (if available).

A&P--Find the symptom with the cause and correct treatment in the table below.

Urinary Symptoms and Findings	Assessment	Plan of Treatment
1. Pain passing urine and frequently urinating in small amounts	Cystitis (if bladder is not large)	Cipro. 500 mg BID X 5 days or cotrimoxazole 400 BID x 7 days
2. Frequent urination, but no pain Patient is always eating and is drinking much water The amount of urine is large	Diabetes (classic symptoms for Type One or advanced Type Two diabetes)	1) Blood glucose if glucometer, or 2) Test urine for sugar--if positive, send to hospital for regulation. 3) See DIABETES pg. 147–154.
3. Bloody urine with schistosome eggs seen in the microscope	<i>S. hematobium</i>	Metrifonate 6 tablets (adult) or Prazequantel 4 tabs-see pg. 49-50.
4. Bloody urine (no schistosome eggs seen, and no pain passing urine)	Possible cancer	Refer to hospital for diagnosis.
5. Unable to urinate or passing urine by drops, large bladder	Retention--stricture or large prostate	Refer to hospital for dilatation or surgery.
6. Back pain, fever, and tenderness over kidney (see picture pg. 84)	Pyelonephritis (often only in 1 kidney)	Cipro. 500 mg BID x 10 days or cotrimoxazole 800 BID x 14 days

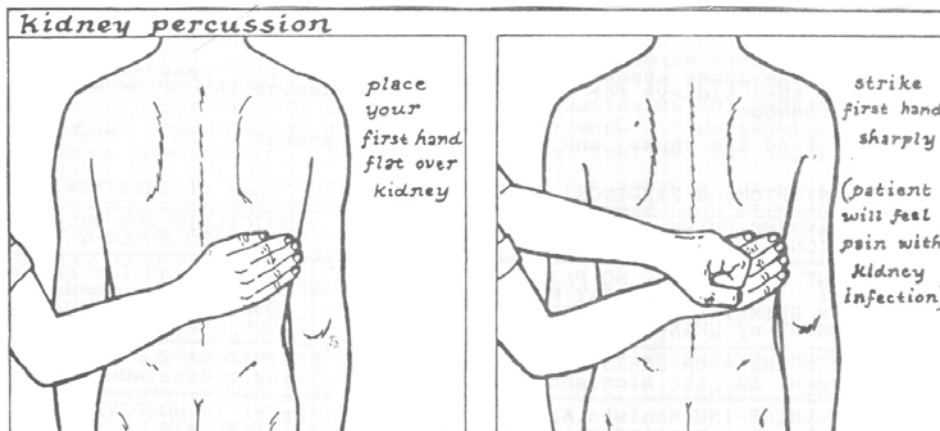
Additional Notes on Urinary Symptoms

Numbers below match the numbers in the table above.

1. Cystitis—when examined under the microscope, the urine will have many WBCs, bacteria, and often many RBCs (epithelial cells are normal in urine and not a sign of infection). With cystitis, also percuss over the kidneys—if very painful the kidneys also are likely infected (pyelonephritis) (often only on one side). Note that *S. hematobium* causes the bladder to become infected more easily.
2. For more information on DIABETES, see pg. 147–154.
3. Other causes of bloody urine in addition to *S. hematobium* and cancer (bladder or kidney) are: cystitis, TB of the kidney, nephritis, kidney stones (ureteral calculi), and injury to the kidney.
5. Urinary retention (unable to urinate)—common causes are strictures and, in the male, an enlarged prostate. Do not confuse retention with kidney failure—in urinary retention the bladder can be felt full of urine; in kidney failure it is empty. Feel the bladder.
 - a. In a health center, try gently to insert a soft rubber catheter to empty a large bladder. With strictures the catheter will usually not pass, but with prostatic enlargement it will pass into the bladder and relieve the patient.

- b. Refer the patient to the hospital. Outpatient care with dilatation is usually sufficient for strictures. Surgery is needed for an enlarged prostate. NOTE FOR HOSPITAL PERSONNEL: to dilate a stricture put in filiforms, then dilate gently with followers attached to the filiform.

DO NOT FORCE METAL DILATORS WITHOUT FILIFORMS AGAINST A STRICTURE—THEY WILL TEAR THE URETHRA.



GENITAL OR REPRODUCTIVE SYSTEM COMPLAINTS

“White GC”

S—White GC (urethral discharge) with painful urination **in the male** (recent onset)

O—Look to be sure a urethral discharge really is present.

A—Often caused by gonorrhea, but chlamydia is also a common cause.

P—Cipro. 500 mg x 2 days, or ceftriaxone 250 mg IM for gonorrhea. To also treat chlamydia, add doxycycline 100 mg BID x 7 days or erythromycin 500 mg TID x 7 days. Best to use both cipro. and doxycycline or erythromycin. (Gonorrhea is now often resistant to penicillin.) Doxycycline might cure both GC and chlamydia. Any female sexual contacts must also be treated, even if they have no symptoms.

PREVENTION of GC—Avoiding sex except with one’s own husband or wife is the best way. Use of condoms can reduce spread. Immediate adequate treatment of the patient and all sexual partners will prevent further spread.

Vaginal Discharge

S—The woman complains that a **vaginal discharge** is present.

O—Notice whether the discharge is thin, thick, or curdy (like cheese). Is it white, very pale yellow, or darker yellow (like pus)? Does it have small bubbles? Is it causing itching or irritation? Examine it with the microscope (if available).

A&P—Possible causes are:

- **Trichonomiasis**—Causes a **thin white or pale yellow bubbly discharge**. *T. vaginalis* flagellates will be visible under the microscope. Give metronidazole 250 mg TID x 7 days (see pg. 52-53). The husband must also be treated at the same time or the woman will be reinfected.
- **Moniliasis (yeast)**—Causes a **thick, curdy, white discharge**--like flakes of wet cheese. Daily gentian violet, clotrimazole cream, or nystatin suppositories will help. (Just one oral fluconazole 150 mg tablet will also treat yeast; but is very expensive, and not likely available.)
- **Gonorrhea and Chlamydia**—May cause no symptoms in the female, but **if it causes a discharge it is often yellowish like pus**. Sometimes gonorrhea can be proved with a gram stain smear, or by knowing that a male partner has gonorrhea. When cultures are available we will be able to tell. See the treatment on the previous page. Remember to also treat any female partners of a male with G.C.

COMPLICATIONS OF GONORRHEA—**Salpingitis** or **Pelvic Inflammatory Disease (PID)** may develop in the female as a complication. One or both fallopian tubes may become infected causing very low abdominal pain with low abdominal tenderness and fever, usually with a yellowish vaginal discharge. Give cipro. 500 mg BID x 7 days, or ceftriaxone 500 mg IM x 3 days, or chloramphenicol 500 mg QID x 10 days. The health post often does not have these medicines, and it is best to refer such patients to the hospital anyway for exact diagnosis because the low abdominal pain could be caused by some other kind of condition--such as peritonitis, diverticulitis, or an ectopic pregnancy.

Remember to also treat all patients with Gonorrhea for Chlamydia, preferably with doxycycline 100 mg. BID x 7 – 10 days. Many patients have both Gonorrhea and Chlamydia.

Female Infertility

Female infertility is frequently caused by tubal scarring from gonorrhea or chlamydia, or sometimes from infections of the pelvis after deliveries or abortions. Some believe that schistosomiasis also may cause infertility. Chronic diseases also make it difficult to become pregnant. Infertility is a good problem for a certified midwife to treat, especially if she can obtain the lab work.

S—The usual complaint is “low abdominal pain” and “black, scanty menses.” These women may need to be referred to a fertility clinic in a hospital. The fertility clinic should obtain a good obstetrical history, including number of pregnancies, number of living children, date of the last pregnancy, and number of years she has been with her present man (and how many wives the man has). Also ask if she is having periods, if her periods are regular, and if her husband has any other living children. Look for any possible chronic diseases: does she have a cough, or bloody urine?

O—

- LAB—Do a Hgb. test to rule out anemia, a urine test for schistosomes, and a stool test for parasites.
- With a chronic cough, do sputum smears for TB (See TB pg. 121–133).
- Look for an abdominal scar; rule out a tubal ligation or hysterectomy. Check for low abdominal tenderness.
- Do a pelvic exam; check for a uterine fibroid or for thickened fallopian tubes. Also check for real tenderness. If fibroids are felt, refer her to an obstetrician. Occasionally intrauterine fibroids are removable surgically without doing a hysterectomy, and may permit her to become pregnant.
- If she has never been pregnant for the last five years and if the husband has other children, send her where she can get a Rubin’s test or hysterosalpingogram (X-ray of the uterus and tubes). If the fallopian tubes do not appear to be open, she will have a hard time becoming pregnant.

A—

**COMPLAINT OF
LOW ABDOMINAL PAIN + BLACK SCANTY MENSES
+ NO RECENT CHILDREN = INFERTILITY**

P—Be sure she has only infertility--not an ectopic, PID or some cause of real pain.

- Treat any chronic diseases (anemia, schistosomiasis, TB, etc.)
- Explain the menstrual cycle, and the importance of having intercourse during the time in which ovulation occurs (13 to 17 days after the period starts).
- If the tubes are open, and no chronic disease exists, and the patient wants medicine, sometimes vitamin E 50 mg caps 1 daily seems to be helpful—at least it is not harmful.

Dysmenorrhea—Significant chronic pelvic or low back pain with periods, usually with each period for years. If this is pain only with the present bleeding, be sure she does not have an ectopic pregnancy, threatened miscarriage, or P.I.D. The woman with ordinary dysmenorrhea usually feels better if she takes **ibuprofen** 400 mg. 3 or 4 times per day when having pain. However, some women have other causes, such as **Endometriosis**, which is caused by small implants of **endometrial tissue** in the lower pelvis in the abdominal cavity (not just inside the uterus, where endometrial tissue belongs). The implants are often just many small specks on the surface of the ovaries, tubes, and pelvic peritoneum, but sometimes the size of a pea. Endometriosis may cause infertility. It is difficult to correctly diagnose in a clinic. Laparoscopy or pelvic ultrasound may be needed to diagnose. With infertility and real significant dysmenorrhea, or dysmenorrhea not improved with ibuprofen, send the lady to a gynecologist for diagnosis and treatment.

Male Infertility

S—Most men who bring this complaint have never had children with any woman. Refer for lab work (sperm count).

O—LAB—A health center or hospital may be able to do a sperm count to tell if the man is able to have children.

A—He is infertile if he has only a few or no sperm present.

P—

- If there are many sperm on the first count, explain that the “fertile period” (the correct time for a woman to become pregnant) each month is 13 to 17 days after her period starts, and send him home to try with his wife.
- If few or no sperm are seen, check a TSH test if possible. He can try vitamin E 50 mg tablets, 1 daily. Add thyroid ½ grain (or levothyroxine 50 mcg) tablets 1 daily if the TSH is elevated. (None of these are supplied to the clinics by the Ministry of Health and Social Welfare [MOHSW].) Give medications for 1 month. Then recheck the sperm count:
 - If he still has no sperm, advise him that he will have difficulty ever having a child. Stop vitamin E, and send him to a doctor.
 - If more sperm are seen, continue trying the vitamin E and thyroid, explain the “fertile period,” and send him home. (Check the resting pulse; if above 88, stop or reduce thyroid—you do not want him to be hyperthyroid.)

Male Impotence (Unable to Function Sexually)

S—Ask:

- How long has he not been able to function?
- Is he never able to function, or only cannot function sometimes?
- Is he angry with his wife?
- Is he worried about something?
- Is he ill?

O—Look for signs of severe illness, such as chronic cough (TB), severe weight loss (TB, cancer or AIDS), or pale tongue and conjunctiva (anemia); such illnesses may cause impotence. Also note if he is very old.

A—Impotence is often psychological (especially in younger men--caused by anger or worry) in Liberia, but may be caused by chronic disease, drugs, fatigue, or old age.

P—

- If some severe illness is present, when it is treated his impotence may improve.
- If no severe illness is found:
 - In young men impotence often occurs temporarily with worry, anger, anxiety, fatigue, or too much alcohol. It usually will improve when his other problem improves—tell him so. If he insists on some kind of medicine, vitamins at least will do no harm.
 - In old men impotence may occur with aging as arteries harden and become narrow. Usually it does not improve, and medicines usually do not help it. Treat any chronic illness found. One VIAGRA® (sildenafil citrate) tablet 2 or 3 hours before sex (very expensive) may help (not available from Ministry of Health [MOH]).

CENTRAL NERVOUS SYSTEM DISORDERS (Psychiatric Disorders--pg. 315-325)

- **POST TRAUMATIC STRESS DISORDER**—See page 315
- **ANXIETY**—See page 317
- **OPEN MOLE**—See page 319
- **DEPRESSION**—See page 320
- **PSYCHOSES**—See page 324
- **ALCOHOLISM**—See page 325

DEMENTIA

This is not a single illness—there are many different types of dementia. Dementia is caused by damage to the brain or to its ability to function normally.

The symptoms include:

- Having difficulty recalling recent events—as it worsens, the patient may also not recall past events.
- Not recognizing familiar people and places.
- Having trouble finding the right words to express thoughts or name objects.
- Having difficulty performing calculations.
- Having problems planning and carrying out tasks, such as following instructions, or writing a letter.
- Having trouble using good judgment, such as knowing what to do in an emergency.
- Having difficulty controlling moods or behaviors-the person may become agitated or aggressive.
- Not keeping up personal care such as grooming or bathing.

Some of the CAUSES of Dementia are:

- Injury to the brain caused by tumors, head injury, or strokes
- Diseases, such as Parkinson’s and Alzheimer’s
- Infections such as HIV, encephalitis and Syphilis
- Long-term alcohol dependence.
- Toxins, such as lead or mercury.

Alzheimer’s dementia is the most common cause in the U.S. Dementia caused by **vascular disease** is next most common--often from very small strokes or atherosclerosis of brain arteries. People with Alzheimer’s can improve temporarily with certain medications, but will continue to deteriorate and eventually die. Vascular disease dementia cannot be reversed, but further damage can be reduced by preventing strokes. Some other causes that cannot be reversed are:

- **Parkinson’s disease**, which is a movement disorder. A tremor is present at rest. Dementia is common in people with this condition. However, Parkinson’s disease in early stages can be improved (but not cured) with medications.
- **Dementia with Lewy bodies**, which causes protein deposits (Lewy bodies) in brain cells. It can cause short-term memory loss like some other brain diseases, but it can also cause the person to fall often and to see things that aren't there (hallucinations).
- **Severe head injury** that caused a loss of consciousness—auto accident or sports. The person’s mental functioning may improve, but damaged brain cells will remain damaged.
- Antibiotics can treat **syphilis** at any stage, but they cannot improve the damage already done to the brain.

Doctors can treat some causes of dementia and restore mental function. Some of the causes in which mental function can be restored include:

- Hypothyroidism—by treating with thyroxine.
- Vitamin B 12 deficiency—with monthly injections of B-12.
- Heavy-metal poisoning, such as from lead or mercury.
- Side effects of medicines or drug interactions.
- Some cases of chronic alcoholism by giving high levels of thiamine.
- Some cases of encephalitis.
- HIV dementia—by giving anti-retroviral medications.

With symptoms of dementia it is therefore best to send the patient to the doctor in the hospital for correct diagnosis and if possible, treatment. The doctor can refer the patient back to the clinic for follow-up and continuation of medication.

COMA--Unconsciousness—See pages 25 and 26.

EPILEPSY-- Seizures or convulsions, usually Grand Mal--see pg. 155–159 in CHRONIC DISEASES. For differential diagnosis of seizures, see pg. 28-29.

STROKE

Cerebrovascular accident—Usually from a clot blocking an artery in the brain, or an artery or aneurism in the brain breaking and bleeding into the brain tissue. Such bleeding is often due to hypertension.

S—The patient is unable to move the arm and leg on one side of the body. (Occasionally either the arm or the leg is more greatly affected.) The weakness will be on the opposite side of the body from the side of the damage to the brain. Often he has difficulty talking (especially if the right arm and leg are weak). Sometimes he is unconscious. Usually the weakness or paralysis develops rapidly, within a few minutes or 1 or 2 hours.

Ask: When did the condition begin? Did it develop suddenly? Is he known to have diabetes or hypertension?

O—Note which side is paralyzed, and whether he can move these limbs at all. Take the BP. Note whether he is conscious, whether the pupils are equal, and whether he is able to talk or eat or drink.

A—

**WEAKNESS or PARALYSIS LEFT ARM and LEFT LEG
or RIGHT ARM and RIGHT LEG = STROKE**

P—

- Send the patient to the doctor as an outpatient if he is conscious and able to swallow well.
- Send him to the hospital for admission if he is unconscious or unable to swallow without choking.
- Treating hypertension—Many stroke patients have hypertension, but begin treating it with caution since some of these patients are very sensitive to antihypertensive medications during the first month after the stroke. Later they may need the dose increased.



**Paralyzed right arm and leg
from a stroke**

PREVENTION—Finding and treating hypertension early and continuing medication for the patient's lifetime will prevent many strokes. Don't smoke; it increases the chance of a stroke. Atrial fibrillation, diabetes, and being overweight and a high serum cholesterol level also increase the chance.

MENINGITIS

Infection of the lining around the brain and spinal cord. This is a very serious condition that can develop very rapidly. The patient may have been well yesterday, developed fever last night, and be critically ill now. By evening he could even be dead. It is a true medical emergency. Large IV doses of the correct antibiotics are required to save the patient. Many patients die or suffer brain damage because treatment was not started early.



Infant with a bulging fontanel

S—Ask whether the patient is having fever, headache, and a stiff neck. Is he able to think clearly and talk sensibly? Has he had a seizure? (Small infants often do not develop a stiff neck, but they become irritable and stop nursing, and sometimes have a seizure.)

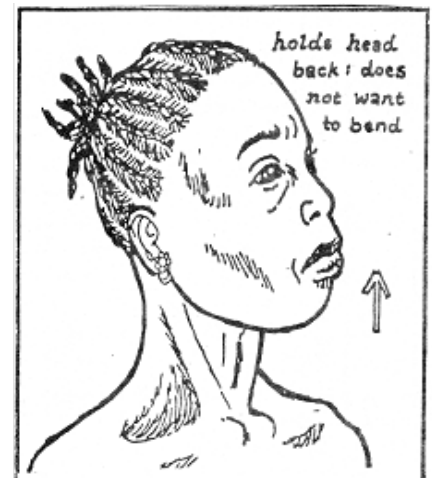
O—Take the temperature, examine the neck and the state of consciousness. In an infant, feel whether the fontanel is bulging. In the hospital a spinal tap will prove the diagnosis.

A—Any person with fever, headache and stiff neck (adult or child) or any fever with seizure in a patient who does not have epilepsy, or any infant with fever and irritability who refuses to nurse must be considered to have meningitis or cerebral malaria and treated as such. Check an RDT for malaria, and (if possible) spinal fluid for meningitis, but start treatment without waiting for CSF lab results.

NOTE: A **bulging fontanel** in an infant is a **late sign**. Such an infant has meningitis, but **try to recognize meningitis in an infant earlier**.

P—

1. If RDT is positive, treat for cerebral malaria. If spinal fluid is positive or if unable to check, also treat for meningitis. Give adults ampicillin 2 gm IV or IM or benzylpenicillin 5 million IU IV, and chloramphenicol 1 gm IV or 8–250 mg caps orally (if available) or cotrimoxazole (400/80) 4 tablets stat if no chloramphenicol. Give a child 3 mo. to 5 yr. ampicillin 50 mg/kg IV (or if none 2 cc penicillin IM) stat and chloramphenicol 25 mg/kg IV (if available). This will hopefully begin to stop the bacteria from further destroying the brain while the patient is being taken to the hospital. For neonates and infants less than 3 months, see pg. 248—give ampicillin 50 mg/kg, but give gentamycin 4 – 5 mg/kg IV instead of chloramphenicol.



Adult with a stiff neck.

2. Then send the patient to the hospital immediately. Help the relatives find transportation. Go with the patient if necessary. Time is of the greatest importance. Delay of a few hours may cost the patient his life.

TETANUS

S—Stiff neck, cannot open mouth, spasms or seizures when touched or with noise, back bent backward (opisthotonus), and back pain. Tetanus patients are able to think clearly. (Meningitis patients are confused or comatose.)

Tetanus most often occurs in newborn infants 5 to 15 days old (tetanus neonatorum) from unsterile deliveries (with an infected umbilical cord), but adults also develop it from dirty injuries. With an adult patient ask whether an injury occurred within the last 2 weeks.

O—

- Examine the neck and back for stiffness. Take the temp. Does the patient jerk when touched?
- See if he is able to open his mouth.
- Check whether an adult is thinking clearly and alert.
- In an infant check the navel for signs of infection.

A—Do not confuse tetanus with meningitis. Adult meningitis patients are often mentally confused or semiconscious, while adult tetanus patients are mentally clear and alert.



Infant hospitalized with tetanus neonatorum

ANY INFANT 5 – 15 DAYS OLD who **CANNOT NURSE** & **SEEMS IRRITABLE** & **JERKS WHEN TOUCHED** has **TETANUS NEONATORUM**

P—

- Adult—If available, give diazepam (Valium) 20 mg IM and phenobarbitone 200 mg IM (or if able to swallow, give diazepam 5 mg tablets 5 orally, and phenobarbital 60 mg tablets 5 orally), and 12,000–18,000 units of TAT IM (8–12 doses of 1,500 units) and send the patient immediately to the hospital.
- Newborn—Give diazepam 3 mg (0.6 cc) IM, phenobarbitone 20 mg IM, and human TAT 1,500–3,000 units (1 to 2 amps of 1,500 units) IM if available, and send the baby immediately to the hospital. See pg. 249–250.

PREVENTION—

1. Approximately 90% of all tetanus cases have been occurring in the newborn. (Perhaps a lower percent now due to vaccinating mothers.) Prevent these by:
 - a. Vaccinating all women of childbearing age before they are pregnant with 2 doses (or more) of tetanus toxoid (TT) at least three weeks apart. Then give 1 booster dose during the second trimester of pregnancy.
 - b. Encouraging deliveries in the hospitals and clinics.

- c. Training village midwives to use only new, clean razor blades and boiled string for the cords.
2. Give pentavalent vaccine or DPT to infants and TT to school children to protect them.
3. Cuts and burns must also be protected at any age (see pg. 2).
4. Also give a course of TT or DPT to all patients who recover from tetanus.

PREVENT TETANUS NEONATORUM BY VACCINATING ALL WOMEN OF CHILDBEARING AGE.

HEAD COMPLAINTS

Headache

S—Ask:

- When did the headache start? Is it mild or severe?
- Does the patient have headaches often?
- Is the headache on one side or both sides of the head?
- Is the patient nauseated with the headache?

O—Take the temperature and BP and examine the neck for stiffness. Note whether the patient is oriented and thinking clearly. Are pupils equal?

A&P—Match your findings with the groups listed below.

Symptoms/Observations Head Complaints:	Assessment	Plan of Treatment
Headache with:		
1. No fever, mild, on both sides (and headaches are not frequent)	Common headache	Paracetamol, 500 mg, 2 tabs as needed up to QID
2. Repeated frequent headache—back of head and both sides	Possible hypertension	Take BP. See hypertension in CHRONIC DISEASES, pg.141 - 145.
3. Repeated episodes of severe headaches with photophobia (often 1 side of head only)	Migraine headache	Refer for migraine med. if ibuprofen or paracetamol are not sufficient.
4. With fever and chills but no stiff neck or sore throat	Probable malaria	Do RDT for malaria; if pos., treat for malaria; if neg., look for viral cause.
5. With fever and stiff neck and not mentally clear	Meningitis (also test for malaria & treat if positive)	Adults—ampicillin 2 gm IV/IM, & chloramphenicol 1 gm IV or 8 caps PO, or cotrimoxazole. 4 tablets, and to hospital stat
6. Headache with fever, sore throat, muscle pain, and diarrhea lasting over one week	Possible Lassa Fever	Send to the hospital.

Other Symptoms Related to the Head

Ask the questions and do the examination indicated to choose the correct symptom group below:

Symptoms/Observations Other Head Complaints:	Assessment	Plan of Treatment (adult doses)
1. Itching eyes for some time (definite chronic condition)	Possible onchocerciasis	Skin snip—if positive, treat with ivermectin. See pg. 52.
2. Chronic itching eyes and negative test for oncho.	Probable allergy	Chlorpheniramine 4 mg BID or decongestant eye drops
3. Both eyes red and sticky (for less than 7 days)	Conjunctivitis	Antibiotic eye ointment QID until eyes are cured
4. One eye red and painful with a dilated pupil	Glaucoma	Refer stat to hospital.
5. Foreign body embedded in eye or other eye injury	Eye injury	Bandage eye and refer to hospital stat.
6. Earache or freshly draining ear (if draining more than 1 month, refer)	Otitis media	Amoxicillin 500 mg TID or cotrimox. 800 mg BID x 10 days
7. Nosebleed (not pale, recent onset)	Epistaxis	Compress nostril gently for 10 min. See pg. 20.

MUSCULOSKELETAL COMPLAINTS

Bone Pain (or Pain in a Limb)-Think of Injury, Infection, Arthritis, Sickleemia, or Cancer

S—Ask:

- 1) When did the pain begin?
- 2) Which part or place is hurting?
- 3) Was there any injury?
- 4) Is the pain mild or severe?
- 5) Does it hurt all of the time, or does the pain come and go?
- 6) What kind of movement, work or exercise makes the pain worse?
- 7) Have you had this kind of pain before?

O—

- 1) Examine the limb for swelling or tenderness. Determine if pain is actually from the bone, or some other cause—soft tissue bruise? Sore muscle?
- 2) Take temperature.
- 3) Is the patient pale, with episodes of bone pain since a child? If so, do a Hgb. test and sickle cell prep (if possible).

A&P—

- 1) Chronic bone pain coming and going in all limbs ever since the patient was a small child with anemia = **Sickle Cell Anemia**. **If Sickle Cell Anemia:**
 - a. Give aspirin for bone pain (reduces pain, decreases clotting)
 - b. Give penicillin if febrile (sickle cell patients often have pneumococcus).
 - c. Give folic acid 1 tablet daily (they need extra folic acid).
 - d. Send the patient to the hospital if the patient is severely ill.See **Sickle Cell Anemia** in **Chapter Four--Chronic** Illnesses, p. 163-166
- 2) Pain beginning within the last few weeks or months, only 1 bone involved, and with swelling or tenderness is likely a **bone tumor** or **osteomyelitis**. Send the patient to the hospital.
- 3) With a recent history of injury a **sprain, fracture, bruised bone** or **muscle strain** may be the cause of pain.

Sprain

Use an elastic bandage if available. Patient may be given ibuprofen, paracetamol, or aspirin for pain. See pg. 8.

Fractured Bone

See Fractures—pg. 9 and 10.

Simple Sore Muscles

Examine the muscle to be sure no abscess is present. Give:

- Ibuprofen or paracetamol by mouth, and/or
- Capsicum or other analgesic preparation to rub on.

Swollen, Painful Joints

S—Ask when the pain and swelling started and if it has happened before. How many joints are swollen? Does the pain and swelling come and go?

O—Take the temperature. Examine the joints for tenderness or deformity. Check for anemia.

A&P—

Symptoms/Observations Painful Joints with:	Assessment	Plan of Treatment (adult dosages)
1. Pale, with bone pain, and fevers at times since a small child	Sickle cell anemia (See p. 163-166)	1) Aspirin when having pain* 2) Penicillin if fever. 3) Refer if severely ill.
2. One or 2 joints recently became swollen—warm, painful, and having fever	Possibly septic joints	Cotrimoxazole 400/80 mg. tabs-- Give 2 stat and refer to hospital for definite diagnosis and Rx
3. One joint swollen for many months in an older person—joint not warm and no fever	Probably osteoarthritis (most often a knee joint)	Paracetamol 500 mg as needed, (2 QID if required, but not more)* Also may try ibuprofen Refer if severe pain
4. Adult, many joints swollen, symmetrical, deformed hands (usually present for years)	Rheumatoid arthritis	Ibuprofen 600 mg QID if severe pain until it improves (take with food). See CHRONIC DISEASES, pg.161–162.
5. Child, many joints painful, and swollen. Swelling may move about from joint to joint. Fever, but not pale.	Possible Rheumatic Fever	Needs rest and aspirin QID until fever is gone and joints are improved.* Amoxicillin x 10 days to destroy strep. Refer if not improving.

*Always check the correct dose of aspirin or paracetamol for a child's weight—too much can cause the child to die!

Paralysis and Muscle Weakness

- With an arm and leg paralyzed on the same side, the patient has had a **stroke**, (pg. 90).
- With contracted fingers or foot drop and light anesthetic skin patches the patient has **leprosy**. See leprosy in the CHRONIC DISEASE section, pg. 111–120.
- A child with a weak leg following a fever usually has had **polio**—he will need a leg brace if the weakness does not improve. (Prevent this by vaccinating all children!)
- If paralysis does not fit one of these descriptions, send the patient to the doctor for correct diagnosis and treatment.

Back Pain

See the drawing and explanatory notes on pg. 65.

S—Ask: When did it start? What part of the back is hurting? How severe is the pain? Was it caused by lifting, hard work or much bending? Is the patient also having headache or fever?

O—Check the patient’s ability to bend his back.

- Is the spine straight, or crooked?
- Check the spine for pain with pressure from a finger.
- Check the kidneys for tenderness with percussion.
- Are the arms, legs, or neck stiff?
- Is the patient alert and oriented?
- Take the temperature.
- See if straight-leg-raising increases the low back pain.

A&P—Choose the diagnosis and treatment from the table below.

Symptoms/Observations Back Pain with:	Assessment	Plan of Treatment
1. Fever, headache, stiff neck, pain back of neck and not mentally clear	Meningitis	Give antibiotics stat and send immediately to the hospital--see pg. 91.
2. Can't bend back forward, stiff arms and legs, and mouth getting hard to open. He is mentally alert.	Developing tetanus (early case)	Diazepam, phenobarb., and TAT stat if available, and send stat to the hospital. See pg. 92-93.
3. Lower back pain with Tenderness over right or left kidney and Fever (able to bend back)	Pyelonephritis (check urine for UTI)	Cotrimoxazole 400, 2 BID or cipro 500 mg BID x 14 days, and refer if not improving. See pg. 65, 83 & 84
4. Pain and tenderness of 2 or 3 vertebrae, and 1 vertebra bulging out under the skin	TB of the spine (Pott's disease)	Notify TB control-needs definite diagnosis & start of supervised treatment. See TB in CHRONIC DISEASE section, pg. 121–134.
5. Lumbar spine painful, not able to bend because bending increases pain, no fever or headache. (Pain usually started when lifting or bending or heavy work.) Arms and jaw are not stiff.	Herniated lumbar disk or strained back muscles	Ibuprofen 400 mg QID x 5 days Diazepam 5 mg TID x 3 days if available. Sleep on flat bed (mattress on floor). No bending, lifting, or heavy work until well.

“SWELLING”—EDEMA OR ASCITES

ASCITES WITH EDEMA

1. Causes:

- Often from cardiac decompensation (often has rales) (see **CHF**, p. 135–139)
- Sometimes from renal (kidney) decompensation. With renal causes the BP is high and the urine contains albumin.
- May have other causes, such as an abdominal malignancy pressing on the inferior vena cava.

2. Refer all cases to the hospital

ASCITES WITHOUT EDEMA

NOTE: Ascites is fluid in the abdominal cavity causing abdominal swelling. Edema is too much fluid in the body tissues, usually the feet, ankles and lower legs, causing swelling.

S—Complaint: “My abdomen is swelling.” **Ask:**

- 1) When did the swelling begin? 2) Is he having pain?
- 3) Does he drink much alcohol? 4) Is he having fever?

O—Weigh the patient. Feel for a liver mass. Check the abdomen for shifting dullness. Listen to the lungs for rales, and check ankles for edema (with just one ankle swollen see SPRAIN). Check the urine and stool for schistosome eggs if a microscope is available.

A—

NOTE: A **chronic swollen abdomen** with **shifting dullness** (but with no vomiting, constipation, or tenderness) = **ASCITES**

The common **causes** of **ascites without edema** are:

- Chronic hepatitis B or C (viral infection damaging the liver)—These also often cause cirrhosis, and may cause liver cancer.
- Cirrhosis of the liver due to schistosomiasis or alcohol.
The liver will feel firm. The patient must stop drinking alcohol!
- Malignancy—Liver cancer often from chronic hepatitis B or C, or a metastasis (spread from cancer elsewhere) to the liver or peritoneal cavity.
- Occasionally tuberculous peritonitis (sometimes this patient has a fever).

P—Send all patients with ascites but no edema to the hospital for a proper diagnosis and for treatment.

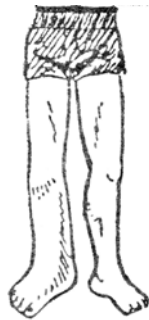
SWELLING OR EDEMA OF THE FEET

S—Complaint: “My feet are swelling.” **ASK:** Is the patient having pain? Having any fever? When did the swelling start? Short-of-breath?

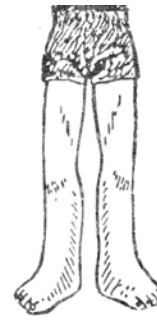
O—

1. Check the swelling for pitting: press on it with your finger and see if the indentation in the swollen skin of the foot remains there after you remove your finger.
2. With one foot swollen look for signs of cellulitis—redness, tenderness (pain), and warmth—and take the temperature. If chronic think of filariasis.
3. With two feet swollen look for:
 - Distended neck veins which is a sign of cardiac decompensation (**CHF**).
 - Signs of Kwashiorkor in small children (skin & hair changes) (pg. 100–103).

A—Causes of swollen feet—



WITH ONE FOOT SWOLLEN THINK OF:
 1) Cellulitis if very recent, warm & tender
 2) Elephantiasis if chronic



WITH TWO FEET SWOLLEN THINK OF:
 1) Congestive heart failure (adult)
 2) Kwashiorkor or nephrosis (child)

A&P—Find the correct group below.

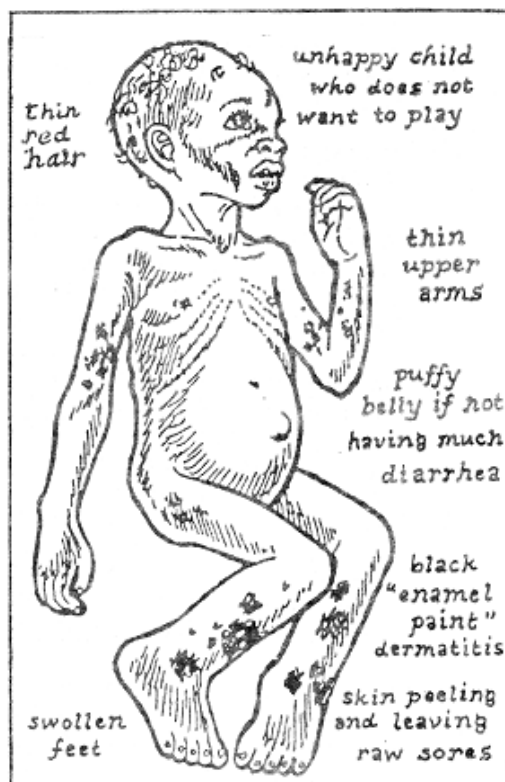
Symptoms/Observations	Assessment	Plan of Treatment
Swelling of One Foot or Leg		
1. Swelling is warm, tender, red and painful, and started recently	Cellulitis	Treat for staph, see pg. 73–74. Refer if not improving.
2. Chronic pitting edema—one limb. Not warm, tender or painful, and present for months or years	Likely Elephantiasis (Caution—see warning--pg. 51)	See treatment pg. 51; first check for & treat oncho if it is present-then wait 4 months before starting hetrazan.
3. Recent swelling one lower leg, calf tender, no other signs of cellulitis, calf pain with foot dorsiflexion	Deep venous thrombophlebitis	Aspirin 325 mg, 2 stat, and refer to doctor.
4. Area of a bone is painful and tender with swelling over it. Often also fever- if chronic, pus may be draining.	Probable osteomyelitis	Refer to hospital.
5. Bony swelling of arm or leg (but not very tender) (or swelling not fitting one of the groups above)	Possible bone tumor	Refer to hospital.
Swelling Starts while Taking Hetrazan Tablets		
Either 1 or 2 limbs or other areas are swollen	Reaction to dying oncho. microfilaria	Stop hetrazan immediately until improves, and then begin again with a very low dose.
Both Legs Swollen with:		
1. Cough, shortness-of-breath, distended neck veins, & often rales	Congestive Heart Failure (CHF)	Refer to hospital. See CHF on pg. 135–139.
2. Positive urine albumin, high BP, no cough, not pregnant	Nephrosis	Refer to hospital.
3. Pregnant, but normal BP and no urine albumin present	Edema of pregnancy	Additional bed-rest daily. See PRENATAL section, pg. 287.
4. Pregnant, elevated BP, and a positive urine albumin	Pre-eclampsia See pg. 291.	Refer quickly to midwife in the hospital.
5. Child—thin, light hair, and discolored skin and often also diarrhea (often after measles, or if taken from the breast early)	Kwashiorkor (pg. 100–103)	Help mother to treat vigorously with good diet with much protein or send to hospital or nutrition center.

MALNUTRITION IN CHILDREN—KWASHIORKOR (See also pg. 201 - 203.) (Marasmus is found on page 201)

Causes of Kwashiorkor

Kwashiorkor is caused by children not eating enough body-building (protein) foods, or more frequently by **both not enough protein and not enough calories** in the diet of the child. It most often develops in:

- Children getting too little breast milk:
 - Children taken from the breast before the age of 2 years.
 - Children left with the grandmother (no breast milk).
 - Children fed with bottles instead of breast milk (more frequent illnesses, especially diarrhea, and usually not enough money to buy sufficient milk).
 - Children taken from the breast because the mother became pregnant before the first child became 2 years old.
- Children who do not eat enough food:
 - Children fed mostly rice-water (not enough calories).
 - Children whose fathers are not buying food for them.
 - Children fed only once or twice a day.
- Sick children:
 - Children sick with TB (NOTE: Often small children with TB are not coughing).
 - Children who have recently had measles who have sore mouths and are not eating well.



Signs of Kwashiorkor

S—

1. For the child who has Kwashiorkor, the mother may complain that the child has:
 - Poor light skin with black areas, and thin red hair
 - Usually swelling feet
 - Usually diarrhea
2. For such a child, ask:
 - Is the child still nursing the breast? (Usually this child has been weaned.)
 - If not, when was he weaned?
 - How many meals does he eat each day?
 - What foods is he eating?
 - What time did he become ill?

- Did he recently have measles or another illness?
- Is he having diarrhea?
- Having fevers?
- Is the father supporting the child?

O—Look for:

- Thin, light hair and discolored skin
- Edema of the legs
- Thin upper arms (check MUAC with Shakir Strip)
- Signs of dehydration
- Signs of anemia

LAB—If possible, check stool for parasites and do a hemoglobin test. If no lab just de-worm with mebendazole.

A—

ANY CHILD with:	1) POOR LIGHT SKIN and	2) THIN LIGHT HAIR and	3) A POOR NUTRITION and HISTORY	4) USUALLY EDEMA and DIARRHEA	HAS KWASHIORKOR
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P—Treating children with Kwashiorkor requires either:

The BABY-KILLER:
 Baby formula powder fed in nursing bottles has caused many infants to die in Liberia. Most mothers cannot afford to buy sufficient formula, so the hungry baby dies from malnutrition. Other babies die from diarrhea when water is not boiled and the bottles are not clean.
Advise mothers to feed breast milk! (not formula from a nursing bottle)

1. Intense work by the clinic staff in helping the mother correctly feed the child until the child is much improved (about 5 to 6 weeks). This requires someone from the clinic actually teaching and helping the mother to prepare food with sufficient protein and calories, and supervising her feeding the child 4 or 5 times a day, OR
2. Sending the child to a hospital which does feeding for Kwashiorkor or to a nutritional rehabilitation center for a proper diet high in protein which usually includes fish, beans, ground-pea paste, etc. This is most successful if continued for 2 months before finally discharging the child. If the child’s mouth is too sore to eat food, whole milk may be needed until the mouth is better.
 - In either case while the child is recovering, continue teaching the mother what foods to feed the child to prevent Kwashiorkor from developing again.
 - Be sure the mother actually understands how to feed the child and is doing it. The child must get sufficient protein and calories, and must have 3 or more meals a day and small food other times after returning to their village.
3. Follow-up after discharge. Check the weight every month. Watch the Road-to-Health Card; if the child stops gaining weight you will know that the diet is inadequate.

Prevention of Kwashiorkor

1. In under-fives clinics (clinics for children under the age of 5) teach the mothers to:
 - a. Breastfeed at least until age 1—but to age 2 years is better, and best to age 3.
 - b. Do not feed a baby cow's milk from a can instead of breastmilk.
 - c. Do not use a nursing bottle.
 - d. Feed only breast milk until age 6 months. Then start rice porridge as a food supplement to breast milk. Then add scraped banana and orange juice and other foods gradually one at a time. By age 1 year the child should be fed at least 3 times a day in addition to breast milk.
 - e. Be sure to feed this child plenty of the body-building protein foods every day.
 - f. Feed the child 1½ to 5 years of age frequently, 4 to 5 times a day.

Encourage the spacing of children through family planning to permit each child to reach the age of 3 to 4 years before the next child is born. (Breastfeeding helps.)

Vaccinate all children to prevent measles, TB, and pertussis.

Watch children to be sure they are not becoming dry and poor. Weigh them every month and mark the weight on the Road-to-Health Card. If you have no scale, measure their upper arms every few months with your arm band (Shakir Strip).

2. Why is formula or milk fed from a nursing bottle dangerous for the baby?

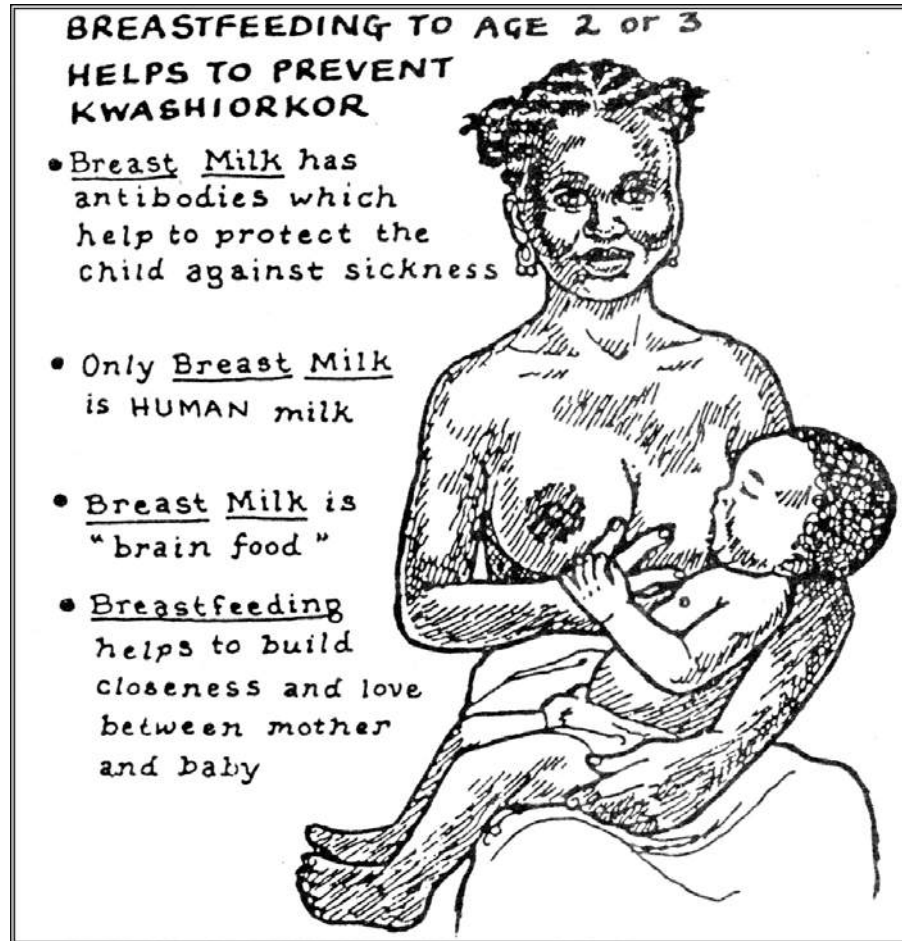
- Because **formula is expensive**, and often the mother **cannot afford to buy sufficient milk for the baby**. Without sufficient cow milk the baby develops Kwashiorkor and dies.
- Because the bottles **must be carefully cleaned and sterilized with boiling water**, and the **powder mixed with boiled water to prevent the formula from growing bacteria** (this often is hard for the mother to do).
- Because, unless the mother has refrigeration, or feeds the baby immediately after mixing the powder with boiled water and placing it in a sterilized bottle, **the milk often grows bacteria and the baby gets sick with gastroenteritis and becomes dehydrated**.

Breast milk is sterile, does not cause the baby to become sick, protects the baby with mother's antibodies, and although the mother must eat more, costs much less than formula – protect the baby by breastfeeding!



Many babies get malnourished and die when the mother does not have enough money to buy formula milk, or from diarrhea when formula is not prepared safely. Always advise feeding the baby breast milk.

Some people think that sometimes a mother may have
breast milk that is bad for her baby
This is only true if the mother has HIV
Otherwise:
BREAST MILK is ALWAYS GOOD and ALWAYS BEST



**Other Deficiency Diseases--Iron Deficiency—p. 80-81, B-12 Deficiency—p. 81-82
Vit. A Deficiency—p. 203, Iodine Deficiency—Goiter—p. 69**

Beriberi – Vitamin B-1 (thiamine) Deficiency—2 forms—Wet and Dry Beriberi

Rice bran is a good source of B-1. When rice is polished, the B-1 is removed. People just eating polished country rice may develop Beriberi. (Polished U.S. rice has thiamine added back to it.)

Dry Beriberi causes **neurological** symptoms, including:

- Loss of muscle function with difficulty walking or paralysis of the lower legs
- Loss of feeling and tingling in hands and feet
- Mental confusion/speech difficulties, and eyes dancing back and forth (nystagmus)
- Chronic alcoholics eating a poor diet develop a form of dry beriberi called **Wernicke's Encephalopathy**, with dementia, staggering, incoordination, babbling, and nystagmus.

This is an **emergency**, needing **hospitalization**, stopping alcohol, and high doses of B-1.

Wet Beriberi causes congestive heart failure with shortness-of-breath, orthopnea and leg edema. Beriberi is treated with large doses of thiamine or strong B-complex and improvement of diet.

Pellagra—Vitamin B-3 (niacin) Deficiency—Often only eating corn, which is deficient. Pellagra has the **4 D's**:

- 1) Black **Dermatitis** on skin exposed to sun, 2) **Diarrhea**
- 3) **Dementia** later, and finally 4) **Death** in about 4 or 5 years.

Treatment: 1) Niacin or nicotinamide 50 – 100 mg or strong B-complex TID until improved
2) Improving diet 3) If drinking, completely stopping alcohol

Scurvy—Vitamin C (ascorbic acid) Deficiency—From not eating sufficient foods with Vitamin C—Oranges, grapefruit, limes, lemons, paupau and guava have much Vit. C. Tomatoes and cabbage have some.

Symptoms: 1) Bleeding under skin and into joints 2) Skin breaking down 3) Sore mouth
4) Loosening teeth 5) Very bad-smelling breath, and finally 6) Death.

Treatment: 1) Vitamin C 500 mg. tabs BID, or much fruit containing Vitamin C
2) Correct the diet

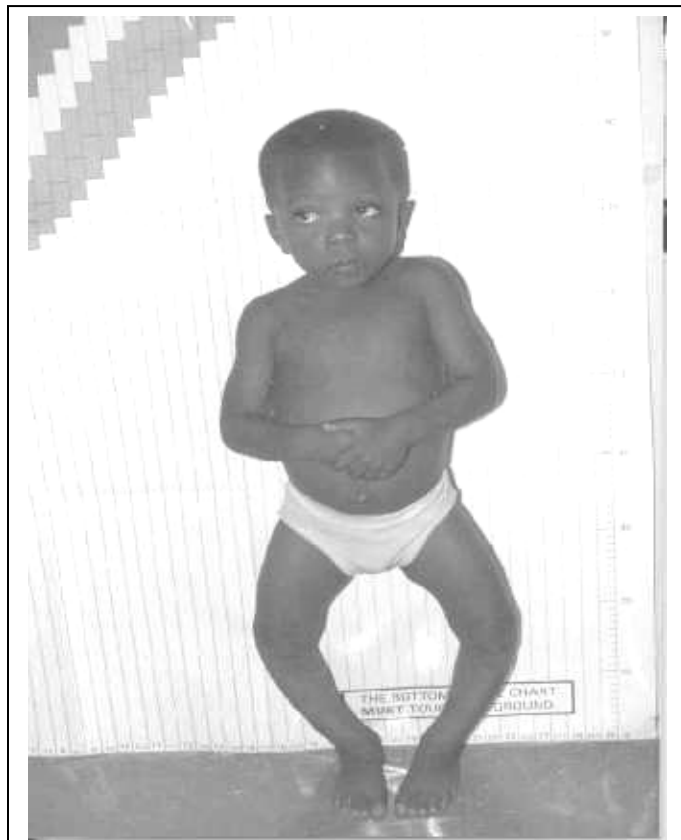
Rickets—Lack of Vitamin D—Sunlight on the skin is the **main source** of Vitamin D for most Liberians. Fatty fish and fish oil are good food sources. Cow liver, egg yolk and milk also have some Vitamin D. Some milk has Vitamin D added to it.

Vitamin D is needed to absorb calcium from food. Calcium deficiency can also cause Rickets..

Rickets usually occurs in children 6 to 24 months old who have not had sufficient sunlight on their skin. The most common symptom is bowed legs.

The treatment is to supply both Vitamin D (sunlight and food) and sufficient calcium from food or milk.

Use the rest of this page for additional notes.



Child with Rickets before treatment
Perlstein/Shiel

MEDICATIONS

Average Doses of Drugs For Clinics, Health Centers, and Hospitals

Key-Drug supplied to: Clinics & HC (*), Health Centers (HC), Co. Hospitals (hosp), Referral Centers (ref)

Drug	Adult Dose	Child Dose (20 lbs)
ANTIBIOTICS		
Ampicillin 1 gram vial*	1–2 gm IM/IV Q 6 H for serious situations	250–500 mg IM/IV Q 6 H Often refer after first dose
Amoxicillin 250 and 500 mg tablets,* 125/5 mL syrup	500 mg tablet TID	125–250 mg syrup TID
Azithromycin 250 mg tab (ref)	2 first day, then 1 x 4 days (in clinic use erythromycin instead)	10 mg/kg day 1 5 mg/kg day 2–5, susp. available
Cefalexin 500 mg tablet (hosp)	500 mg TID–QID (clinic: try flucloxacillin instead)	¼ tablet TID
Ceftriaxone 250 mg and 1 gm vials (hosp)	1 gm daily IM/IV for serious infection, 250 mg once for GC	500 mg IM as single dose for serious infection
Chloramphenicol 250 mg tablet (hosp)	2 tablets QID	—
Chloramphenicol 1 gm vial*	1 gm IV Q 6 H	25 mg/kg IV Q 6 H
Ciprofloxacin 500 mg tablets (hosp)	1 BID—very good for UTIs, bacillary dysentery, and typhoid	—
Cotrimoxazole 200/40 mg per 5 mL susp.* and 100/20 and 400/80 mg tablets*	2 (two) 400/80 tablets BID or 1 (one) 400/80 tablet QID	200/40 susp.—5 mL BID Do not give under age 2.
Doxycycline 100 mg tablets and caps*	1 BID	—
Erythromycin 250 and 500 mg tablets*, 125/5 mL susp.	250 mg QID or 500 mg BID or TID just before meals	5 mL susp. TID or QID before meals
Flucloxacillin 250 mg tablets* 125/5 mL susp.	1–2 tablets QID for staph and add penicillin tablets to cover strep	3–5 mL susp. QID—for 20 lbs wt 1 mL QID—10 lbs
Gentamycin 40 mg/mL amp*	1.7–2.5 mg/kg IV/IM Q 8 H (limit 300 mg total/24 hours)	1.5–2.5 mg/kg IV/IM Q 8 H or 2.5–3.75 mg/kg IV/IM Q 12 H
Metronidazole 200/250 mg tablets*	Giardia—1 tab TID x 7 days Amebiasis—3 tablets TID x 7–10 days	Giardia—¼ tablet TID x 7 days Amebiasis—¾ tablet TID x 7–10 days
Penicillin, benzyl benzathine 2.4 mu vials*	1 vial IM for strep throat (Note: 10 days of oral amoxicillin or oral penicillin is better)	Give oral amoxicillin susp. or oral penicillin instead of benzyl penicillin IM.
Penicillin, phenoxymethyl 250 mg tablets* and 125/5 mL suspension	1–2 tablets QID	3 to 5 mL susp. QID
Penicillin inj. (procaine pen. G) 10ml vial * 300,000 u/cc	2–4 cc IM daily or BID, must be given every day—never give only 1 dose	1 cc IM daily or BID

Chapter Three—Acute Illnesses

Drug	Adult Dose	Child Dose (20 lbs)
ANTIPARASITICS		
Benzyl benzoate 25% emulsion*	Apply to entire skin, neck to toes, wash off 24 hr later. Repeat next day.	Same for child
Diethylcarbamazine citrate (hosp) 50 mg tablets	Dosage-See Bancrofti (pg. 51). Not for onchocerciasis!	Very rarely needed for child
Ivermectin tablets*	3 tablets single dose yearly for onchocerciasis	Rarely needed for small child
Mebendazole 100 mg tablets*	1 tab BID x 3 days, or 5 tablets as single dose (Pinworm—one tablet only)	1 BID x 3 days (or 5 stat) Pinworm—one tablet only (Not for under 1 year of age.)
Metrifonate (bilharzil) 100 mg tablets--only for <i>S. hematobium</i> if available	5 or 6 tablets stat, repeat in 4 weeks if needed	1 tablet stat
Metronidazole 200 mg or 250 mg tablets* and 125/5 mL syrup: 5 mL = ½ tablet	Ameba—3 TID x 10 days Giardia—1 TID x 7 days Trichomonas—1 TID x 7 days	½ tablet TID x 5–10 days ¼ tablet TID x 7 days
Piperazine 500 mg tablets and syrup 500 mg/5 mL	7 tablets stat once only, or 35 mL (7 tsp) syrup stat	3 tablets stat or 15 mL (3 tsp) stat
Prazequantel (biltricide) 600 mg tablets*	40 mg/kg single dose after breakfast: 132 lbs = 4 tablets	Approximately ½ tab

Average Doses for Common Drugs

Drug	Adult Dose	Child's Dose (20 lb)
Aminophylline 100 mg tablets	1 or 2 tablets QID for asthma	¼– ½ tablet TID or QID
Antacids (many types): – Magnesium trisilicate 500 mg tablets* – Aluminum hydroxide 500 mg tablets – Alum. hydroxide 320 mg/5 mL syrup – Alum. hydrox.+ mg trisilicate tablets – Calcium carbonate 500 mg	1 or 2 tablets or 2 tsp TID, QID, or PRN	Usually not needed in small children.
Aspirin 300 mg tablets*	1 or 2 tablets TID or QID or 2 PRN (not for upper abd. pain)	¼ tablet TID, do not give for influenza or chicken pox
Aspirin (child's) 81 mg*	1 daily to prevent arterial clots	1 TID or QID, see above
Benzoic acid cpd. (Whitfield's ointment)*	Rub small amount into ringworm BID until clear.	Same for child
Calcium lactate 300 mg tablets	1 tablet daily, BID, or TID	½ tablet TID, not needed with milk
Chlorpheniramine 4 mg tablets*	1 QID PRN for allergies	Cautiously ¼ tablet QID, rarely needed for small children
Cimetidine 300 mg tablets (hosp)	1 QID with meals and HS	—
Clotrimazole 1% cream*	Rub small amount into ringworm BID until clear.	Same for child
Clotrimazole 100 mg pessary*	Insert 1 daily for 7 days	—
Cough syrup (adult), many kinds; read the label	Usually 1–2 tsp QID	Usually ½ tsp QID (Read label)
Children's cough syrup	—	Usually 1 tsp QID (Read label)
Decongestant tablets	Many kinds; read the label.	Not for child
Diazepam (valium) 5 mg tablets*	1 QID as muscle relaxant or TID for anxiety—not for long use.	—
Diazepam inj. 10 mg/2 mL*	For seizure, 2 cc very slowly IV	0.3–0.4 cc very slowly IV
Digoxin tablets (Lanoxin) 0.25 mg tablets (hosp)	For CHF, initially 2 TID for 1 day; then ½ or 1 tablet daily (if pulse over 60) depending on response.	1 tablet BID first day if no previous digoxin; then ¼ tablet daily (let pediatric specialist prescribe).
Epinephrine (adrenaline) inj. 1:1000 in 1 cc amp.	Asthma—0.4 cc SC and repeat if needed in 20 min. Anaphylactic Shock—0.2–0.4 cc IV or 0.6–1.0 cc IM	Asthma—0.2 cc SC and repeat if needed in 20 min. Anaphylactic Shock—0.3 cc IM

Chapter Three—Acute Illnesses

Drug	Adult Dose	Child's Dose (20 lb)
Ergometrine inj. 0.5 mg in 1 cc (for use by certified midwife)	Postpartum bleeding only— ½ –1 cc SC or ½ cc IV	—
Ergometrine 0.5 mg tablets	1 tablet for postpartum bleed	—
Ferrous sulfate tablets 200 mg	Prenatal—1 daily, but if Anemia—1 BID or TID	Use child's syrup, read label for dose. Too much is toxic.
Ferrous fumarate syrup * 20 mg/mL	—	Supplement— ½ tsp daily Anemia—½ tsp BID
* Folic acid 5 mg tablets	½ tablet daily	¼ tablet daily
Ferrous sulfate 200 mg + folic acid 0.25 mg tablets*	Prenatal—1 daily Anemia—1 BID or TID	—
Furosemide 40 mg tablets (hosp) and 20 & 40 mg amps	1 daily or bid—acts fast, but hydrochlorothiazide costs less	Rarely needed. Consult pediatrician.
Gentian violet solution*	Apply daily to candida or BID to mouth sores.	Apply daily or BID to thrush.
Hydralazine 20 mg/mL inj. (hosp)	20–40 mg IM/IV PRN for severe HTN needing immediate decrease	—
Hydrochlorothiazide tablets* 25 or 50 mg	1 or 2 tablets daily (25 to 100 mg daily) (Often not much help from giving more than 50 mg/day)	Rarely needed— ¼ tablet of 25 mg daily (consult pediatrician)
Hydrocortisone* 1% cream	Apply BID to rash.	Apply BID to rash.
Ibuprofen 200 mg tablets*	1 to 3 tablets as a single dose or BID, TID, or QID with food	Try paracetamol syrup instead.
Ichthamol 20% oint.	Apply daily over abscess to cause skin to thin and abscess to drain.	Same—may not be needed with antibiotics
Laxatives: • Bisacodyl 5 mg tablets* • Milk of magnesia • Liquid paraffin	Do not give if lower abd. pain • 1 or 2 tablets HS • 2 tablespoons (1 oz) HS • 1–2 tablespoons HS	Small children do not need laxatives—do not give.
Levothyroxine 100 mcg tablets (hosp)	1 daily for hypothyroidism (doctor will prescribe)	Rarely—only for child proven to be hypothyroid—pediatrician will prescribe amount
Lidocaine 1% plain (also 2%* plain and 2% with epinephrine)	Infiltrate SC around laceration before suturing (but do not use Lidocaine with epinephrine for fingers or toes).	Same for child with laceration
Magnesium sulfate 50% amp (hosp)	For seizures with toxemia of pregnancy	—
Methyldopa 250 mg tablets	1 BID or TID for hypertension	—
Oral rehydration salts* (1 packet makes 1 liter)	Drink 2 to 6 liters a day while having diarrhea--depending on degree of dehydration	Perhaps 1 L or less daily (more if severe diarrhea)
Oxytocin 10 IU/mL amp*	See instructions in LABOR AND DELIVERY section, pg. 234–245	—
Paracetamol 300 and 500 mg tablets* and syrup 125 mg/5 mL	1–2 tablets QID for pain or fever (avoid if liver damage)	1 tsp syrup QID (read label) or ¼ tablet (too much is toxic)

Drug	Adult Dose	Child's Dose (20 lb)
Phenobarbitone 30 or 60 mg (hosp) tablets (for seizures)	90–300 mg daily HS—may increase to 450 mg maximum	30–60 mg HS 90 mg maximum
Phenytoin 100 mg tablets (Health Center) (for seizures)	200 to 600 mg daily Often used with phenobarbital (for seizures)	½–1 tablet or caps
Prednisolone 5 mg tablets (hosp)	Dose and duration vary—for asthma 6 daily x 5–7 days to temporarily supplement salbutamol or other continuous daily asthma meds.	A 5-day course of 1 to 2 tablets may help an acute attack of asthma (with other meds).
Promethazine (phenergan)* 25 mg tablets, syrup 1 mg/mL	1 tablet BID	1 tsp syrup BID
Propranolol 40 mg tab (hosp) (HC)	1–2 tablets BID or TID for HTN or for migraine prophylaxis	—
Reserpine 0.25 mg tablets	1 daily or BID	—
Salbutamol 2 mg tablets (HC) and inj. 0.5 mg/mL (hosp), and inhaler (inhaler likely not available at present)	Asthma—2–4 mg QID Also relaxes uterus to delay premature labor	Asthma—Seek pediatric advice—a nebulizer would be very good, but rather expensive, not likely available.
Sulfacetamide eye oint.	Apply under lower eyelid QID	Apply QID
Tetracycline 250 mg caps	1 or 2 QID	Avoid in children
Tetracycline eye oint.	Apply under lower eyelid QID	Apply QID
Vitamins (multivitamins) Tablets. And syrup	1 tablet daily	½ –1 tsp syrup daily
Vitamin A—50,000 and 200,000 IU caps*	Breastfeeding mothers—200,000 IU within 6 weeks after delivery	Children 6–11 months—100,000 IU once 1–5 yr—200,000 IU PO Q 6 months
Zofran (ondansetron) 4 & 8 mg tabs, 8 mg rapid dissolving, & syrup 4 mg/5 cc (all forms may not be available)	Excellent for stopping vomiting—age 12+--8 mg. TID maximum	4–11 yr.—4 mg TID maximum Do not give if liver failure. Do not give with phenergan. May cause slow pulse. Occasional allergic reactions, twitching, vertigo, rare seizure
Psychotherapeutic Medications		
Chlorpromazine 25 and 100 mg tablet and 25 mg/mL amps (hosp)	25 to 100 mg BID for psychosis	—
Amitriptyline 25 mg tablets	1–3 tablets HS for depression	—
Carbamazepine 200 mg tab, 100, 200, 400 mg XR, 100 mg/5 ml susp	Start with 200 mg BID (seizures) Max: 1200 mg/day	---
Fluoxetine 20 mg caps	Initially 1 cap daily for depression If needed, increase to 2 or 3 daily	---
Imipramine 25 mg tablets	3 tablets HS for depression—may be increased later to 150 mg (6 tablets)	—

MEDICATIONS FOR SPECIFIC ILLNESSES:

MEDICATIONS FOR MALARIA—see pg. 46 - 48

MEDICATIONS FOR DIABETES—see pg. 153 - 154

MEDICATIONS FOR LEPROSY—see pg. 119 - 120

MEDICATIONS FOR TUBERCULOSIS—see pg. 131

THE MAIN IV FLUIDS YOU WILL PROBABLY NEED ARE:

For INTRAVENOUS FLUIDS—see pg. 18.

- NORMAL SALINE (NS) (0.9%)
- RINGER'S LACTATE
- ½-STRENGTH DARROW'S SOLUTION IN 2½% DEXTROSE
- ½-STRENGTH RINGER'S LACTATE IN 2½% DEXTROSE
- DEXTROSE 5% IN WATER (D5W)
- POTASSIUM CHLORIDE (KCL) 10% in 10 mL amp. as an ADDITIVE

CHAPTER FOUR—CHRONIC DISEASES

LEPROSY

Leprosy is a chronic infectious disease that affects the skin and nerves.

Cause

An acid-fast bacillus known as **mycobacterium leprae**



Mycobacterium leprae on a microscope slide

Epidemiology

- **RESERVOIR**—Humans--it can only be caught from infected human beings.
- **METHOD OF TRANSMISSION**—Leprosy is **usually spread by droplets from patients sneezing and coughing who have many bacilli in their nose and throat (multibacillary patients)**. It is also possible to spread it by **skin contact from an ulcerated nodule of an untreated multibacillary patient**, but this is much less likely.
- Leprosy is actually **not very contagious**. In fact, although it is possible to catch leprosy from exposure to a multibacillary patient or objects contaminated by his nasal secretions, **those living in the same house in close contact with the patient are most likely to catch it**. But **most people have natural resistance to leprosy** and cannot develop it.



Leprosy bacilli sneezed out in the air are breathed in by those living in the same room

**LEPROSY IS THE WORLD'S
LEAST CONTAGIOUS
INFECTIOUS DISEASE**

- **INCUBATION PERIOD**—Usually 2–4 years or longer after exposure.

**LEPROSY IS ONLY VERY MILDLY CONTAGIOUS
IT IS SPREAD MOSTLY BY THE RESPIRATORY ROUTE
FROM MULTIBACILLARY PATIENTS
IT TAKES 2 YEARS OR LONGER TO DEVELOP SIGNS OF LEPROSY**

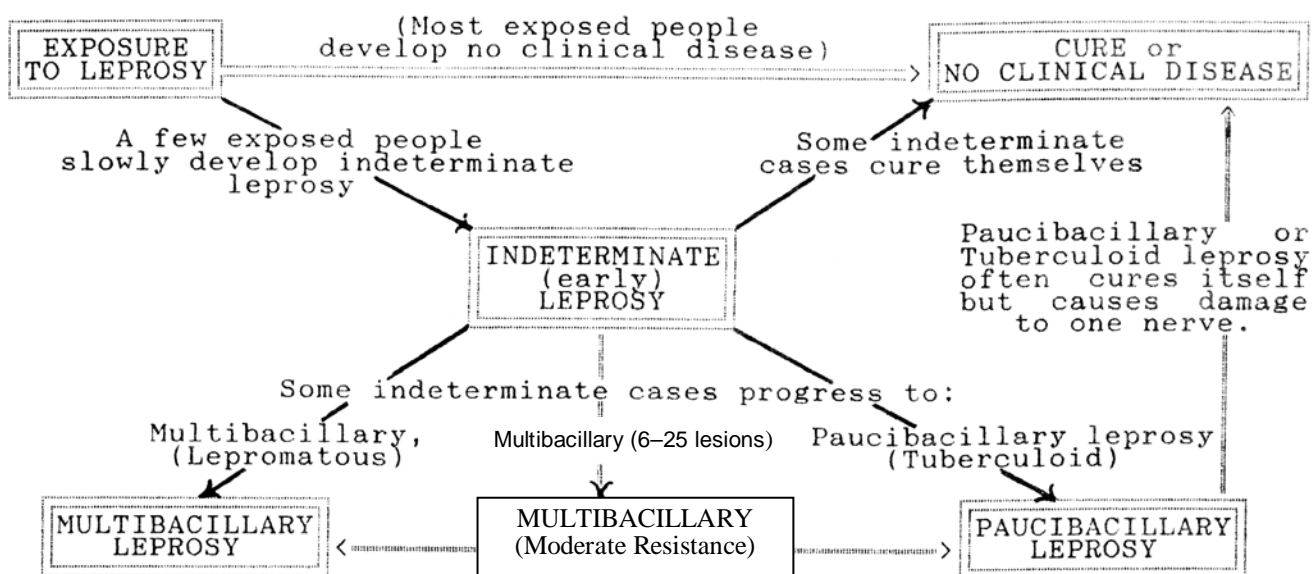
Types

Leprosy is divided into two main types: **paucibacillary** (only a few bacteria present), and **multibacillary** (many bacteria present). The type of leprosy that develops depends upon the resistance of the patient's body to the bacteria. Paucibacillary (also called tuberculoid) patients have 1–5 lesions and are actively resisting the bacteria. Multibacillary patients with 6–25 lesions have moderate resistance, which may increase and decrease and develop reactions very easily. Multibacillary lepromatous patients with more than 25 lesions have essentially no resistance at all. (NOTE: “multi” means “many” and “pauci” means “few.”)

The earliest sign of leprosy is usually a single light area on the skin that may or may not be able to feel touch from a piece of cotton. At this early stage, it is said to be indeterminate leprosy; as it cannot be determined at this time how much resistance the patient has, and whether he will cure himself or develop paucibacillary or multibacillary leprosy.

It is important for the health worker to be able to correctly diagnose the two different types; since the length of treatment and kind and probability of reactions are different with each type. The characteristics of each type are shown below.

THE RELATIONSHIP OF THE DIFFERENT FORMS OF LEPROSY



Multibacillary leprosy patients with moderate resistance to leprosy bacteria are the most likely to develop severe reversal reactions with significant nerve damage.

The Differences between Multibacillary and Paucibacillary Leprosy

Signs of Multibacillary Leprosy:		Signs of Paucibacillary Leprosy
Lepromatous Nodules and Many Lesions	No Nodules and Fewer Lesions	
1. Skin lesions, many. Borders are not at all clear (vague or hazy). Lesions always symmetrical and may not be anesthetic. Lesion color: reddish	1. Skin lesions—6 to 25. Borders are fairly clear, but less clear than paucibacillary. Lesions usually symmetrical and most usually anesthetic. Color: usually pale	1. Skin lesions—1 to 5. Borders are very clear and definite. Lesions not symmetrical. Lesions always anesthetic. Color: always pale
2. Bacteria easy to find in large numbers in skin slit scrapings and nasal secretions.	2. A few bacteria are sometimes found in skin slit scrapings from lesions only.	2. Bacteria often not present in skin scraping report. (Bacteria are very difficult to find.)
3. Late nerve damage occurs on both sides and may damage many nerves. Often: “stocking-and-glove” anesthesia develops.	3. Early nerve damage and very frequent reactions—more than 1 nerve often involved and usually both right and left sides. No “stocking-and-glove” anesthesia.	3. Early nerve damage may occur, but no more than one nerve is involved. No “stocking-and-glove” anesthesia develops.
4. Other people can catch leprosy from an untreated multibacillary patient.	4. These multibacillary patients are much less able to spread leprosy to anyone else.	4. Paucibacillary patients are not contagious, even if untreated.
5. Without treatment always slowly becomes worse. May cause death from complications in 10 to 20 years.	5. Often slowly clears the bacteria from the body by itself but usually leaves the patient crippled.	5. Usually clears bacteria from the body without medication in 3–5 years, and in much less time if given medications.
6. Skin nodules as well as raised thickened skin areas.	6. Skin nodules do not develop.	6. Skin nodules do not develop.
7. These multibacillary patients have almost no resistance to leprosy bacilli.	7. These multibacillary patients have moderate resistance which may increase and decrease.	7. Paucibacillary patients have higher resistance to leprosy bacilli.

NOTE: Cases may also fall in between these groups. Modified from G. Frederiksen and the Liberian Leprosy Control Program.

S&O—

- **SKIN**—Light spots develop that usually cannot feel cotton lightly touch them (lack of feeling is called anesthesia). Often these spots have lost the fine skin hairs and are unable to sweat. In **multibacillary** patients with many lesions, on occasion, some of the lesions may not be anesthetic, the eyebrows lose hair, and subcutaneous nodules and skin thickening develop.
- **NERVE DAMAGE**—Causes **paralyzed muscles** and **inability to feel touch or pain**. Complications that develop from nerve damage which has caused anesthesia and paralysis are:

Contractures	Swollen nerves	Loss of fingers or toes
Foot ulcers	Foot or wrist drop	Inability to close the eye
- **NOSE DAMAGE**—Infection of the nasal tissues causes nasal congestion (like a fresh cold). In neglected multibacillary patients the many leprosy bacilli that are present destroy tissue inside the nose that causes broadening and collapse of the nose.

A—

1. Make a diagnosis of leprosy if the person has:

- Large light spots on the skin which are anesthetic (cannot be felt when they are touched lightly with a piece of cotton), OR
- Light spots on the skin (even if some spots are not anesthetic) if nerve damage is also present (such as swollen, tender nerves or contractures) (see NERVE DAMAGE above), OR
- Leprosy bacteria are seen on an acid-fast smear from a slit skin scraping or from nasal discharge.

2. Classify Patient as Multibacillary or Paucibacillary--Examine the patient to determine whether he is multi- or paucibacillary. Count number of lesions, note clarity of borders, and other distinguishing characteristics of each type—see table on previous page.

Register the Patient and Check Nerves, Muscles, Hands and Feet

1. Register the patient for your clinic records and for notification to Leprosy Focal Person
2. Check nerves for swelling and tenderness—Great auricular, ulnar, radial cutaneous, median, peroneal and posterior tibial on both right and left sides and record the status.
3. Check muscles—Voluntary muscle testing (VMT): eyelid, fifth finger, thumb up, foot up.
4. Check sensation—Symmetrical eyelid blink, and 10 points to pen touch, both palms and soles
5. Check hands and feet for skin cracks, wounds, clawed fingers, missing digits, or foot or wrist drop. Grade all findings as: Normal = 0, Mild Disability = 1, Severe = 2.

P— Proper management consists of:

- Regular correct **Medications**
- Regular **Examinations**, and
- **Education**

(See the Protocol to Diagnose and Manage Leprosy, pg. 118):

1. **MEDICATIONS—**

Patient must be placed on the proper medications for his type of leprosy. See the protocol on pg. 119 - 120.

2. **REGULAR EXAMINATIONS—**See the patient every 4 weeks to:

- a. Make sure he is taking his drugs regularly and correctly.
- b. Give him supervised medicines which you watch him swallow, and another 4 weeks of blister pack medicines to carry.
- c. Examine him for possible drug reactions (see pg. 133) and for reversal or Erythema Nodosum Leprosum (ENL) reactions (see pg. 116).

3. **PATIENT EDUCATION—**Adequately **educating** the **patient** and the **relatives** concerning leprosy and its treatment is **extremely important**.

- a. Both the patient and his relatives must clearly understand that the treatment of leprosy will take 6–18 months. The relatives must agree to encourage the patient to be checked every 4 weeks on the same day and to always take his medication.

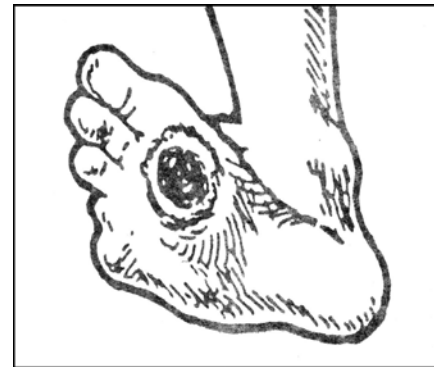
- b. Explain the symptoms of leprosy reactions according to the patients' categories, and instruct them to come for treatment immediately if any of these symptoms appear.

- c. Teach patients who cannot feel in their hands or feet to look daily for injury to the fingers or toes or for ulcers starting to develop on the soles of the feet. Patients developing foot ulcers must have a plaster cast placed on the foot to force them to rest it until the foot ulcer is completely healed.

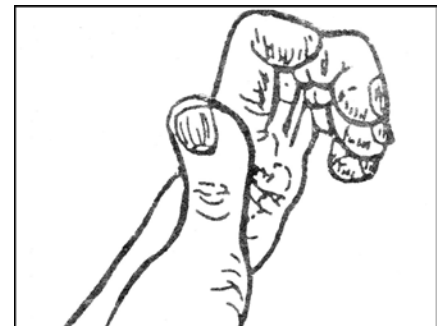
- d. Patients who cannot feel pain in the feet must wear special shoes to prevent development of foot ulcers.

- e. If the disease has already caused an arm or leg to become very weak or paralyzed, teach the patient to fully move that weak part 3 times every day to prevent contractures from developing.

- f. Teach the patient and his relatives that on each visit he will swallow supervised medicines, and be given a blister pack of medications for 4 weeks. (Next visit must be in exactly 4 weeks.)



Foot ulcer with missing toes



Hand with missing digit and finger contractures

Reactions

A reaction is a response of the body to dead leprosy bacilli. Check for possible reactions whenever you are examining a leprosy patient. Reactions are the most dangerous part of leprosy. They can cause nerve damage or even death, and are most likely to occur during the first part of treatment. There are two types of reactions—Reversal and ENL. Never stop dapsone therapy during either type of reaction.

- **TYPE I (or REVERSAL) REACTION**—Occurs most often in multibacillary leprosy with moderate resistance. It can rapidly cause swelling, pain, and damage to the nerves that can cause serious crippling in a short time. Therefore, unless it is very mild it requires emergency treatment and should be referred to the hospital quickly. It causes skin lesions to swell and scale and sometimes to develop skin ulcers.
- **TYPE II (ENL or LEPROMATOUS) REACTION**—Occurs in the multibacillary patients with many lesions and almost no resistance. It is most common during treatment when the patient’s resistance is improving and the bacilli are dying. These patients develop painful nodules (ENL) that swell and may ulcerate. This reaction is less likely to cause crippling than Type I, but it can sometimes be very severe and life-threatening with high temperature and inflammation of the joints, lymph nodes, testes, and eyes. Refer all severe cases quickly to a hospital.

Summary of Reversal (Type I) and ENL (Type II) Reactions and Their Management

Symptom	Mild Type I Reaction	Severe Type I	Mild Type II	Severe Type II
1. Fever	Absent or mild fever	Fever, often from 100°–102°F	Low fever	High fever: approx. 104°F or 40° C
2. Skin Lesions	Often become red and swollen	Swollen and may ulcerate	Red SC nodules (ENL)	SC nodules may swell & ulcerate
3. Nerves	Become swollen and tender to pressure	Swollen, tender, and painful, with increasing anesthesia and may develop paralysis	Nerves may become swollen and tender to pressure	Nerves swollen, tender and painful even without pressure
4. Joints	Normal	May be swollen, especially the wrist joints	May have mild joint pain and swelling	Severe joint pain and swelling
5. Eyes	Normal	May be inflamed	Normal	May be inflamed
6. Management	Give aspirin 2–3 tabs QID (or ibuprofen) and chloroquine 250 mg 1 BID, and refer if not quickly better.	Treat with prednisolone, or refer immediately to the hospital for steroids to prevent nerve damage.	If very mild give ASA 2–3 300 mg tabs QID (or ibuprofen) and chloroquine 1 BID. Watch closely and refer if not quickly improved.	Send immediately to the hospital with clinic record for admission and treatment with clofazimine and prednisolone.

Refer even the mildest reactions that continue for more than 6 weeks.

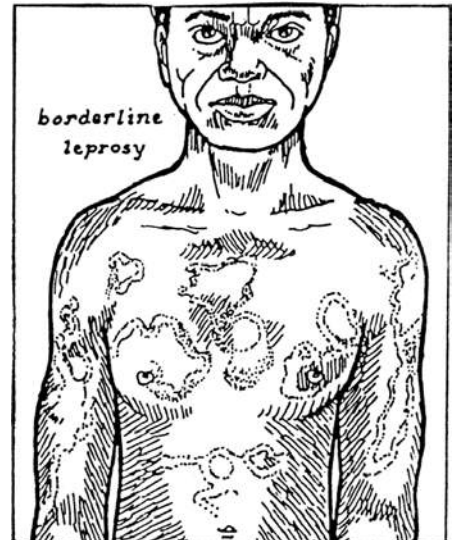
Prevention of Leprosy

1. Find early cases and treat them early—Multibacillary patients who have not received treatment are the source of infection to the community. Once treatment is started the leprosy will not be caught by others. Early detection and early treatment will therefore prevent spread to other people.

Early treatment also prevents deformities. Don't forget to educate patients to watch for reactions to prevent nerve damage, which causes crippling deformities.

2. The **community** must:

- Understand that leprosy is only mildly contagious and that most people have too much natural resistance to catch it.
- Understand the necessity of examining all household contacts to find any new cases that will also need treatment.
- The community must understand that leprosy patients who are receiving treatment will not spread the disease and do not need isolation. Leprosy patients are now no longer placed in special hospitals or villages, but treated in their own towns while they continue to live and work with their own families.
- The community and the family of the patient must encourage the patient to keep all clinic appointments and continue taking all medications faithfully.

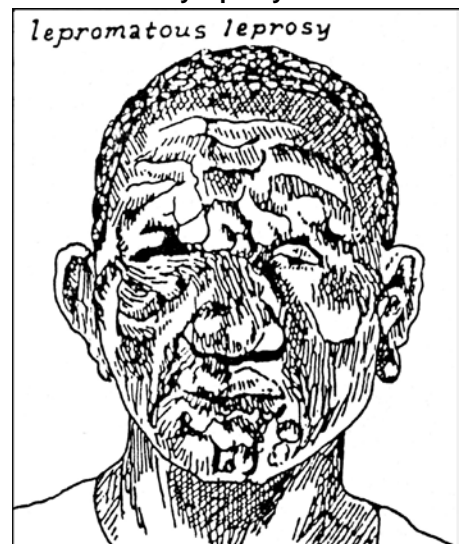


Multibacillary leprosy 6–25 lesions

3. Examination of all school children and village surveys are useful in finding early cases and preventing spread by early treatment. Leprosy is most commonly caught during childhood.

Deformities (of foot, hand, and face) shown in this section could have been prevented by early treatment.

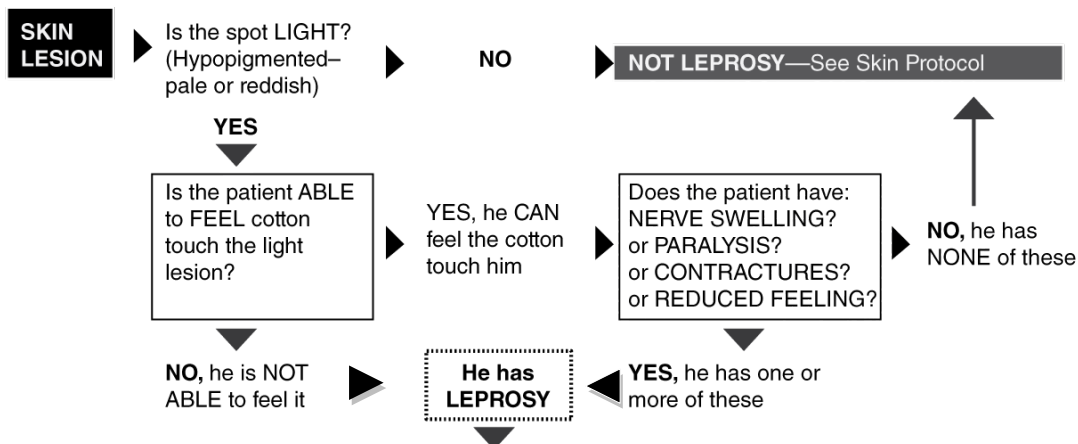
**PREVENT LEPROSY FROM SPREADING AND
FROM CAUSING DEFORMITIES BY FINDING
AND TREATING EARLY CASES**



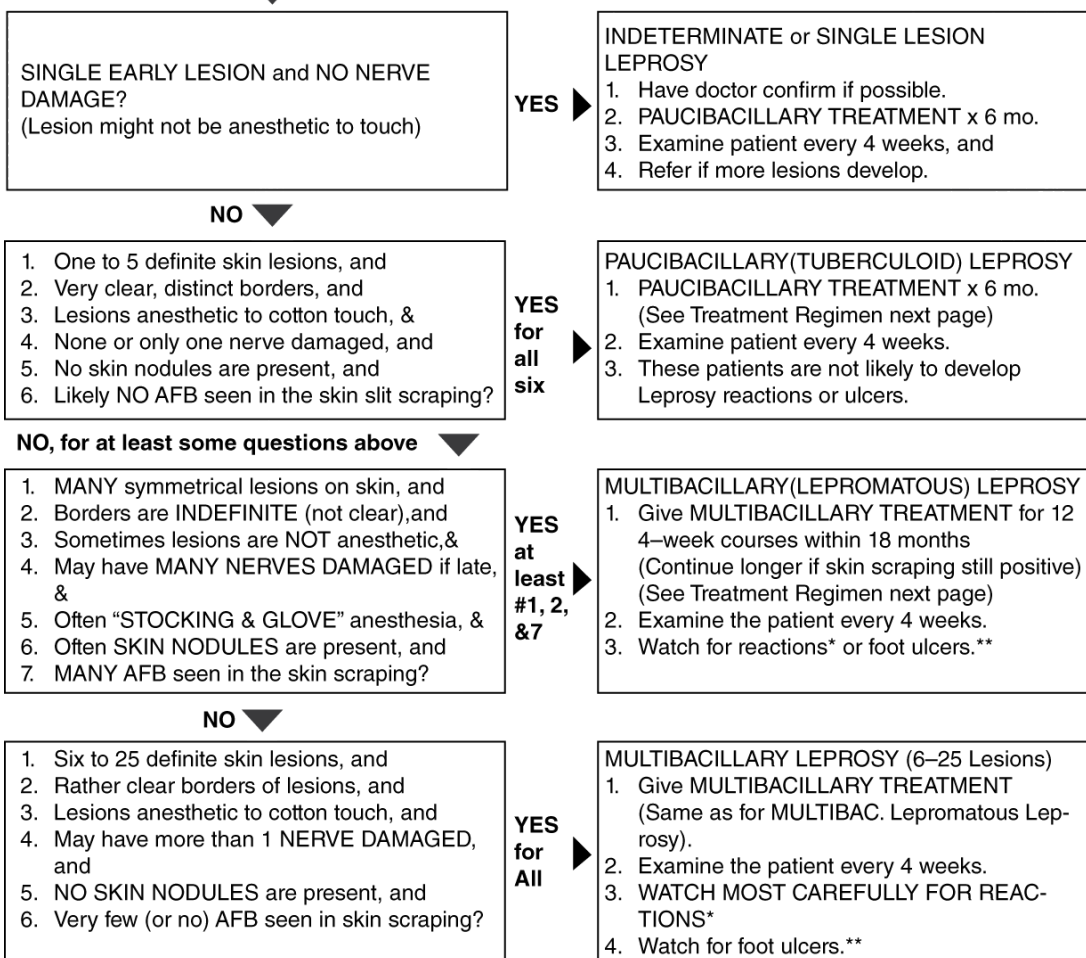
Such nodules will improve with treatment.

4. BCG vaccine may give mild protection to children against catching Leprosy.

PROTOCOL TO DIAGNOSE AND MANAGE LEPROSY



1. Do a SKIN SCRAPING for Acid Fast Bacilli (A.F.B.) in a patient with many skin lesions or nodules.
 2. EDUCATE THE PATIENT & RELATIVES and GAIN THEIR COOPERATION (See pages 115 -
 3. Treat the patient AT HOME in his OWN VILLAGE. Do NOT isolate him.
 4. The patient should STAY WITH HIS FAMILY and CHILDREN. Examine the family to find any other cases.
- Next DETERMINE the TYPE of LEPROSY:



*For instructions for reversal and ENL reactions see pg. 116. For drug reactions, see pg. 133.

**Patients with foot ulcers must have a plaster cast and not step on the foot until the foot is completely healed. (The cast prevents them from walking on the ulcer.)

Paucibacillary Therapy

The medicine to carry comes in a blister pack with just the correct amount for both Paucibacillary and Indeterminate leprosy. The patient needs 6 treatments of 4 weeks each, over 6 to 9 months. Remember to check for reversal (pg. 116) and drug reactions (pg. 133) every visit.

Adult

1. During the monthly visit: **100 mg dapsone** (one tablet) and **600 mg rifampicin**. Watch the patient swallow these. This is supervised therapy.
2. Give dapsone 100 mg, 27 tablets to carry—must take 1 daily.
3. See patient again in exactly 4 weeks.

Children

Take the **same drugs** in the **same way**, except **lower doses**:

- 4–7 yrs: **Dapsone 25 mg** and **rifampin 300 mg**--swallow in clinic, and
 Dapsone 25 mg, 27 tablets to carry—take 1 daily at home.
- 8–14 yrs: **Dapsone 50 mg** and **rifampin 450 mg**--take in clinic, and
 Dapsone 50 mg,—27 tablets to carry--take 1 daily at home.

Over 15 yrs: Adult doses

See patient again in exactly 4 weeks. Discharge from treatment after 6 cycles.

Multibacillary Therapy

The medicine to carry comes in a blister pack with just the correct amount, and is the same for all multibacillary patients. The patient needs 12 treatments of 4 weeks each over 12 to 18 months. Remember to check for reversal and ENL reactions (pg.116) and drug reactions (pg. 133) every visit.

Adult

1. During the monthly visit give the patient:
 - 100 mg dapsone
 - 600 mg rifampicin
 - 300 mg clofazimine
 - Watch the patient swallow all of these; this is supervised therapy.
2. Then give the patient a blister pack to carry with:
 - Dapsone 100 mg, 27 tablets to carry home—take 1 tablet daily.
 - Clofazimine 50 mg caps, 27 to carry home—take 1 daily.
3. See the patient again in exactly 4 weeks. Treat for 12 such cycles.

Children

Take the same drugs in the same way, except lower doses.

4–7 yrs: Dapsone 25 mg, rifampin 300 mg, and clofazamine 100 mg swallowed supervised on visit, and dapsone 25 mg daily for 27 days to carry, and clofazamine 50 mg twice a week (7 doses).

8–14 yrs: Dapsone 50 mg, rifampicin 300 mg, and clofazamine 200 mg swallowed supervised on visit, and dapsone 50 mg daily for 27 days to carry, and clofazamine 50 mg twice a week (7 doses)

Over 15 yrs: Adult doses

See the patient again in exactly 4 weeks. **Discharge from treatment after 12 cycles.**

For further leprosy information, see the excellent Liberian *Manual for Tuberculosis and Leprosy Control*.

**EARLY, ADEQUATE, AND REGULAR TREATMENT PLUS COMMUNITY
EDUCATION ARE THE KEYS TO CONTROLLING LEPROSY.**

TUBERCULOSIS

Cause

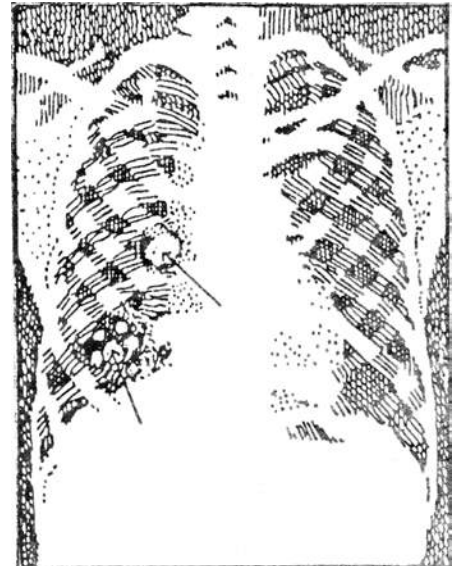
Tuberculosis (TB) is caused by rod-shaped, acid-fast bacteria called *Mycobacterium tuberculosis*. They are very much like the bacilli that cause leprosy.

Epidemiology

- **RESERVOIR**—Mostly **humans** are the reservoir (although cow and bird TB can also be caught by people).
- **TRANSMISSION**—Most usually by the **respiratory route** (droplet-spread) from coughing patients usually living or working in the same room or building.
- **DEGREE OF CONTAGION** is **mild**—It is **more contagious than Leprosy** but much **less contagious than measles** or **common colds**.
- **AGE AND HEALTH**—**Children** less than 5 years, **old people**, and **ill people** (especially people ill with **AIDS** or **diabetes**) and **malnourished people** develop TB much more easily.

Types

- **“CHILDHOOD”** or **PRIMARY TUBERCULOSIS**—Usually develops 4–12 weeks after a person is first exposed heavily enough and long enough to someone with TB. It usually occurs in the lung and may cause a cough and fever resembling influenza or a severe cold and lasting for a few weeks. The body of a healthy person then usually destroys the invaders (although a few of the bacteria may remain alive but inactive), and controls the disease without further damage, and the person usually never realizes that he had TB. The patient’s TB skin test becomes positive and his lung slowly develops calcified spots where the disease was. However, in small children, or malnourished, ill or weak people, the body may not be able to control this childhood-type infection—it may spread, causing miliary TB, TB meningitis, adult-type pulmonary TB, or other complications.
- **PULMONARY TUBERCULOSIS (ADULT TYPE** or **SECONDARY TB)**—Pulmonary TB develops after a person who previously had “childhood” TB becomes heavily infected a second time. This second infection may be from:
 - Another person with TB, or
 - From TB bacilli from his own childhood-type or primary infection, which his body defenses have surrounded and controlled, but not completely



Healed primary TB with calcified spot in right lower lung and calcified hilar lymph nodes (arrows)

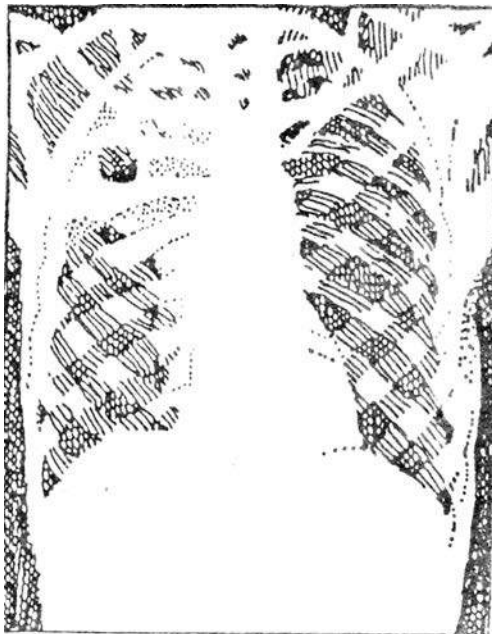
destroyed. When the person's immune system becomes weak from some cause such as AIDS or another serious illness, TB bacteria may break through the body defenses and spread in the lungs, causing pulmonary TB.

Pulmonary TB usually first develops in the upper (apical) part of the lungs.

S—

Pulmonary TB (“Adult” or Secondary” TB) **is the illness we think of when we say a person has TB.** It often starts gradually with a cough and mild fever. Other common symptoms soon develop, such as:

- Chronic cough, either dry or producing sputum
 - Weight loss (emaciation)
 - Lack of appetite (anorexia)
 - Failure to gain weight in children
 - Night sweats and fevers
 - Blood-streaking in the sputum
 - Chest pain
 - Increased pulse rate
- **COURSE** of the illness—Pulmonary TB **usually occurs mostly in the upper (apical) part of the lungs** and often slowly becomes more severe. It gradually destroys lung tissue and causes the development of lung cavities.



Chest X-ray showing a cavity and infiltrate in the right upper lung from TB.

The patient coughs, runs fevers, has a poor appetite, and loses weight. Destruction of blood vessels in the lung causes hemoptysis (coughing up blood). Without treatment many pulmonary TB cases slowly become worse over a period of months or years with temporary periods of slight improvement, and many finally die. Some may even heal slowly without medication. A few become worse rapidly and die within a few weeks or months. But with proper treatment most recover, unless they also have some other serious illness such as HIV or diabetes. Patients with diabetes or HIV develop TB easily and require diabetic or HIV treatment along with the TB medicines.

TUBERCULOSIS IN AN INFANT OR CHILD—TB may develop in the lung of a child and cause the same symptoms that pulmonary TB does in an adult, but it frequently causes entirely different symptoms with no cough being present. Such children are often treated for malaria, typhoid, kwashiorkor, or other illnesses

and when they fail to improve, their true cause of death from Tuberculosis is never suspected.

In children, TB frequently causes one of the following four types of illnesses:

(From *The Child in the Health Center*, LKN, King)

- **LOSING WEIGHT**—The child does not gain weight and may develop Kwashiorkor
- **COUGH** or wheezing for more than 1 month
- **FEVER** that may either occur every day or come and go for many weeks
- **CHRONICALLY ILL**—with no good explanation for the cause of illness. Such children are irritable, do not want to run about and play, and have a poor appetite. Their parents may even believe the child has been “witched.”

TB in children often also may have one of the following characteristics or patterns (but less often than the four above):

- It often **starts to develop soon after measles**. Think of TB when a child who has had measles is not doing better after one month.
- It may cause **swollen, draining lymph nodes of the neck** (i.e., **scrofula**, which is now also called **tuberculous cervical lymphadenitis**).
- It may cause slowly developing **abdominal pain and swelling**—(**tuberculous peritonitis**) usually with some fever.
- It may cause **tuberculous meningitis**. (NOTE: it is the health worker’s responsibility to recognize and immediately refer any type of meningitis. It is the doctor’s responsibility to decide what type of meningitis it is, and to treat it correctly.)

GUIDING PRINCIPLE

Any malnourished child not improving with proper treatment, or any child with a chronic fever not improving with other treatment = child who has TB unless proven otherwise. (Send to the doctor for diagnosis.)

A—Diagnosing TB

Since TB causes many forms of illness that are much like other illnesses, it is necessary to always **think of the possibility of the illness being TB with any of the different possible symptoms or whenever the patient does not improve when treated for another illness.**

How to Diagnose Tuberculosis

Whenever you are wondering whether a patient might have TB, check it out, as follows:

1. **Examine the protocols** below to find if you can make a **clinical diagnosis of TB** (this will be only a **possible** or **probable diagnosis**.), then

2. Prove or confirm the clinical (probable) diagnosis by using the diagnostic tools listed on the next page.

Protocols for the Clinical Diagnosis of Tuberculosis

Diagnose TB clinically in any adult or child with:

- A **chronic cough** lasting more than one month or cough with blood
- **Chronic (and unexplained) fever** lasting more than 1 month
- **Pneumonia that will not cure** with amoxicillin or erythromycin
- **Painless, enlarged, draining cervical lymph nodes** (i.e., scrofula)
- **Ascites with a mildly tender abdomen** (and sometimes fevers)

Also diagnose TB clinically in any child with:

- Kwashiorkor or marasmus with a chronic fever, or
- Kwashiorkor or marasmus that is not improving after 2 weeks of good nutrition (such children may have TB without even coughing)
- Failure to start doing well again within 1 month after measles (even though being given enough food with protein)
- Any chronic unexplained illness that is lasting more than 1 month

Diagnostic Tools for Proving or Confirming the Clinical Diagnosis

A clinical diagnosis is a probable diagnosis; positive sputum smears prove it, or a positive chest X-ray if a doctor reads it and agrees it is TB.

- **Sputum smears for acid-fast bacilli**—these should be used for all TB patients who can produce sputum. It gives a **definite diagnosis when acid-fast bacilli are found**, and is very inexpensive. The sputum can be sent, rather than the patient needing to travel a long distance to the hospital. In patients suspected of having TB who are coughing collect 3 sputum samples:
 - Immediate
 - Overnight (early morning)
 - Up to 24 hours later

Send the sputum samples (or slides made from them) to a County TB Focal Person or hospital or health center laboratory that can examine them for acid-fast bacilli.

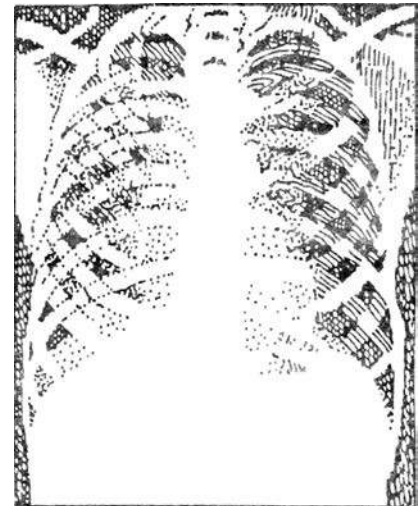
- **When the patient cannot produce sputum, send the patient to the hospital for chest X-ray** (and TB skin test if available). If the patient produces sputum and it is negative but symptoms strongly suggest TB, repeat the sputum smears. If the hospital is actually very near, send him for a chest x-ray in addition to the repeat sputum smears.

P—

- **DRUGS—Modern medications can cure TB.**
 - The drugs the National TB Control Program uses for treating TB are isoniazid (H), rifampicin (R), pyrazinamide (Z), and ethambutol (E). These medicines are effective. They are given in combination tablets called DOTS

(directly observed treatment, short-course). Streptomycin (S) is also used in combination with the DOTS for the initial phase in retreatment cases.

- The DOTS are given to all patients in the intensive initial phase of treatment. **If the DOTS are not taken daily for 2 months, the patient's bacilli may become resistant.** Therefore, they are **given with supervision either in the treatment unit, or by a DOTS Provider for 2 months.** Then the new patient whose sputum has become negative is placed on the tablet which contains both ethambutol and isoniazid (EH) to be taken daily, and is given 4 weeks medication to take at home with each clinic visit for 4 more months. (NOTE: Any patient being retreated, relapsed, or with sputum still positive continues on the DOTS under supervision for another 6 months.)
- **EDUCATION—Gaining the understanding and cooperation of the patient and his relatives is one of the most important parts of the management.** Take time to explain TB and its treatment to them. Only if they understand and are cooperating with you will you succeed in curing the patient. Teach them that:
 - **TB is a serious illness, but good medicines are available to cure it.**
 - **To get well the patient must take good medicines put together in one tablet every day.**
 - If untreated, or treated incorrectly this illness may cause the patient's death and spread to other members of the family.
 - Treatment must continue for 6 months since TB improves slowly with treatment.
 - The relatives must agree to be responsible to bring the patient regularly each month for medicines and for check-up.
 - The new TB patient will need supervised treatment for the first 2 months. Then monthly clinic visits with medicines to carry for 4 more months.
 - All family members will need immediate checking:
 - For family members with symptoms, collect sputum samples and refer to begin treatment.
 - For family members without symptoms, explain the importance of early treatment if symptoms develop.
 - Check all children less than 6 years for a shoulder scar from BCG vaccine. If no shoulder scar and if the child has no symptoms and no findings suggestive of TB, give the child BCG.



X-ray of the chest of a TB patient improving with good treatment

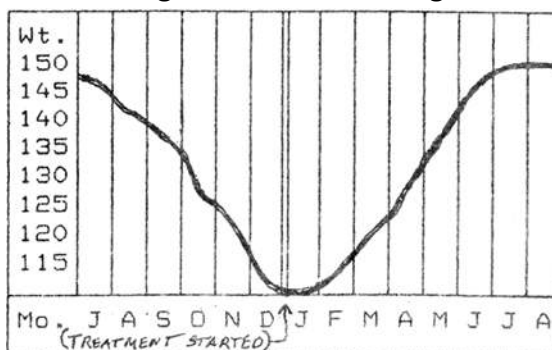
- For children exposed to a mother or very close family member with TB, give isoniazid (5 mg/kg) daily for 6 months.

■ **RECORDS**—Good records are very important for every proven case of TB. Send notification of a new case with patient information immediately to the County TB and Leprosy Focal Person (to be put in the County Case Index Register. The County TB and Leprosy Focal Person will provide you with record cards including an appointment card for the patient.

■ **MONTHLY CHECKING OF PATIENTS**—After completing supervised therapy, there are **three important things to check** to tell how the patient is doing: **amount of coughing, sputum at appropriate times, and weight.**

1) **AMOUNT OF COUGH**—Each month the cough should gradually improve. Refer the patient to the TB worker if cough really does not improve. (Remember that any person can sometimes get a cold and cough 1 to 3 weeks.)

2) **WEIGHT**—The patient should gain weight every month for the first 4–8 months after treatment is started, and then not lose any of the weight he has gained. If he loses more than 4 pounds after gaining, his TB may have become resistant. If weight loss continues, he will need further evaluation.



Weight graph of a recovering T.B. patient

3) **SPUTUM**—This will be repeated before discharge from the TB treatment unit. It should be collected again in the fifth month of total therapy and upon discharge, or sooner if the patient is losing weight, coughing more, or doing poorly, and examined for acid-fast bacilli. If the sputum is not yet negative after 6 months of treatment or if it again becomes positive after being negative at 2 months, the patient is probably drug-resistant. Send him with a copy of his record to the County TB Focal Person.



MILIARY TB—The small spots on the chest X-ray are infiltrates in the lung caused by TB, which has got into the blood and spread throughout the body. He may not even develop a cough.

Complications

■ **SPREAD TO OTHER ORGANS**—TB bacteria can spread from the lung to any part of the body, including the intestines, kidney, bones, and skin. The most serious types of spread are:

- 1) Spread to the whole body through the

blood (called miliary TB, which can cause death within 4 weeks), and
 2) TB meningitis, which can cause death within 2 weeks.

- HEMORRHAGE from the lung can be severe. Any patient coughing up much blood (not just little specks) must be sent immediately to the hospital.
- DEVELOPMENT OF DRUG-RESISTANCE—TB bacilli can become resistant to the drugs the patient is taking. This is a very serious complication. Remember that either a continually positive sputum or continued weight loss is a sign that such resistance has developed. Send the patient to the TB Control Worker for possible referral to the TB treatment unit for intensive supervised treatment with DOTS and injections of streptomycin. (Streptomycin is only for use with DOTS for retreatment of TB.)
- DRUG REACTIONS—Check the patient on every visit for possible drug reactions. If any of the serious reactions occur stop drugs immediately and send the patient to the TB Control Worker or the doctor. See the Drug Reaction Chart at the bottom of pg. 133.



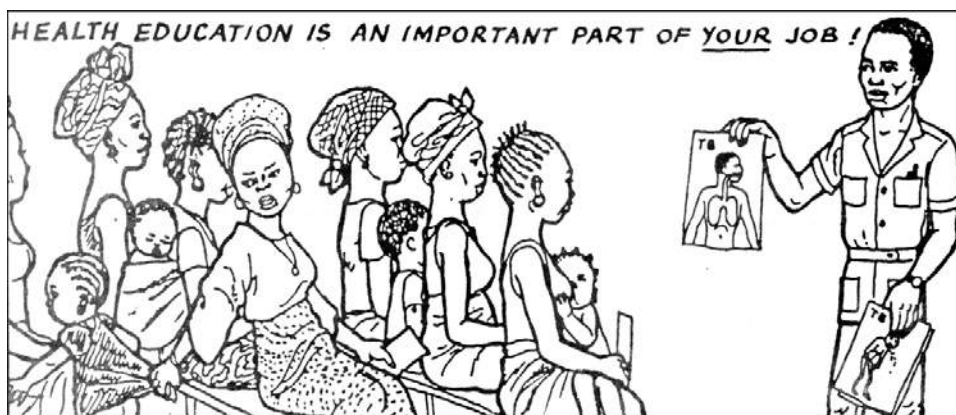
AVOID DRUG-RESISTANCE BY ALWAYS GIVING TB DRUGS IN CORRECT COMBINATIONS. NEVER GIVE 1 DRUG BY ITSELF.

Prevention of Tuberculosis (TB Control Program)

- **BCG VACCINATIONS**—Give BCG on the right upper arm. Vaccinate all infants and children from birth to 3 years of age with 1/10 cc (0.1 cc.) BCG intradermally (ID). This is the age group with the highest priority for receiving BCG vaccine to prevent TB. BCG vaccine certainly helps prevent serious complications of TB in these young children, but does not prevent all TB cases.
 - It is controversial whether to give BCG to older children or adults without BCG scars—check the current policy with the TB Control Program.
- **FIND AND TREAT ACTIVE CASES IN THE FAMILY**—A child with TB usually has caught it from an older family member with an active case. Find this older active case and treat the person to prevent further spread to other people.
- **USE NEIGHBORHOOD SURVEYS** to locate and treat other active cases.

- **EDUCATE APPROPRIATE GROUPS** concerning the cause, treatment, and prevention of TB, including:
 - School children
 - Families of TB patients
 - Mothers at prenatal and children’s clinics
 - Village leaders

WITH MASS BCG VACCINATION, PROPER TREATMENT OF ALL ACTIVE CASES AND HEALTH EDUCATION, TB CAN BE CONTROLLED—AND MANY LIVES SAVED. SUCH CONTROL REQUIRES THE DETERMINED AND DEDICATED PARTICIPATION OF ALL HEALTH PERSONNEL.



Tuberculosis and its Association with Other Illnesses

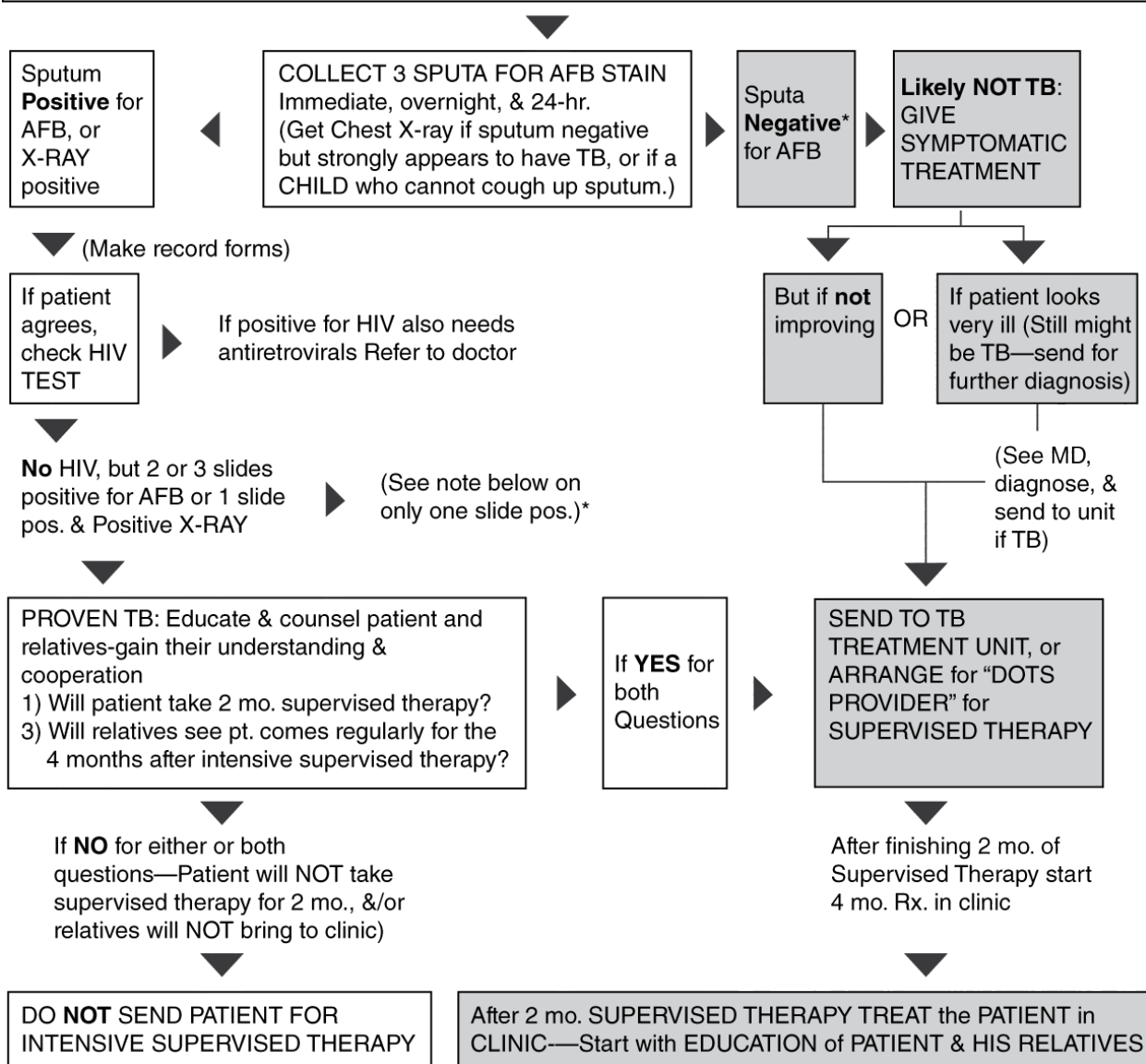
TB is quick to develop if the patient has any illness that decreases resistance to disease. Look for TB with such illnesses. Four such illnesses are:

- **HIV/AIDS**—HIV/AIDS patients very frequently develop TB. It is very difficult to cure TB if the patient’s immune system is working poorly from HIV. Advise all new TB patients to be tested for HIV. If HIV-positive, they will require treatment for HIV also. (See pg. 167–172.) **HIV is the most likely illness to be associated with TB.**
- **DIABETES**—Diabetic patients are quick to develop TB and hard to treat. Always check a new TB patient’s urine for sugar if possible. Diabetic TB patients need the doctor to get good control of the diabetes with medications while also treating TB; TB treatment will not work well without treating diabetes, and the diabetes treatment will not work without treating TB.
- **MEASLES**—A child not recovering well in 3–4 weeks from measles may be developing TB (or Kwashiorkor if not well-nourished).

- **KWASHIORKOR**—A malnourished child who does not improve in 2–3 weeks with sufficient calories and good high-protein food is likely to have TB.

PROTOCOL FOR THE DIAGNOSIS OF TUBERCULOSIS AND STARTING SUPERVISED TREATMENT

<p>DIAGNOSE TB CLINICALLY (Adult or child) IF:</p> <ol style="list-style-type: none"> 1) CHRONIC COUGH over 1 mo. or hemoptysis 2) CHRONIC (unexplained) FEVER over 1 mo. 3) PNEUMONIA which does not cure with Amoxicillin or Erythromycin 4) ASCITES with a mildly tender abdomen* 5) PAINLESS enlarged draining NECK NODES* 	<p>ALSO DIAGNOSE (SUSPECT) TB IN ANY CHILD* IF:</p> <ol style="list-style-type: none"> 1) KWASHIORKOR (PCM) with a CHRONIC FEVER 2) PCM NOT IMPROVING AFTER 2 WEEKS of GOOD FOOD 3) ALWAYS ILL for MORE THAN 1 MO. AFTER MEASLES 4) CHRONICALLY ILL CHILD—SICK OVER 1 month & NO OTHER EVIDENT REASON 5) PHLYCTENULAR CONJUNCTIVITIS is present
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*Only one of three sputum slides staining positive for acid-fast bacilli (AFB) is suspicious but not sufficient to make the diagnosis of TB. Patients with ascites or draining cervical nodes from TB

often have a negative sputum. Any child with TB who is not coughing also usually has a negative sputum. Many children will not cooperate and cough up sputum anyway. In such cases, where TB is highly suspected clinically but cannot be proved by sputum smear alone taken in the clinic, refer the patient to the hospital for X-ray. Draining cervical nodes are an exception and should be considered TB and treated without the necessity of referring. An alternative to X-ray with only 1 of 3 slides positive would be to repeat 3 sputa for AFB. Remember that paragonimiasis can also cause cough and blood-streaked sputum (see pg. 50 - 51).

Since TB develops more frequently in patients with HIV, it is good if the TB patient agrees to do a test for HIV. Discuss this privately with the TB patient, and strongly advise an HIV test.

PROTOCOL FOR THE MANAGEMENT OF TUBERCULOSIS— DRUG THERAPY

**WHEN A NEW PATIENT HAS A PROVEN DIAGNOSIS OF TUBERCULOSIS:
EDUCATE THE PATIENT & RELATIVES concerning TB and GAIN THEIR COOPERATION.**

- 1) They must know that TB can be cured, but it takes 6 months of continued treatment.
- 2) Unless treated correctly, TB can kill the patient and spread to other family members.

MAKE OUT RECORDS, which include:

- TB clinic card
- Appointment card
- Notification to TB Control

CHECK ALL FAMILY CONTACTS:

Check sputa (or send to hospital) any relatives who have symptoms of TB. If available, place PPD skin tests on all & give BCG to all PPD-negative relatives. If the mother or a very close family member has TB, give 6 months of Isoniazid (5 mg/kg) daily to her baby or small child even if no symptoms & negative Mantoux

SEND PATIENT for SUPERVISED THERAPY in UNIT (or “DOTS PROVIDER”) for 2 months

DOTS for ADULTS & CHILDREN >29 kg:

Rifampicin 150 mg. per tablet, with Isoniazid 75 mg. Pyrazinamid 400 mg. and Ethambutol 275 mg--all in 1 single tab
Patient >54 kg.-4 tabs daily
30-39 kg-2 tabs, 40-54 kg-3 tabs daily

CHILDREN take a different combination tab.:

- 1) Rifampicin 60 mg. per tablet
 - 2) Isoniazid 30 mg.
 - 3) Pyrazinamid 150 mg. (No Ethambutol)
- Wt. up to 7 kg—1 tab/day x 2 mo, 8–9 kg—1½ tabs daily
10–14 kg—2 tabs daily, 15–18 kg—3 tabs daily
19–24 kg—4 tabs daily, 25–29 kg—5 tabs daily x 2 mo.

NO, Adult patient
Still sputum positive
Continue Supervised Therapy x 1 more mo

If a **NEW patient** who has improved & sputum is negative after 2 months of INITIAL THERAPY, follow with **EXTENDED DRUG REGIMEN** in clinic for 4 months—adults and children

NO, Child who has not improved or sputum still positive
Continue Supervised Therapy x 1 more mo

NEW Adult patient has completed Supervised Therapy

NEW Child patient has completed Supervised Therapy

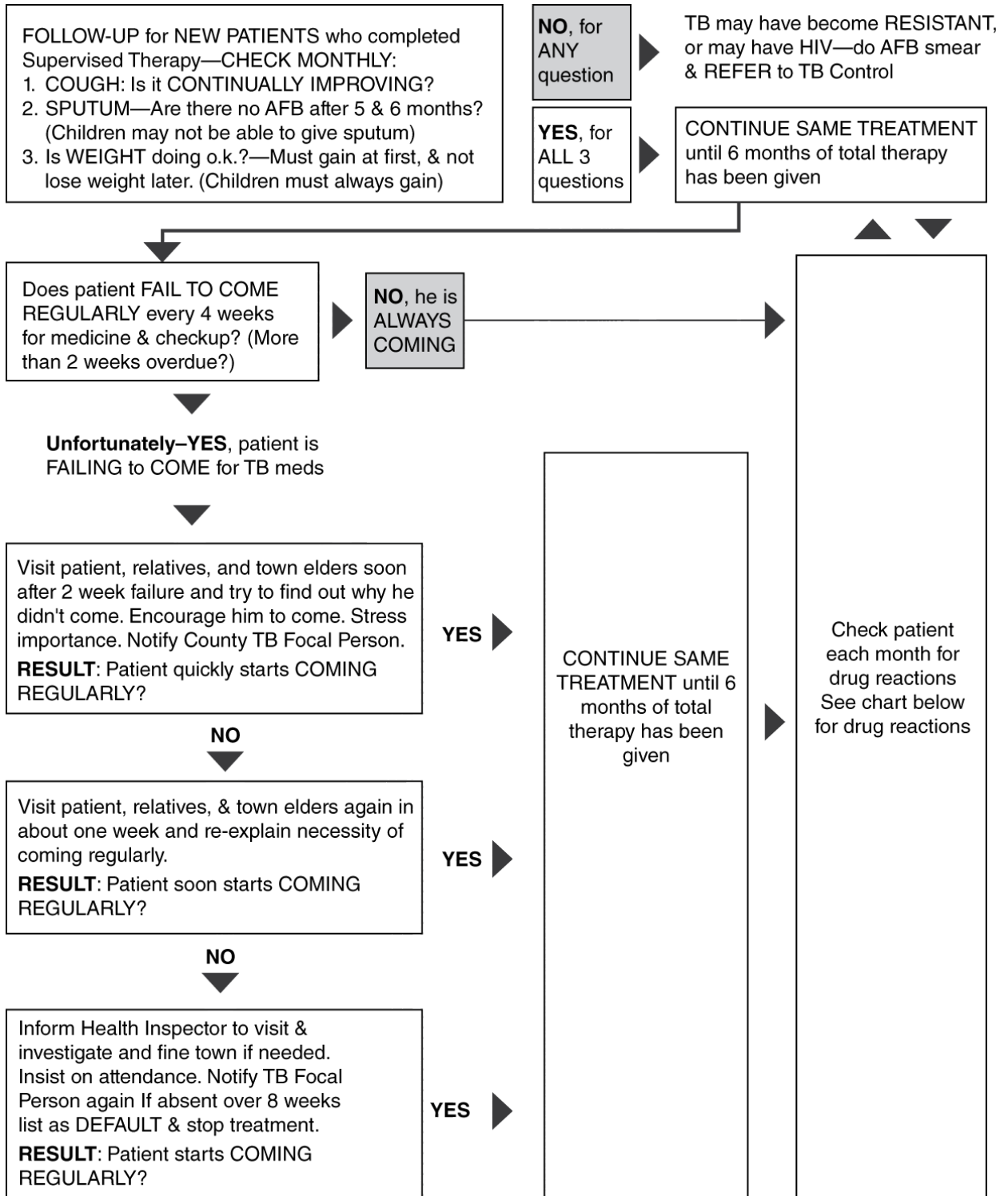
Treat **adult** for 4 more monthly visits in clinic. Check cough & wt. & check for any drug reactions. In 5th month & upon discharge repeat sputum—if positive, list as **FAILED** & refer for retreatment. But if doing o.k., each month give blister pack with 30 days therapy with combined Ethambutol 400 mg. & Isoniazid 150 mg. tabs—to take 2 daily.

Do the same for children for 4 monthly visits as for adults, **EXCEPT** give a different tablet in monthly blister packs--Rifampin 60 mg. & Isoniazid 30 mg. per tablet--give by weight:
7 kg-1 tab daily, 8-9 kg-1.5 tab daily, 10-14 kg-2 daily
15-18 kg-3 daily, 19-24 kg-4 daily, 25-29 kg.-5 daily
Over 29 kg.--treat as adult but adjust dose.

NOTE: In the middle of rainy season, when transportation is very difficult in rural areas, it may be necessary to give 8 weeks of medicine during the 4 months of self-administered therapy instead of only the usual 4 weeks, which is given after each visit to the clinic.

Pregnant and breastfeeding women: take standard therapy (except **no streptomycin if pregnant**).

PROTOCOL FOR MANAGEMENT OF TUBERCULOSIS—FOLLOW-UP IN CLINIC



TB and Leprosy Drug Reactions

Drug Reactions: TB and Leprosy	Drugs that May Cause	Management
Minor Reactions		
Brown discoloration of skin lesions in Leprosy	Clofazamine	Reassurance, discoloration is not harmful
Anorexia, nausea, abdominal pain	Clofazamine	Give meds at bedtime
Joint pains	Pyrazinamid	Aspirin decreases pain
Burning sensation of the feet	Isoniazid	Pyridoxine 100 mg daily
Orange urine, nausea, abdominal pain	Rifampicin	Reassurance, give meds in 2 divided doses 1 hour apart
Major (Serious) Reactions		
Itching of skin and skin rash	Dapsone or Streptomycin	Stop dapsone and refer
Dizziness or decreased hearing	Streptomycin	Stop strep., ask TB Control what to give
Jaundice (exclude non-drug causes)	Isoniazid, Rifampicin, Pyrazinamid, or Dapsone	Stop treatment and refer immediately
Vomiting and confusion (suggesting acute liver failure)	Isoniazid, Rifampicin, or Pyrazinamid	Stop treatment and refer immediately
Shock, purpura, acute renal failure, hemolytic anemia	Rifampicin	Stop rifampicin and refer immediately
Seizure	Isoniazid	Take pyridoxine to prevent
Visual impairment	Ethambutol	Stop ethambutol and refer

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CONGESTIVE HEART FAILURE (CHF OR CARDIAC DECOMPENSATION)

Causes:

CHF can be caused by anything that weakens or damages the heart muscle or causes the heart to pump blood poorly. Common West African causes are:

- Hypertension
- Rheumatic fever (from streptococcal infection) with heart valve damage
- Severe anemia
- Heart muscle damage from viral infection
- Kidney failure

Atherosclerosis is the most common cause in Europe and the U.S., causing damage from myocardial infarcts and ischemia, but not usually in rural Liberians--atherosclerosis is usually found only in West Africans eating a European diet, not getting much exercise (such as having a job sitting behind a desk in Monrovia), having diabetes, or smoking. Other causes of CHF in Liberia are: hyperthyroidism, atrial fibrillation, alcoholism, and pericarditis.

Epidemiology

CHF is found mostly in the elderly, although:

- Infants and children with anemia or congenital heart defects, and
- Younger adults with damaged heart valves from rheumatic fever, or heart muscle damage from viral infections, or hypertension may also develop it.

Types

The two main types are **Systolic CHF** in which the heart cannot beat as strongly as needed due to heart muscle damage, and **Diastolic CHF** in which the ventricles do not fill well due to heart muscle thickness and stiffness, usually from untreated hypertension or aortic stenosis, but the heartbeat is not weak. The two types are treated differently; an **echocardiogram** (needs an ultrasound machine) can tell the difference (and sometimes the cause).

Clinical Illness

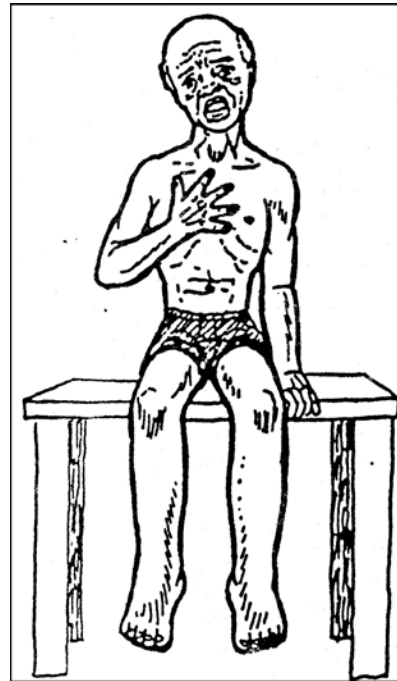
CHF often starts gradually with shortness-of-breath after exercise or work (dyspnea on exertion). The patient later notices mild ankle swelling and a mild cough in the morning. Shortness-of-breath and ankle edema gradually become worse and the patient begins to wake up at night feeling that he must sit up to breathe (orthopnea). Ascites may develop. Finally the patient breathes with difficulty (has dyspnea) even while sitting at rest. In this final state, as pulmonary (lung) edema increases—he becomes more dyspneic and coughs up bubbly, pink-colored sputum and becomes cyanotic. The patient who has reached this stage will soon die unless he receives proper treatment quickly. His cough and edema increase, his lungs develop rales, his liver becomes enlarged, and his neck veins become distended.

S—Ask:

- When did these symptoms start?
- Is he short-of breath? coughing?
- Is he having swollen ankles?
- Does he have to sit up at night to be able to breathe properly?

O—

- Take the temperature, BP, pulse and weight.
- Look at the conjunctival color to detect anemia or cyanosis.
- Look at the neck veins to detect distention with the patient sitting up at an angle of 45°.
- Listen to the lungs for rales.
- Listen to the heart for murmurs and rhythm, and to check the apical pulse rate.
- Check the abdomen for an enlarged liver or ascites.
- Check the ankles and lower legs for edema.



Swollen ankles and shortness-of-breath are signs of CHF

A—

DISTENDED NECK VEINS + EDEMA = CONGESTIVE HEART FAILURE (usually)

- If some of the OTHER SYMPTOMS and signs described previously are also present (shortness-of-breath, orthopnea, cough, large liver, rales, or ascites), your diagnosis is even more certain.
- **ANEMIA** may cause CHF, or make it more severe. If anemia is also present, send sufficient relatives to the hospital with the patient to give 2 units of blood. **Caution for hospital personnel: 1) Give only the sedimented red cells and not the plasma and 2) Give the red cells very slowly.**

FEVER—Do not mistake pneumonia for CHF. Both may have shortness-of-breath with rales, and difficult rapid breathing. But CHF has edema and no fever, while pneumonia has fever, but no edema, and pneumonia also usually has more rapid breathing. But patients with CHF develop pneumonia easily. Therefore, if a patient with ankle edema and distended neck veins also has fever, rales, cough and rapid breathing, he must be treated both for CHF and pneumonia. Note that severe pneumonia can also cause CHF to develop.

P—Management

Health workers have **four duties** in managing CHF:

- The **first duty** of the health worker in the clinic for a patient with CHF is to **correctly diagnose and refer the patient**, who will be placed on medications and have his dosage regulated in the hospital. Preferably refer to a doctor with an **ultrasound** for an **echocardiogram** with estimation of the systolic ejection fraction (of course as well as other tests).
- The **second duty** of the health worker is to **recognize whether anemia is present** in the patient with CHF, and if so to also **send blood donors** to the hospital.
- The **third duty** of the health worker is to **teach the patient and his relatives about CHF and gain their cooperation**. Only if all understand and cooperate will the treatment be successful. Begin teaching before the patient leaves for the hospital and continue with the first follow-up visit. See the Protocol for the Management of CHF on pg. 139. (NOTE: Even with good treatment, most patients gradually worsen and die perhaps in 5 years instead of a few months. But if hyperthyroidism or anemia is the cause correcting these may result in a permanent cure.)
- The **fourth duty** of the health worker is to **give proper follow-up supervision and treatment**. Only properly trained health workers should give follow-up care. The usual drugs are:
 - 1) **A Diuretic--Furosemide** is best if significant edema or dyspnea is present—start with 20 or 40 mg daily, or give **hydrochlorothiazide** (or other diuretic) 25 mg daily (or sometimes 50 mg if symptoms are more severe).*
 - 2) **Lisinopril** (or other **ACE inhibitor**)—1 tablet daily is usually also helpful. (Especially helpful if the patient is also hypertensive as ACE inhibitors decrease BP.) ACE inhibitors may not be available, and in 10% of patients may cause a cough and need to be stopped.*
 - 3) A **beta-blocker (metoprolol succinate or atenolol)** is usually helpful in diastolic CHF—do not use with dyspnea at rest or dyspnea with mild exertion.
 - 4) **Digoxin**—0.125 tablets—In systolic CHF, digoxin strengthens the heart muscle and slows down the heart rate so that it can pump better. Use digoxin only if the systolic ejection fraction is less than 30% (needs echocardiogram to diagnose). Some patients do all right, or better, on only an ACE inhibitor or diuretic—these should be tried first. If digoxin is added, usually only 0.125 mg daily is given first (0.25 mg maximum). But watch for signs of too little or too much digoxin as outlined in the protocol. Digoxin is not useful with diastolic CHF.
 - 5) Hypertension, if present, must also be treated sufficiently. (NOTE: Diuretics, ACE inhibitors, and beta-blockers also treat hypertension as well as CHF.)

Prevention

CHF, generally speaking, is hard to prevent. However, some of the causes are preventable.

Early detection and treatment of streptococcal sore throats will prevent heart valve damage from rheumatic fever. The B vitamins in brown rice may also help to prevent CHF from Beri-beri.** And early detection of anemia and of hypertension and proper treatment will prevent CHF from one of these causes.

Atherosclerosis can be prevented by not eating a Western diet, getting sufficient exercise, not smoking, and not becoming overweight. Exercise helps keep the heart muscle and arteries in good condition.

When CHF does occur, detecting it early and gaining the cooperation of the patient and his relatives for life-long regular medications will prevent needless, early deaths from this illness.

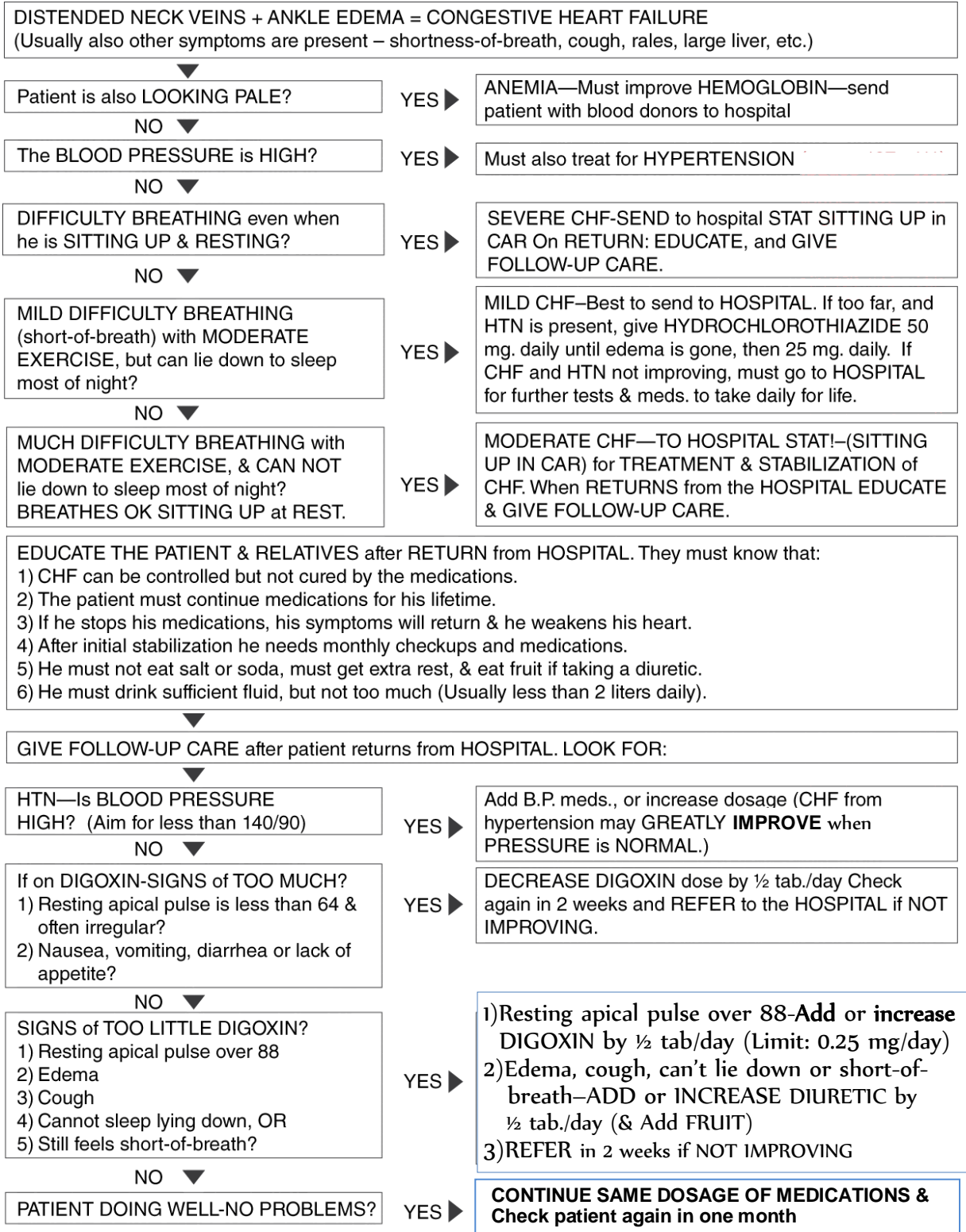


Distended neck veins when sitting at 45° are a sign of CHF.

NOTES: *Diuretics take water, potassium, and salt out of the body through the urine. The loss of water and salt greatly helps hypertension and CHF, but the loss of potassium can be very dangerous—with too low potassium, the muscles become weak and the heart can stop. Add some fruit each day, such as a banana or orange, to prevent this. However, if the patient is also taking an ACE inhibitor, since ACE inhibitors raise potassium, the additional fruit may not be necessary.

**Polishing rice removes the brown bran and makes it look very nice, but also removes the B-vitamins which are in the brown bran, and are necessary for life. When rice-polishers were first brought to southeast Asia around 1896 and many people started eating white rice, many became ill with B-1 (thiamine) deficiency (known as Beri-beri), and developed swollen ankles and congestive heart failure. The pigs who were fed the bran polished off of the rice became very healthy. The B-vitamin-deficient people had to be fed with an extract from the bran containing the B-vitamins to recover. Polished rice sold in the U.S. is now required by law to have B-vitamins added to it to prevent Beri-beri and heart failure and other illnesses.

PROTOCOL FOR THE MANAGEMENT OF CONGESTIVE HEART FAILURE



Atrial Fibrillation (AF) is an irregular and often rapid heart rate that commonly causes poor blood flow to the body. The heart's two upper chambers (the atria) beat irregularly and quiver instead of contracting and pumping blood well. The ventricles do contract and pump blood, but in an irregular rhythm and often rather rapidly, because they are not receiving a regular signal from the atria.

S & O--The person has heart palpitations, complains “My heart is beating,” and often feels short-of-breath and weak.

A--On auscultation the very irregular (described as “irregular-irregular) heartbeat is evident. An EKG will have a typical AF tracing.

P—Send the patient to the doctor for treatment. Occasionally a cause can be found (such as hyperthyroidism) and corrected. Some medications can slow the heart rate. Electrical cardioversion is often used in the U.S., but may not be successful in maintaining a normal rhythm. The greatest problem is that blood clots may form on the atrial walls, and if a clot breaks loose and is carried to the brain, it causes a stroke. To prevent strokes from AF in the U.S., coumadin is often given to thin the blood (not expensive, but requires monthly lab. monitoring to prevent hemorrhaging). Rivaroxaban can be used without lab. monitoring, but is very expensive, can also cause hemorrhaging, and is not available in Liberia. The best we can do now without monitoring is give low-dose aspirin (80 – 100 mg.) daily, which is much less effective, but will prevent a few strokes.

Use the rest of this page for notes such as medication changes.

HYPERTENSION—THE “INVISIBLE KILLER”

Definition

Hypertension is that condition in which a person’s **Blood Pressure** is usually higher than normal, i.e., above 140/90.

Severity —Hypertension can be mild, moderate, or severe. There are no definite dividing points, but BP can be divided (U.S. JNC-7 classification) as follows:

- Normal: <120 systolic & <80 diastolic
- Pre-hypertension: 120/80 –139/89--not as low as desirable, and a little more likely to cause problems, but not high enough to be true hypertension.
- Hypertension-Class 1: 140/90–159/99 (mild-to-moderate)
- Hypertension-Class 2: 160/100 or greater (moderate-to-severe)
- We might add that a pressure greater than 180/120 is definitely severe, has the greatest risk, and requires immediate attention .

Epidemiology and Cause

The number of people affected is large. A rough estimate based on country experience is that perhaps at least 20% of those older than age 40 in Liberia have some degree of hypertension.

- **AGE**—Hypertension rarely develops in childhood (except with nephrosis or nephritis). It can occur in young adults, but it **most often occurs in adults older than 40**.
- **CAUSES**—Hypertension has many causes, but in most of the cases a definite cause cannot be found. These cases with no evident cause are called essential hypertension. Some known causes of hypertension are:
 - **Kidney damage** from pyelonephritis, infections caused by schistosomiasis, or glomerulonephritis, etc.
 - Conditions that cause **too much secretion of adrenal hormones**, such as emotional stress or Cushing’s disease.
 - **Obesity**—the overweight person usually has a higher BP
 - **Heredity**
 - **Eating much salt** or soda also raises the BP.

S—

Hypertension is often an invisible, unrecognized disease. The person may not even know that he is ill until he develops a severe complication such as a stroke and dies. However, sometimes there are symptoms that may warn a person that everything is not all right. These symptoms are listed below:

- Headache is a frequent symptom. Sometimes the headache occurs in the early morning and is most severe at the back of the head. Other types of chronic headache may also occur.
- Light-headedness or dizziness is also frequent.
- Nosebleeds may also occur.

WITH CHRONIC HEADACHES, NOSEBLEEDS OR DIZZINESS
THINK OF HYPERTENSION AND CHECK THE BLOOD PRESSURE

- **Complications**—Hypertension damages the arteries. Damaged arteries damage the organs they supply. Almost all organs are affected, but **most complications and deaths come from damage to three organs: the brain, heart, and kidneys.**

- **BRAIN**—The most severe damage is a stroke from an artery breaking and bleeding into the brain, or developing plaque and a clot plugging the artery, stopping blood flow to a part of the brain. With damage to small arterioles of the brain small areas of damage occur and the patient may develop personality changes, inability to think clearly, or even seizures.
- **HEART**—The heart becomes tired and weak from the constant work of pumping blood up to such a high pressure, the muscles of the ventricles become thick and stiff, and diastolic CHF often develops. The high pressure may also damage the arteries supplying blood to the heart muscle and help to cause a myocardial infarct (heart attack).
- **KIDNEY DAMAGE** from hypertension can be detected by finding protein in the urine, or by checking the level of the waste products urea and creatinine in the blood and finding them significantly elevated.

WHENEVER YOU DIAGNOSE STROKE, CONGESTIVE HEART FAILURE,
OR KIDNEY DAMAGE, TAKE THE BP TO CHECK FOR HYPERTENSION.

- **UNTREATED HYPERTENSION**

- Hypertension shortens life, even mild hypertension.
- A mild case of hypertension without treatment may develop into a severe case of hypertension.
- The higher the BP, the greater the chance that the person will die soon. With severe hypertension with cerebral symptoms the untreated patient will usually die in 2 years or less.

O—

- With a complaint of headache, dizziness or nosebleed suspect the possibility of hypertension and check the BP.
- Also check the BP with stroke, CHF, or kidney damage.

A— Early diagnosis of hypertension, however, does not depend upon checking the BP of patients with symptoms or complications.

DIAGNOSIS OF HYPERTENSION DEPENDS ON THE SCREENING
OF EVERY ADULT PATIENT BY TAKING HIS BP ONCE EACH YEAR.

P—

- **PATIENT EDUCATION**—Treatment is for the patient’s lifetime, and success depends upon gaining the cooperation of the patient and his relatives. Call the relatives and carefully explain the situation to them and the patient. Explain:
 - Hypertension shortens life, but continuing to take correct medications helps to lengthen life.
 - Like hunger, hypertension can be successfully controlled but not cured. (If a person stops eating, he will soon be hungry again. If a patient with hypertension stops taking his medicines, his BP soon goes up again.)
 - Medicines must be taken regularly for the patient’s whole lifetime.
 - It is necessary to find what medicines work best for each patient. With moderate or severe hypertension it is often necessary for this to be done at the hospital.
 - Thereafter the patient will need to come to the clinic monthly to check his blood pressure and receive more medicine (or come every 2 months if well-controlled).
 - Usually the patient must not eat salt, soda, or salty things (such as Maggi® cubes). But with much sweating, a little salt is needed.
- **TREATMENT WITH MEDICATIONS**—First, determine the severity:
 - HYPERTENSION Stage 1—from 140 to 159 systolic and from 90 to 99 diastolic:
 - Give hydrochlorothiazide (**HCTZ**) 25 mg daily (also eat fruit). If after 2 weeks BP is still over 140/90, increase the HCTZ to 50 mg daily.
 - If after 2 more weeks it is not below 140/90, add reserpine 0.25 mg daily, (or **better, an ACE inhibitor**-lisinopril or enalapril). Continue HCTZ.
 - If after 2 more weeks the BP still is not less than 140/90, increase the reserpine to 0.5 mg (two 0.25 mg tablets) daily, or increase ACE inhibitor.
 - HYPERTENSION Stage 2—with Systolic BP 160-179 or diastolic 100-119:
 - Give hydrochlorothiazide (HCTZ) 25 to 50 mg., and reserpine 0.25 mg or an ACE inhibitor daily (remember to eat fruit to avoid low potassium).
 - If after 2 weeks it is not below 140/100, increase the reserpine to 0.5 mg daily (two 0.25 mg tablets) or add a beta-blocker to the HCTZ 50 mg daily.
 - Refer after 2 more weeks if it is not below 140/100.
 - HYPERTENSION Stage 2—with systolic BP 180 or higher, or diastolic 120 or higher:
 - Refer this patient to the hospital, OR start HCTZ 50 mg. daily (and fruit)
 - AND if available add atenolol 50 mg daily (or methyldopa 250 mg or propranolol 40 mg BID), and continue hydrochlorothiazide 50 mg daily.
 - If the BP is not below 160/105 in 1 week, increase atenolol to 100 mg. daily (or methyldopa to TID or propranolol to 80 mg BID). If after 1 more week, it is still not below 160/105, refer the patient to the hospital.

- In all cases, **try to bring the BP below 140/90**. However, it is not always possible to get severe hypertensives that low.
- If available, **beta blockers atenolol, labetalol, or metoprolol succinate**, or **ACE inhibitors captopril, enalapril or lisinopril** may be used instead of reserpine, methyldopa, or propranolol. Check the appropriate dosages.

CAUTION

Try not to give **hydrochlorothiazide** (if any other medication is available) with symptoms of **diabetes** or **gout**—it increases uric acid, and can bring on an attack of gout, and it mildly increases blood sugar in diabetics.

Do not give **reserpine** with symptoms of peptic ulcer or depression—it can worsen both.

Do not give **methyldopa** with symptoms suggesting liver problems such as hepatitis or cirrhosis—it can be hard on the liver and can cause jaundice.

MONTHLY CHECK-UPS after the BP has been brought under control:

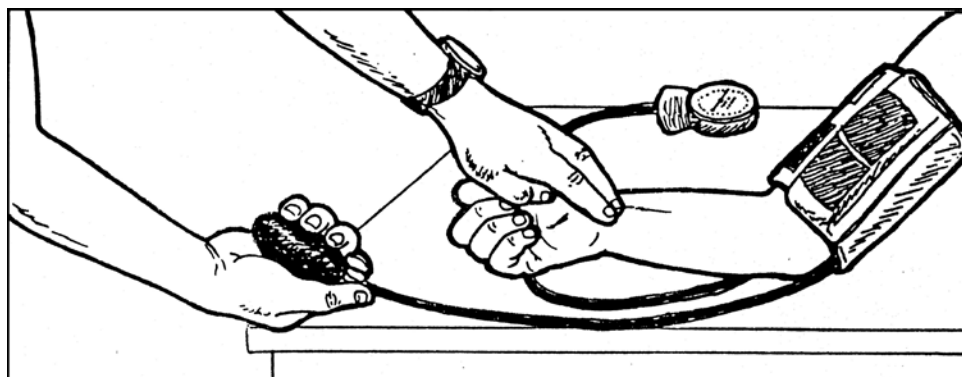
- CHECK BP—is it normal, high or low? Also check the pulse.
 - NORMAL BP--Reduced at least below 140/90, and preferably below 130/85 (100–120/70–80 is usually ideal)—Give the same medications for 1 more month (or 2 months if the distance to come is very far) and have the patient return for another check and more medications. Medications must never stop!
 - LOW BP (Usually less than 100/60 and the patient feels weak or faint when standing)—mildly reduce the amount of medication such as reserpine or hydrochlorothiazide and see the patient again in 2 weeks.
 - BP STILL TOO HIGH:
 - Have the patient rest 10 minutes and recheck the BP.
 - Ask if he is taking the medications correctly every day.
 - Ask if he is eating salt or soda or Maggi cubes.
 - If the BP does not come down with rest and he is actually taking the medications correctly and not eating salt or soda increase the medications (as indicated under TREATMENT WITH MEDICATIONS above) and recheck in 2 weeks.
- WATCH FOR DRUG REACTIONS:
 - HYDROCHLOROTHIAZIDE or other diuretic—Weakness from low potassium; prevent this by having the patient eat some fruit daily.
 - RESERPINE—If the symptoms below develop, stop reserpine, and refer the patient to the doctor:
 - Ulcer symptoms: anemia, epigastric pain, and/or black stools
 - Symptoms of depression
 - METHYLDOPA—Refer for a medication change if the symptoms below are severe enough to be really troublesome:
 - Diarrhea lasting more than just a few days (but remember anyone can develop gastroenteritis for a few days sometimes).
 - Severe constipation
 - Stop methyldopa immediately and refer if jaundice develops.

- BETA BLOCKERS (Atenolol, metoprolol, propranolol)—these slow the heart. Decrease the amount if the pulse slows below 60 per minute. The Alpha-Beta blocker **labetalol** is less likely to slow the heart

Prevention

The prevention of hypertension is difficult, but here are seven useful points to recommend:

1. Avoid becoming overweight—Do not eat too much, and get plenty exercise. Hypertension is more frequent in overweight people.
2. Avoid diets high in saturated fats—Such as Western-type diets with a lot of fatty meats, lard, and butter. Palm oil is partly saturated, but does not seem to give as much trouble as fatty meats; avoid eating too much palm oil. Too much saturated fat causes atherosclerosis (hardening of the artery walls and cholesterol plaques in the arteries which may reduce blood flow and raise pressure, and can lead to heart attacks and strokes.)
3. Avoid kidney damage—Damaged kidneys are one cause of hypertension. Schistosomiasis hematobium and urinary tract infections (UTIs) should be treated correctly and without delay before they can cause damage to the kidneys.
4. Avoid eating too much salt or soda—Salt raises BP. Remember everyone does need a small amount of salt, especially if working hard and sweating. But we do get a little salt in some foods without adding more salt to the food.
5. Do not smoke, and do not drink much alcohol!
6. Get some exercise every day (such as at least 30 minutes walking).
7. It is very important for the health worker to **routinely check blood pressure:**



ROUTINELY CHECK BP ON EVERY ADULT PATIENT AT LEAST ONCE YEARLY TO DETECT AND CONTROL HYPERTENSION AT AN EARLY STAGE AND TO PREVENT IT FROM BECOMING SEVERE.

It may not be possible to check the BP of every adult living in your area once yearly, but at least check the BP of every adult coming to your clinic once yearly!

Chapter Four—Chronic Diseases

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DIABETES MELLITUS

Diabetes mellitus is a chronic disease in which blood sugar (glucose) is not able to pass easily from the blood through the cell membranes into all the various cells of the body where it is needed for energy. The blood glucose level gets very high.

Cause

There are two types of diabetes with different causes:

- **TYPE I** (one)—Caused by something, usually a **virus, destroying the beta cells** in the pancreas that make the insulin to cause blood sugar to pass into the cells. Therefore, the pancreas makes no or very little insulin. It was previously known as “juvenile” diabetes because children and young adults developed it more commonly than older people. It is not directly inherited (although susceptibility of the beta cells to destruction by viruses is inherited). **Type I can only be treated with insulin.** Type I is much less common than Type II.
- **TYPE II** (two)—**Usually develops later in life**--therefore it used to be called “adult” diabetes. It is **much more common than Type I.** The tendency to develop Type II is **inherited.** However, not everyone who inherits the genes for Type II diabetes actually develops the disease—it **develops much more frequently in people who are overweight.** The heavier the person is who has the right genes, the more likely he is to develop Type II diabetes. In Type II, **high blood sugar has a double cause:**
 - First, the **body cells lose their ability to respond well to insulin;** therefore, much more insulin than normal is needed to bring glucose from the blood into the cells.
 - Second, in Type II diabetes the beta cells of the pancreas do not release their insulin well, and gradually become worn out from the huge amount of insulin they are required to produce.

Type II can be treated with oral medications that help the beta cells to release insulin, or with medications that help the body cells to use the insulin better, as well as with insulin. Diabetics who do not require insulin but can be treated with oral medications are now often called “non-insulin-dependent” diabetics.

**DIABETES IS CAUSED EITHER BY:
A LACK OF SUFFICIENT INSULIN (TYPE I)
OR
BY THE PANCREAS NOT RELEASING INSULIN WELL (TYPE II)
AND/OR
BY THE BODY CELLS NOT USING INSULIN WELL (TYPE II).**

Epidemiology

In the U.S., few younger people have diabetes, but by age 60 about 20% or more of the population has developed it. Those who develop it as children or teenagers (Type I) are usually more difficult to control. Diabetes is fairly common in Liberia. It usually occurs in adults (Type II), and is often fairly easy to control with proper medicines, but fairly difficult to regulate without the use of glucometers.

S&O—

SYMPTOMS—Since insulin is insufficient to cause the sugar to pass from the blood into the cells, the blood glucose becomes very high. The excess glucose in the blood escapes from the kidneys in the urine, carrying much additional water out with it. The untreated Type I diabetic or the far-advanced, untreated Type II diabetic, therefore, develops the following symptoms as diabetes worsens:

- Passing large amounts of urine (**polyuria**) because of the large amount of water with sugar passing from the blood through the kidneys into the bladder. (Sugar in the urine prevents the kidney from properly reabsorbing water from the urine.)
- Often thirsty and drinking large amounts of water (known as **polydypsia**) to replace the large amount of water passed out as urine.
- Always eating, but always feeling hungry (**polyphagia**) because the carbohydrate the diabetic eats is not properly entering the body cells as glucose but is instead being passed out of the body as wasted urine sugar.
- Weakness, easily getting tired, and weight loss are other symptoms.

The onset of symptoms may be very slow or very rapid. Symptoms often develop during periods of stress, such as infection, or pregnancy. A mild diabetic may not have such symptoms.

COMPLICATIONS—Learn to recognize these:

- **INFECTIONS**—Such as abscesses, septicemia, and TB develop easily in diabetics and are more difficult to treat, because the immune system does not work very well when the blood sugar is not controlled well.
- **ATHEROSCLEROSIS**—Diabetics more easily develop atherosclerosis, which may completely block important arteries, causing strokes, myocardial infarcts, or gangrene of the leg or foot. (Atherosclerosis is a disease of the larger arteries.)
- **DAMAGED ARTERIOLES**—The small arteries gradually become thickened and narrowed, damaging the organs that they supply with blood. In the retina of the eye this may lead to blindness, and in the kidney may cause hypertension or kidney failure.
- **DIABETIC KETOACIDOSIS**—When too little sugar is entering the body cells they begin to burn more fat for energy, which burns poorly without sufficient glucose. This produces a large amount of ketonic acids, causing the patient to become nauseated and sleepy or even comatose (diabetic coma). This causes deep and rapid respirations in a characteristic way known as Kussmaul breathing. His breath smells something like a spoiling grapefruit, his urine are highly positive for sugar and ketones, and he is usually dehydrated from losing large amounts of water through the urine and from vomiting. He usually dies unless admitted quickly to the hospital and treated vigorously. Diabetic ketoacidosis most often happens in diabetics with poor or no treatment.

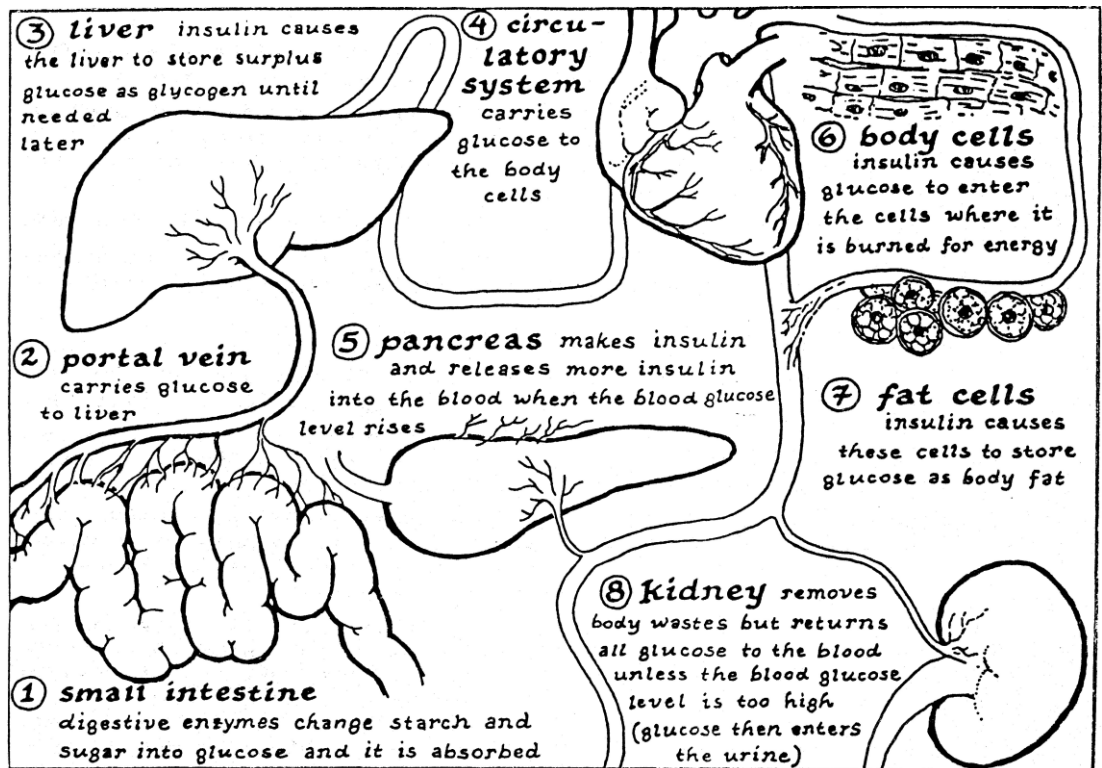
PROPER TREATMENT PREVENTS DIABETIC KETOACIDOSIS.

- **HYPOGLYCEMIA—“INSULIN SHOCK”**—The patient who takes too much insulin or oral diabetic medications, or who eats too little food after taking medications, or exercises heavily may begin to have his blood glucose level fall too low. When this happens he begins to sweat and feel hungry and shaky. If he eats at this point he improves, but if instead the blood sugar level continues to fall, his brain cells (which are unable to burn fat) become short of glucose for energy and he gets sleepy and then comatose. Blood glucose is usually less than 60 mg %--check glucose quickly if you have a glucometer. This is known as insulin shock. Seizures and even damage to the brain may occur; unless given glucose quickly he will often die. If given 20 mL of 50% glucose by IV push, he usually wakes up within 2 minutes.

AVOID INSULIN SHOCK BY:

- 1) Not giving diabetic patients too much medicine
- 2) Teaching the patient to recognize the early symptoms and eat immediately if they occur

Insulin and Glucose in the Body



A— Make a presumptive diagnosis of advanced diabetes from the following:

1)

POLYURIA		POLYDIPSIA		POLYPHAGIA		
excessive urine	+	excessive drinking	+	excessive eating	=	DIABETES MELLITUS

- 2) **INCREASED APPETITE + WEIGHT LOSS = SUSPECTED DIABETES** (This is the only disease that can truly increase appetite and food intake and still result in weight loss. For example, TB causes decreased appetite and weight loss. High blood glucose may also cause the vision to become blurred by making it difficult for the eye lens to correctly focus light.
- 3) Suspect diabetes in an **adult who starts having to get up frequently at night to pass large amounts of urine, or a previously well-trained child who starts bed-wetting.**
- 4) Check urine glucose or a fasting blood glucose for persons older than 50 years who are significantly overweight, since such persons may start to develop diabetes before developing any of the more advanced symptoms listed above.

Laboratory Diagnosis: Prove your presumptive symptom-diagnosis with a glucometer, or by testing the urine for sugar. If you have a glucometer with new accurate test strips, or if near a hospital, check a fasting plasma or blood glucose.

- 1) **FPG test**—Fasting Plasma Glucose (almost the same as Fasting Blood Glucose)—Check glucose in the early morning before the patient eats anything.

Plasma Glucose Result (mg/dL)	Diagnosis
99 or below	Normal
100 to 125	Prediabetes (impaired fasting glucose)
126 or above	Diabetes*

*Confirmed by repeating the test on a different day—glucose must be >125 on at least one other day.

- 2) **OGTT** (Oral Glucose Tolerance Test)—Patient fasts 8 hours, then drinks 75 gm of glucose in water. Check the plasma glucose 2 hours later.

2-Hour Plasma Glucose Result (mg/dL)	Diagnosis
139 and below	Normal
140 to 199	Prediabetes (impaired glucose tolerance)
200 and above	Diabetes*

*Confirmed by repeating the test on a different day with glucose again 200 or higher.

- 3) **Random Glucose Test**—Checked without fasting—**200 or more on 2 days = Diabetes**
- 4) **Urine Glucose**—**Positive on 2 or more days should also be diagnosed as Diabetes**

P—

The new diabetic patient should be sent to the hospital for initial control of his illness.

- Some mild diabetics can be controlled with proper diet alone, or if overweight, with diet and weight reduction. Daily exercise also helps significantly—both weight loss and exercise increase cell sensitivity to insulin (causing the cells to take in glucose from the blood more easily), which then lowers blood sugar.

- More severe Type II diabetics will also require daily medications (oral metformin or glibenclamide or both, or injectable insulin) in addition to a proper diet, weight loss (if overweight), and exercise. The safest medication is metformin, which almost never causes significant hypoglycemia—dosage is 500 to 1,000 mg BID, before breakfast and before dinner in the evening.
- Although the new diabetic should be initially treated and placed on medication in the hospital with laboratory blood glucose or glucometer readings to check the blood glucose level response to medications, it is not always possible to send the person to a hospital. In such a case, for an adult patient who is not too ill, the safest medication to try is metformin at 500 mg BID. Increase gradually if needed. Use a glucometer if you have one, or use urine glucose tests for checking the response. The person should still be seen by a doctor at the hospital later.

TEACH THE PATIENT AND HIS RELATIVES—Gain their cooperation; without cooperation all long-term treatment will fail. Call the relatives together, explain diabetes and its lifetime treatment to them. Get them to agree to always see that the patient is receiving his medicine and following his diet. The relatives and patient must know that:

- **Treatment is for the patient’s entire lifetime**, because the medications can help control but do not cure diabetes. The patient must take medicines regularly and never let them finish. If medication finishes, the symptoms return.
- **He must come to the clinic (or to a physician) regularly** for diabetic check-ups and for more medication (often 1 month at a time, but 3 months is o.k. if the patient has very excellent control).
- **His body cannot handle sugar well.** Avoid eating sugar and any form of sweets, and avoid drinking soda.
- **He should not have too much food at one time.** Divide his food into three or four smaller meals instead of one small meal in the morning and one large meal in the evening.
- **Too much urine means poor control.** He should come to the clinic if passing large amounts of urine frequently.
- **Any unconscious patient must be brought immediately to the clinic.**
- If taking insulin or oral diabetic medications, he must **know the signs of hypoglycemia** (low blood sugar) and **know this means he has to eat something.**

MILD signs of low blood sugar are:		
SHAKINESS	SWEATING (when not exercising)	NERVOUSNESS
HEART PALPITATION		
SEVERE signs of low blood sugar are:		
SLEEPINESS	UNCONSCIOUSNESS	CONVULSIONS

- **If taking insulin** he must **know how to measure insulin accurately**, and **how to sterilize and care for the syringe and needle** (either by boiling or in a jar of alcohol).
- **If overweight, weight loss will definitely improve control of diabetes** by causing the body cells to become more responsive to insulin and take the glucose they need out of the blood more readily, thereby lowering blood sugar. The overweight patient should eat less food, exercise, and lose weight gradually.

FOLLOW-UP TO ADJUST MEDICATIONS—The best way to adjust medications and regulate diabetes would be for every patient to own his own glucometer and check his blood glucose at least once a day, but this usually would be much too expensive. Next best is clinic glucometer testing or testing urine for glucose in the clinic, and having a laboratory check a fasting blood glucose quarterly and a glycosylated hemoglobin (Hemoglobin A1c) yearly (if the test is available). With what is currently possible, do what you can. See the patient each month in the clinic (or at least every 2 months), and check the following:

- History of the amount of urine being passed—must not be passing too much urine too frequently.
- **WEIGHT**—must not be losing weight (**unless he weighs too much and is trying to lose weight**); also unless thin and poor, he must not be gaining weight.
- **a) Check a fasting blood glucose monthly if your clinic has a glucometer.**
 - b) If no glucometer check urine sugars.** (Use low-cost strips which check only glucose or glucose and albumin)—a urine sample from home collected when the patient awakens and a 10 a.m. sample should be checked once a month if a urine sugar test is available.
- **If fasting glucometer readings are 80 to 150**, or if the history of the amount of urine is normal and the patient is not losing weight and neither the urine sample collected on awakening by the patient nor the sample collected in the clinic is more than 1+, continue the same treatment for one more month.
- But **if fasting glucometer reading is above 150**, or with too much urine, or wt. loss (not intentional) of more than 3 lb., or if either urine sample is 2+ positive for sugar or greater, suspect poor control of the diabetes and do the following:
 - a) If possible, repeat the fasting glucometer reading the next day, or
 - b) Check the patient's urine samples for sugar 4 times daily for 2 days--at 6 a.m., 10 a.m., 2 p.m., and 6 p.m. (If you cannot check all, check those that you can obtain.)
 - a) If fasting glucometer readings remain above 150, or
 - b) If one urine each day is 3–4+, or 2 or more are 2+ positive for sugar, then **send the patient to the hospital for better regulation.**
 - If instead **fasting blood samples are below 150**, or **most of the urine samples are negative for glucose**, continue the same treatment one more month.
- If your clinic has no test strips for glucose in the urine and no glucometer, send the patient to a hospital or health center for checking (and improved regulation if required) at least every 3 months.

Complications

- **INSULIN SHOCK**—If the patient taking insulin or diabetic medication is brought to you **unconscious** but the **skin elasticity is normal** and the relatives report the amount of urine is not large, quickly check with a glucometer, if available, then give either: (If no glucometer, just give the glucose or sugar.)
 - 20 mL of 50% glucose slowly IV, or 250 mL 5% glucose IV rapidly, or
 - 30 mL of sugar dissolved in water into the stomach by a nasogastric tube.

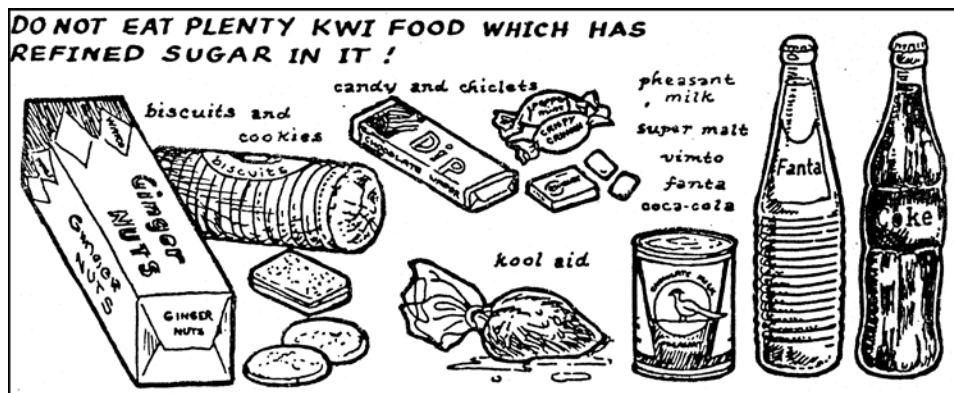
A patient unconscious from low blood sugar will awaken in a few **minutes after being given glucose IV** (more slowly with NG tube sugar). **Feed him after he wakes up. If he does not awaken in 10 minutes, send him immediately to the hospital.**

Generally it is better to have blood glucose a little high than to have it a little too low

- **DIABETIC KETOACIDOTIC COMA**—If the patient is brought to you very sleepy or unconscious and is having too much urine and has **poor skin elasticity** he likely has diabetic ketoacidotic coma—this is very serious. **Blood glucose is very high** and **ketones are present** in serum and urine. With this complication, the patient usually has not been taking his diabetic medication and has very poor control of diabetes; **send him immediately to the hospital.** (Be sure this is not insulin shock (without diabetic meds it is not), or dehydration from significant diarrhea. If a glucometer or urine test strips are available, quickly check the sugar.
- **TB**—Diabetic patients easily catch TB (because their immune systems often do not work well). Watch for chronic cough, fever, and weight loss. Pages 121-133.
- **CELLULITIS**—Diabetic patients also more easily develop abscesses and cellulitis. Drain abscesses and treat the patient with antibiotics (see pg. 73–74).
- **FEVER**—Look for the cause. Remember to look carefully for urinary infections.

Prevention

- We have no known way of preventing the less common Type I diabetes.
- The best way to prevent Type II diabetes would be to choose your parents carefully so that you could not inherit any genes that would make it possible for you to develop Type II diabetes. But since we cannot choose our parents, the next three things are the best we can do:
 - **Do not become overweight**—especially if you have diabetic relatives. Being overweight greatly increases the probability that you will develop Type II diabetes .
 - **Avoid foods that are full of sugar**—do not frequently eat many concentrated sweets. Eating large amounts of sugar puts extra stress on the beta cells and causes weight gain.
 - **Get plenty of exercise**—exercise makes body cells respond better to insulin and lowers blood glucose, and so helps prevent the development of diabetes.



Medications from the Liberian National Drug Service for Diabetes

■ INSULINS:

- **Insulin actrapid** 100 IU/mL—fast-acting synthetic human insulin
- **Insulin zinc susp. (Lente)** 100 IU/mL—slower onset and longer in action
- **Insulin isophane NPH** 100 IU/mL—moderate-to-long-acting insulin
- NOTE: Be cautious—all insulins can cause hypoglycemia

- **Glibenclamide 5 mg** tablets--helps pancreas release insulin. Starting dose of 2.5 mg daily, maximum 10 mg BID, but there is usually not much advantage to giving more than 5 mg BID. **Can cause hypoglycemia.**

- **Metformin 500 mg** tablets—stops liver from putting more glucose into the blood from its stores of glycogen. Lower dose: 500 mg BID, maximum dose: 2,500 mg/day—in divided doses. **Rarely causes hypoglycemia.**

Medications for Diabetes Not Currently Supplied by National Drug Service

- The “**Glitazones**”: pioglitazone and rosiglitazone—these make body cells more responsive to insulin, so the cells more readily take in glucose from the blood, thereby lowering blood glucose (very expensive and some dangers). (Exercise and weight loss also make the body cells more responsive.)
- **Incretin**—a more recently discovered hormone which signals the pancreas to release insulin when a person eats (extremely expensive).
- **Basal insulins** which work evenly over 24 or more hours, without peaks of activity—basal insulins are less likely to cause hypoglycemia, but they do not have a period of greater activity to match with the time when food is eaten.

Write changes in medicines for diabetes supplied from National Drug Service in the space below on this page or in the margins.

EPILEPSY—THE “FALLING SICKNESS”

Definition

A person who has repeated attacks of seizures (convulsions or fits) is said to have epilepsy. In the U.S., about one in every 200 people is affected, and our impression is that the number in Liberia is at least this great.

Cause

An epileptic seizure begins in cells in the brain that are damaged or not normal. The abnormal activity of these cells with generalized seizures spreads to the whole brain, causing the body to jerk and the person to become unconscious. There are many causes for abnormal or damaged brain cells including birth injury, lack of oxygen during birth, meningitis, genetics, and head injuries. In about 75% of patients the cause is idiopathic (which means we cannot find a cause for the damaged brain cells). **NOTE: Epilepsy cannot be caught from a patient having seizures.**

Tonic-Clonic (Grand Mal) Epilepsy-- There are many different types of epilepsy; the **tonic-clonic type is most common**, and this is the type we will discuss below.

AURA AND PRODROMAL PERIOD—Before a seizure occurs, many patients experience a warning sensation that the seizure is about to happen. This is known as an aura. It may be a light or spots before his eyes, an imagined sound, a bad smell, feeling of fear, or other strange sensation. The exact same aura usually occurs to the same patient each time and may happen from minutes to hours before the seizure occurs. The time between the aura and seizure is known as the prodromal period. Some patients, however, have seizures without any warning aura or prodromal period.

TONIC-CLONIC (GRAND MAL) SEIZURE—Often begins with the patient suddenly crying out as he becomes unconscious. If he is standing, he will fall. The unconscious patient first becomes very stiff and then all his muscles begin to jerk. He first breathes with difficulty and then stops breathing altogether. The jerking becomes less, and usually after a minute or two he begins to take deep noisy breaths. The jerking soon stops and he begins to breathe more normally. During the seizure many patients bite their tongues, and some pass stool or urine.

POSTICTAL PERIOD—After the jerking has stopped, the patient slowly becomes conscious again. At first he often is confused, has difficulty remembering recent happenings, feels very weak and tired, and has a severe headache. Gradually his memory improves and the confusion clears. This is known as the postictal period.

A--Be certain the seizure is not caused by some condition other than epilepsy. See the list of possible diagnoses below and on pg. 29.

- With fever suspect meningitis, sepsis, or cerebral malaria (or possibly a febrile seizure in a small child).
- With a stiff neck, confusion and fever suspect meningitis or cerebral malaria.
- But with a **stiff neck and back**, and **thinking clearly**, and **hard for patient to open his mouth**, and **not unconscious when jerking**—suspect **tetanus**.
- **Isoniazid, ambilhar, or drinking much alcohol** can cause seizures, but these do not cause fever or a stiff neck.

- Diabetics on insulin or taking medications to lower blood glucose may have a seizure from a very low blood sugar.

P—With a **seizure**, and:

THE PERSON HAS BEEN
HAVING REPEATED
ATTACKS OF SEIZURES
PREVIOUSLY + AND HAS NO
FEVER OR
STIFF NECK + IS NOT TAKING
INH, INSULIN,
AMBILHAR OR
MUCH ALCOHOL = EPILEPSY

Treat epilepsy in the clinic. Give emergency treatment to other causes of seizures, then send other causes STAT to the hospital. (See pages 28 – 30).

- **EDUCATE**—both the patient and the patient’s relatives, and form a “**Therapeutic Alliance**”. They must agree to continual treatment and to never letting treatment stop, or the treatment will fail. They must know that:
 - **The medicine controls but does not cure epilepsy—treatment is for the patient’s lifetime. Just like eating prevents hunger, these medicines prevent seizures.**
 - A patient taking medicine may cause himself to have more seizures if:
 - He forgets to take his medicine
 - He drinks alcohol
 - He gets too little sleep
 - The medicines must never be permitted to stop suddenly; if they do, severe seizures may occur.
 - Patients with seizures must never drink alcohol as it can cause more seizures!
- **MEDICATIONS**—Three medications from National Drug Service are low in cost and effective in controlling grand mal seizures:
 - **Phenobarbital** 30 and 50 mg tablets—very easy to obtain—give **daily** h.s.
 - **Phenytoin** 100 mg tablets—sometimes not available
 - **Carbamazepine** 200 mg tabs, 100 mg/5 ml susp, & 100, 200, 400 mg XR tabs. Adults start at 200 mg BID & gradually increase-max 1200 mg/day (400 mg TID)

All of these medicines have **possible side-effects**:

- **Phenobarbital** may cause the patient to feel sleepy (especially during the first 2 weeks). Never take too much—a large overdose can cause coma and death! Phenobarbital is almost always available-usually try this med.
- **Phenytoin** (diphenylhydantoin) may cause swelling of the gums, severe skin rash, dizziness, anemia, or fever. (Not always consistently available.)
- **Carbamazepine**—allergies, aplastic anemia, low platelets rarely, birth defects likely. Does not go well with some other medicines.

Start with phenobarbital or phenytoin, and increase the dose gradually as shown on the next page until the seizures no longer occur.

START WITH PHENOBARBITAL

OR

START WITH PHENYTOIN

<p>Adult: 50 mg Phenobarbital daily Child: 1 mg/lb/day for 1 week</p> <p>Then increase to: Adult 100 mg daily or Child 1½ mg /lb /day for one more week</p> <p>If seizures have not stopped in 2 weeks: Increase phenobarbital gradually every 2 weeks until they stop.</p> <p>Possible increases if needed: After 2 wks: Adult—150 mg daily Child—2 mg/lb/day</p> <p>After 4 wks: Adult—200 mg daily Child—2.5 mg/lb/day</p> <p>After 6 wks: Adult—250 mg daily Child—3 mg/lb/day (Do not increase more than this)</p> <p>After 8 weeks if still having seizures: Continue the same amount of phenobarbital but add phenytoin, starting with the lowest dose and increasing until seizures stop.</p>	<p>Adult: 200 mg Phenytoin daily Child: 2 mg/lb/day for 2 weeks (Give twice the dose on the first day only.)</p> <p>If seizures have not stopped in 2 weeks: Increase phenytoin gradually every 2 weeks until they stop (but not more than maximum doses).</p> <p>Possible increases if needed: After 2 wks: Adult—300 mg daily Child—3 mg/lb/day</p> <p>After 4 wks: Adult—400 mg daily Child—4 mg/lb/day</p> <p>Maximum: Adult—500 mg per day, Child—4 mg/lb/day, but give no child more than 300 mg per day</p> <p>Watch for reactions: 1) With severe skin rash, stop phenytoin and substitute phenobarbital. 2) With anemia, refer to the doctor.</p> <p>After 6 weeks if still having seizures: Continue the same amount of phenytoin but add phenobarbital, starting with the lowest dose and increasing until seizures stop.</p>
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If seizures are not controlled with both medications, send the patient to the doctor. When seizures are controlled with the proper dosage of medication, see the patient monthly and give one month’s supply of medication at a time.

Complications

- **Injuries** from falling often occur, and sometimes patients fall into open cooking fires and are burned severely.
- **Status epilepticus** is a very serious complication in which a patient has continued seizures one after another without regaining consciousness. He may suffer brain damage from lack of oxygen or even die. It often happens if the patient suddenly stops his medications. Take such patients immediately to the hospital. Give an adult 10 mg **diazepam** IV slowly (if available) while looking for transportation [try 2 mg (0.4 cc) IV for a 20 lb child, and 4 mg (0.8 cc) for a 40 lb child]. Check an RDT to rule out malaria while waiting for transportation.
- **Occasionally a patient may aspirate** or not start breathing by himself after a seizure and die from lack of oxygen. Clear the airway and breathe for a patient if he stops breathing.
- **Social complications:**
 - Epileptic patients are often not well-accepted by society—one reason is people believe they can catch epilepsy from the patient (this is **not true**).
 - Sometimes they have a difficult time finding employment.

Prevention

Most cases cannot be prevented. A few of the causes, however, are preventable.

- Safe deliveries in a hospital, being careful to avoid either damage to the infant’s head from a long difficult delivery, or lack of oxygen from the newborn infant not breathing after delivery will prevent some cases of epilepsy.
- Very early detection of meningitis or cerebral malaria and vigorous correct treatment will prevent a few more.
- Starting children who develop febrile seizures on phenobarbital or phenytoin and continuing the medication for at least 3 years after the last seizure, then discontinuing the medication gradually will prevent some children from continuing to have seizures and becoming adult epileptics.
- Prevent status epilepticus by teaching patients and relatives never to permit medications to stop suddenly.

SUMMARY	
●	Epilepsy can be controlled but not cured.
●	Grand mal epilepsy is the common type that the health worker will treat. Learn to treat this kind well.
●	Educating the patient and his relatives is most important.
●	Phenobarbital and phenytoin are effective medications for control.

Phenobarbital and Phenytoin Doses for Children by Weight per Day

Child’s Weight in pounds	PHENOBARB—30 and 50 mg tablets*		PHENYTOIN—100 mg tablets*	
	Starting Dose (mg tab)	Maximum (mg tab)	Starting Dose (mg tab)	Maximum (mg tab)
25	½ of 50 mg	1½ of 50 mg	½ of 100 mg	1 of 100 mg
30	1–30 mg	1½–50	½–100	1–100
35	1–30	2–50	½–100	1½–100
40	1–30	2–50	¾–100	1½–100
45	1–50	2½–50	1–100	2–100
50	1–50	3–50	1–100	2–100
55	1–50	3–50	1–100	2–100
60	2–30	3–50	1–100	2–100
65	2–30	4–50	1–100	2½–100
70	1½–50	4–50	1½–100	2½–100
75	1½–50	4–50	1½–100	3–100
80	1½–50	4–50	1½–100	3–100
85	1½–50	4½–50	1½–100	3–100

*Because of tablet strength, doses above are not exact for recommended mg/lb.

Additional Information—Petit Mal Epilepsy (Absence Seizures)

This type is also fairly common, especially in children, who may outgrow it. Most commonly in absence seizures the child loses consciousness (becomes unaware of his surroundings) for a few seconds and stares, but does not fall. His eyes may blink rapidly. He may make certain movements, and then returns to being completely normal with no awareness of what just happened. Petit mal epilepsy is much more difficult to control, and often does not significantly improve with phenobarbital or phenytoin. Send these patients to the physician. Sometimes, if not too severe, it is best to do nothing about petit mal and to hope the child outgrows it.

Chapter Four—Chronic Diseases

Use this page for additional notes on Epilepsy.

RHEUMATOID ARTHRITIS

Definition

Rheumatoid arthritis is a chronic disease causing the joints to become stiff, swollen, and painful. The body's immune system attacks its own joints. The cause is unknown.

Epidemiology

It usually begins between age 20 and 50, occurs 3 times more often in women than in men, and is much less common and less severe in the tropics than in the temperate zones. Not many cases are seen in Liberia.

S&O—

Joint pain and swelling may come on suddenly or gradually. In either case, within a few months the swelling usually is found in the same joints on either side of the body, and usually involves the smaller joints of the hands and feet. The joints feel especially stiff when the patient wakes up in the morning, but improve as he moves around. Most patients tire easily, and some have fever. Subcutaneous nodules may develop over the joints and bony prominences. At any time during the illness the symptoms may improve or even disappear for a period of months, but they usually return with periods of pain and swelling which come and go for the rest of the patient's life. After some months or years, the joints may become permanently swollen, deformed, and stiff from scar.

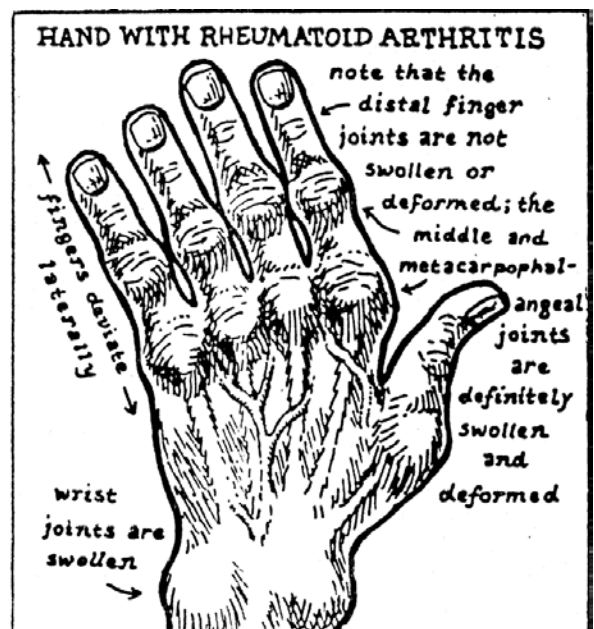
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ANY ADULT PATIENT WITH
MANY JOINTS SWOLLEN, A LONG HISTORY OF PERIODS OF JOINT PAIN AND SWELLING, AND SWELLING AND DEFORMITY OF THE JOINTS OF THE HANDS WITH THE SAME JOINTS SWOLLEN ON THE RIGHT AND LEFT HAS RHEUMATOID ARTHRITIS.

WARNING: A very recent swelling of 1 or 2 joints (with no history of injury to suggest sprain or fracture) and much pain and warmth and often fever may be caused by bacterial infection (septic joint). Best to send the patient to a doctor to diagnose the swellings correctly and to properly treat it.

P—

- EDUCATE — The patient and relatives must understand that:
- The swelling and pain usually come and go many times.
- Medicine can help relieve the pain.
- Mild exercise is needed to prevent joint contractures.



- **MEDICATIONS**—Give **ibuprofen** tabs 200 mg, 2 or 3 TID, or **diclophenac** 50 mg BID (if available) when the patient is having pain. Either medicine is often very helpful, and may be continued for many months if it is necessary. **Aspirin** 300 mg 2 TID or QID may also be used, but is **more likely to cause bleeding**. These medicines also reduce inflammation as well as reducing pain.

WARNING: All three medicines can irritate the stomach. Check for symptoms of **peptic ulcer**—epigastric pain, anemia, or black stool. Do not give any of the medicines listed above if any of these symptoms are present, and stop them immediately if they develop. They may cause a patient with a peptic ulcer to bleed to death. If ibuprofen, diclophenac, or aspirin causes stomach pain or black stools, stop the medicine and give paracetamol 500 mg tablets—2 TID or QID instead of these medicines (but not more—too much paracetamol is toxic). Paracetamol can reduce pain, but does not help inflammation as the other medicines do.

SECOND WARNING: Paracetamol will not irritate the stomach, but can cause **liver damage** and even death if too much is taken (if more than 2 tabs of 500 mg QID in adults with healthy livers.) Do not give paracetamol to jaundiced patients, or patients who drink much alcohol.

THIRD WARNING: Remember to tell all mothers to **keep all medicines out of the reach of small children**. If a child eats too much aspirin, paracetamol, or ibuprofen instead of the correct children’s dose, the child can die.

- Chloroquine diphosphate tablets 250 mg may be given 2 daily for up to 4 months for patients who cannot take ibuprofen, diclophenac, or aspirin, and will not cause bleeding, but improvement begins slowly. If given longer than 4 months in daily doses, chloroquine may cause damage to the retina or cornea of the eyes.
- If ibuprofen, aspirin, paracetamol or chloroquine fail to relieve the pain, send the patient to the doctor.
- Prevent contractures by encouraging each patient to move every joint through a full range-of-motion several times each day.

Complications

The most common complication is joints that become deformed and cannot move well. When the patient does not move joints because they are very painful contractures may also develop.

Prevention

There is no known prevention for the arthritis. However, contractures can be prevented by teaching patients to fully move all joints each day even when painful; and pain can be reduced by giving ibuprofen (or other medication).

SICKLE CELL ANEMIA

Cause

Sickle cell anemia is a **recessive, inherited condition** that causes the patient's red blood cells (RBC) to readily become long and thin rather than round. Such long thin cells easily break down, causing the patient to be chronically anemic. The long cells do not flow easily through capillaries and small blood vessels. The slow blood flow reduces the amount of oxygen carried to the body tissues, which causes pain. Sometimes the capillaries and vessels develop clots, damaging organs they supply.

Epidemiology

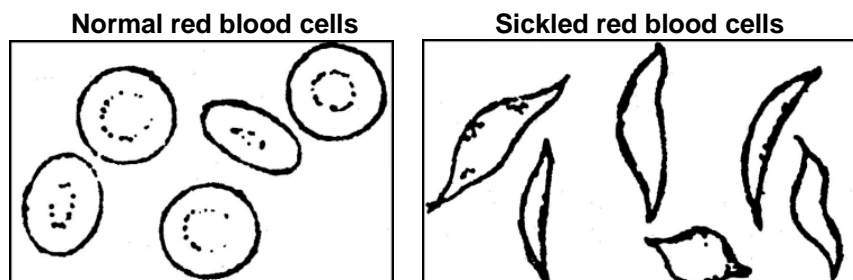
Sickle cell anemia is found mostly among black people in Africa (or people whose ancestors came from this area). It is common in the same regions where *P. falciparum* malaria is common. This seems to be because the carrier state (which does not usually cause illness) gives some protection against *falciparum* malaria. For a child to develop sickle cell anemia, both parents must either be carriers of the trait or actually have the illness. If both parents are carriers, on the average one out of four of their children will have the disease.

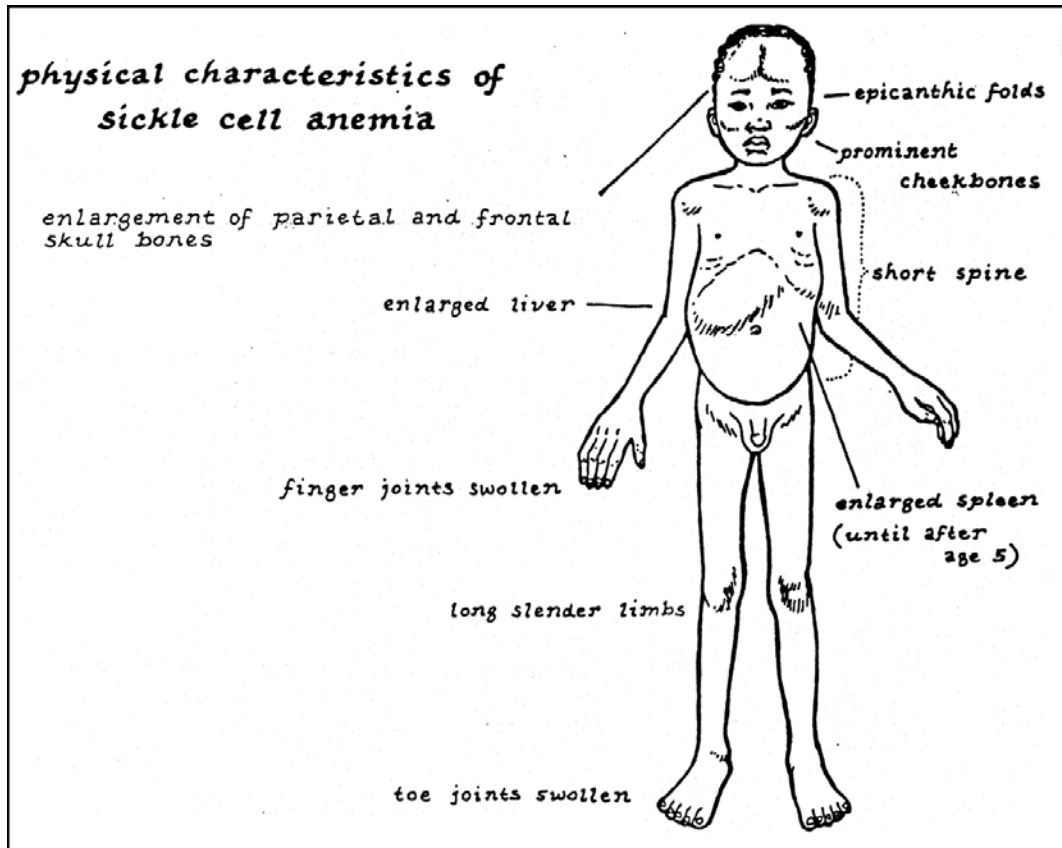
S—

The signs and symptoms of sickle cell anemia usually begin between 6 months and 2 years of age. They are:

- Chronic anemia (100% of patients)—usually 6 to 9 gm% of Hgb. The anemia never completely improves.
- Repeated episodes of pain (100% of patients), usually most severe in the bones of the arms and legs, but abdominal pain is also very common and may be confused with peritonitis or some other abdominal emergency.
- Mild to moderate jaundice develops in less than 50% of patients, from the rapid breakdown of RBC's.
- Finger and toe bones may become very painful and their joints and the soft tissues over them may swell. Such swelling of the fingers and toes is known as **dactylitis**.
- The spleen is enlarged until age 5 or 6 when it begins to grow smaller from splenic blood vessels clotting off and from scarring.

All the symptoms and complications can be explained by the way the abnormal RBC's break down easily, flow with difficulty, and easily form clots.





A—

- Any **black patient** with **chronic anemia** and a history of **recurrent episodes of bone pain** or joint pain and swelling, all of which **began in early childhood** most probably has **sickle cell anemia**.
- In addition to the above, if the patient also has **periods of jaundice** or a **history of repeated episodes of abdominal pain** the diagnosis of sickle cell anemia is even more certain.
- **SICKLE CELL CRISIS**—Any sickle cell patient who presently has many painful bones and tender swollen joints or abdominal pain and rebound (both usually with fever) almost certainly has a sickle cell crisis. (But be sure it is not peritonitis.)
- **LABORATORY DIAGNOSIS**
 - **SICKLE CELL PREPARATION**—This test is easily done. A drop of blood is placed on a slide with a drop of sodium metabisulfite solution, covered with a coverslip, and the edges sealed with petrolatum. With either the carrier state or sickle cell anemia the cells change from round to the sickle shape within a few hours. Sicklemia blood cells sickle more rapidly than carrier blood cells,
 - **THIN BLOOD FILMS**—The Wright's stain or Giemsa stain will show cells of many different sizes and irregular shapes, with target cells, nucleated red cells, some cells slightly bluish in color (polychromasia), and some sickled cells.

Complications

- **BACTERIAL INFECTIONS** are much more common in sickle cell patients than in non-sicklers. They are the leading cause of death in all age groups. The **pneumococcus** is the most frequent bacteria causing infection. In the U.S.:
 - In children with sickle cell anemia (previous to pneumococcal vaccine), **pneumococcal pneumonia** was 100 times more common than in normal children.
 - **Bacterial meningitis** was 300 times more frequent than in the general population (and 70% of the cases of meningitis were caused by the pneumococcus before the vaccine).
 - **Osteomyelitis** from bacteria growing in bony infarcts is very common and often caused by **salmonella** bacteria.
- **SEVERE ANEMIA**—May occur from rapid breakdown of RBCs during a sickle crisis (not very common) or a viral infection that temporarily causes the bone marrow to stop making RBCs (aplastic crisis). Aplastic crises, which are more common, usually begin to improve in 7–10 days.
- **CLOTTING**—In blood vessels may cause damage in many organs including the brain, heart, lungs, kidneys, and eyes. Stroke occurs if a blood vessel to the brain clots off.

Prognosis—We use 1970 U.S. statistics because this more closely resembles the probabilities for survival in Liberia at the present. With excellent care the prognosis is better.

- Patients with sickle cell anemia do not live as long as people with normal hemoglobin. **U.S. statistics** in the 1970's showed that:
 - Some die in infancy.
 - 50% used to die before the age of 20—this has improved in the U. S.
 - Few lived past the age of 40—this has also improved to age 50 or longer.

**MOST SICKLE CELL PATIENTS DIE FROM BACTERIAL INFECTIONS;
PNEUMOCOCCI CAUSE MOST OF THESE INFECTIONS.
SO WITH FEVER, ALWAYS LOOK FOR SIGNS OF BACTERIAL INFECTIONS.
WHEN IN DOUBT TREAT WITH PENICILLIN OR AMOXICILLIN TO DESTROY
PNEUMOCOCCI.**

- In children, nearly 75% of the deaths are caused by **bacterial infections**— most commonly **pneumococcal**. **Whenever pneumococcal vaccine becomes available in Liberia, give it to all Sickle Cell Anemia patients at age 2. It will prevent many deaths by reducing the number of pneumococcal infections.** Give penicillin V prophylaxis to all children 2 mo. – 5 yr. of age or until given pneumococcal vaccine.
- Pen V prophylaxis – 3 mo.-2 yr. - 125 mg. b.i.d., 3 – 5 yr. - 250 mg. b.i.d. daily
- In adults, bacterial infections are still the leading cause but the percentage is lower, and stroke, kidney failure, and heart failure are also very important causes.

P—

SICKLE CELL CRISIS

- With fever, do an RDT. If malaria is present, treat it (pg. 46–48). Also with fever, give penicillin or amoxicillin for the possibility of a pneumococcal infection.
- If you have any suspicion of meningitis being present, give both ampicillin and chloramphenicol IV and refer immediately to the hospital (see pg. 91).
- Give aspirin for pain (aspirin also helps prevent clots).
- Give adequate fluids.

Chapter Four—Chronic Diseases

- Watch the Hgb. If the patient becomes very pale (Hgb drops below 5 gm%), send the patient to the hospital—may require a transfusion.
- Send any patient who is very ill or not doing well to the hospital.
- Oxygen is also helpful during a crisis.

SYMPTOM-FREE PERIODS

- Many mothers feel they must be giving their child some sort of medicine. **Folic acid** is advisable; sickle cell patients need more folic acid—give 1 mg. daily. **Multivitamins (without iron)** are also fine. They guarantee sufficient vitamin intake and cause no harm. (**Vitamins with iron or ferrous sulfate can cause hemosiderosis.**)
- **Do not give iron routinely**—It will not help the anemia. The constant breakdown of cells tends to cause damaging iron deposits (hemosiderosis) in vital organs. Giving iron can make this condition much worse and finally cause death. But in hookworm in children, giving 2 weeks of iron syrup following treatment with mebendazole is advisable to replace lost iron stores.
- **Educate** the parents and patients to:
 - Avoid becoming too tired or exercising too hard.
 - Come to clinic early with fever, cough, or signs of infections.
 - Treat diarrhea promptly with ORS or IV fluids to prevent dehydration (with dehydration sickle cell patients easily clot off blood vessels).

DURING PREGNANCY

- Give multivitamins and folic acid.
- Give Fansidar prophylactically monthly in the second and third trimesters.
- Avoid much iron—but ½ to 1 tablet daily is advisable as the developing fetus needs iron and gets it from the mother.
- Watch the Hgb. If below 6 gm, send her to the hospital.
- Observe for signs of infection or pre-eclampsia.
- Pregnancy is dangerous for sickle cell patients; suggest a tubal ligation.

With a STROKE or other complication send the patient immediately to the hospital.

PREVENTION

Since sickle cell anemia is inherited, at the present there is no way to prevent the illness in a person born with this condition. Various drugs are being tried experimentally--Hydroxyurea given daily causes more fetal hemoglobin to form which prevents the cells from sickling so often, but makes it easier to develop infections, and long-term use may cause leukemia. But there is no hydroxyurea, or anything of this sort to give at the present in Liberia.

It is possible to identify sickle cell carriers by making a sickle cell preparation with a drop of blood and sodium metabisulfite, and then advising any carrier not to marry another carrier, but this also is usually not a practical solution in rural developing areas.

Although the final solution to sickle cell anemia has not been found, informed relatives, patients who come early when trouble begins and proper careful management by clinic personnel can prevent some of the complications and prolong life.

HUMAN IMMUNODEFICIENCY VIRUS (HIV/AIDS)

Acquired Immune Deficiency Syndrome, or **AIDS**, is caused by the Human Immunodeficiency Virus (HIV). We believe it came from a virus found in monkeys. The virus was first isolated in 1983. It has been identified in over 200 countries and territories worldwide and is spreading rapidly in many affected populations, particularly in developing countries. The first case of HIV in Liberia was identified in 1986.

HIV belongs to an unusual group of viruses called **retroviruses**. There are two main strains of HIV. HIV-1 has caused the majority of infections and AIDS cases; however HIV-2 is concentrated in certain countries (some in West Africa). Both HIV-1 and HIV-2 are transmitted in the same ways, are associated with similar opportunistic infections, and both lead to AIDS. However, HIV-2 is transmitted less easily, and the period between becoming infected and developing symptoms of AIDS is longer.

HIV Is Acquired Mainly in Five Ways

1. By **having sex** with someone who is carrying the virus in his or her body, even if he or she does not seem to be sick.
2. By getting an **injection** with a needle that has not been boiled and was used to inject a person carrying the virus (or by accidentally sticking your finger with the needle).
3. By receiving a **blood transfusion** from a person carrying the virus, or
4. From any **instrument that pierces or cuts the skin**: tattoo or ear-piercing instruments, circumcision equipment, or blades for tribal marking—if it has not been sterilized by boiling (soaking in alcohol does not always kill AIDS virus).
5. From a mother with HIV through the placenta to her baby **before** or **during birth**, or by **breastfeeding**. (Daily Nevirapin syrup for the baby makes breastfeeding safer, but not completely safe—see page 172.)

Mode of Transmission	Risk of Transmission
Blood transfusion from someone HIV positive	~90% (blood must always be checked for HIV)
Mother to child (including pregnancy, delivery and breastfeeding)	~40% chance of infection with HIV
Sharing needles used for injecting drugs	<1% each time
Vaginal intercourse	<1% each time
Occupational exposure	<1% each time

S—

After the virus has gotten into a person's body it may take 3–10 years for the person to actually start to appear sick. However, an HIV-positive person who “looks” well can still spread the virus to other people. With continual antiretroviral (ART), treatment, the patient will not get well from HIV, but will usually feel much better and live significantly longer (often for many years), than he would without ART treatment.

People who have AIDS run fevers, lose weight, and usually have chronic diarrhea and swollen lymph nodes. Sometimes they have a cough. Often they have thrush in the mouth, and they easily and frequently develop TB, *Pneumocystis carinii* pneumonia, toxoplasmosis, and other infections. (These infections are known as **opportunistic infections** because they find the opportunity to occur when the patient's immune system becomes weak from HIV.) The fever does not usually go away with antimalarials or the usual antibiotics. If it does, it just comes back again later.

It is important that all health workers recognize the signs and symptoms of HIV. (See the HIV/AIDS posters for adults and children.)

The natural history of untreated HIV is divided into the following stages:

- Viral transmission—the time when the person becomes infected.
- Acute retroviral syndrome—after 2 to 6 weeks most patients develop a flu-like illness with fever and aching, sore throat, and possible skin rash and diarrhea.
- Recovery and seroconversion (i.e, the person's serum goes from negative to positive for HIV)—person feels well again although he now tests HIV-positive.
- Asymptomatic chronic HIV infection—the patient seems well but the virus continues to grow in his body and continues destroying his immune system's CD4 lymphocytes.
- Symptomatic HIV infection—this is the stage we recognize as AIDS. It usually develops 3 to 10 years after becoming HIV-infected.
- Finally, death.

Once HIV enters the body, where it replicates rapidly, it infects a large number of WBC's called CD4 cells. During this acute or primary phase of infection, the blood contains many viral particles that spread throughout the body, seeding various organs. This rapid initial viral replication causes an equally rapid destruction of CD4 cells, leading to a high concentration of virus in plasma and a low CD4 count. These CD4 cells are very important for the immune system to work properly. As they are destroyed, the body's defenses weaken.

Two to six weeks after exposure to the virus, 50 to 80% of newly HIV positive people suffer a flu-like illness related to this infection (**acute retroviral syndrome**). Symptoms include: fever, headache, myalgias (muscle aches), skin rash, sore throat, and diarrhea. Other symptoms, such as paralysis, meningitis (infection of the lining around the brain), and opportunistic infections as a consequence of severe immune suppression are much less common at this stage. As antibodies are produced and become detectable in the patient's blood (from around 6 weeks onward), the level of virus falls, the CD4 count begins to increase, and the clinical symptoms and signs resolve. This period is known as **seroconversion**.

After seroconversion, a **long period of chronic HIV viral infection** follows without any symptoms of illness. During this time, the virus continues to replicate and infect the CD4 cells as above, but the patient usually continues to look well. However with time, the immune system becomes unable to produce new CD4 cells at the same rate at which they are being destroyed, so the number of CD4 cells begins to decline and the rate of viral replication increases until the immune system is damaged to the point where HIV-related opportunistic diseases and eventually the AIDS syndrome develop.

Almost all (if not all) HIV-positive people will finally develop HIV-related diseases and AIDS. The rate of this progression depends on the type and strain of the virus and certain host characteristics. Factors that may cause faster progression include: age less than 5 years or more than 40 years, poor nutritional status, other infections, and possibly genetic factors. As HIV infection progresses and immunity declines, people become more susceptible to opportunistic infections.

The survival time after the start of severe AIDS-related illnesses is variable but, before the development of effective antiretroviral (ARV) therapy (ART), average survival time was about 2–4 years in most developed countries and about 6 months or less in developing countries.

SIGNS AND SYMPTOMS IN HIV INFECTION—The symptoms are usually caused by opportunistic infections occurring when the body’s defenses are low, and not by the HIV virus itself. Therefore, opportunistic infections (such as thrush, TB, and pneumocystis carinii pneumonia) should be aggressively treated before even considering antiretroviral (ARV) treatment. The World Health Organization (WHO) staging system for HIV infection recognizes HIV disease progression and may be used to assess newly diagnosed HIV clients and their eligibility for preventive and ARV therapies. Knowledge and extensive use of the WHO staging system is the basis of clinical care for HIV. In addition, regular measurement of body weight and laboratory measurement of immunological and virological status (where possible) are very important for good HIV clinical care.

O—

EARLY DIAGNOSIS AND TREATMENT of all HIV-positive individuals is essential. Early knowledge of HIV infection can result in tremendous public health benefits through decreasing risky behaviors that could transmit HIV to those people who remain uninfected. Uninfected persons may also benefit from HIV testing, because knowing they do not have HIV may encourage them to reduce risky behaviors. Expanding opportunities for widespread testing, coupled with access to free treatment—and the knowledge that it exists—will help to identify HIV-positive individuals in the population. Testing for HIV is available at every hospital and health center in Liberia and in many clinics. All patients with signs or symptoms of disease should be referred for testing, but cannot be tested unless they agree.

Liberia has adopted a National Testing Strategy employing two key approaches:

1. **Voluntary counseling and testing (VCT)** is a system by which an individual can find out his/her HIV status and receive pre- and post-test counseling. Informed consent (written or oral) for testing is required in this setting.
2. **Health care provider-initiated testing and counseling (PITC)** is based on a health care provider's recommendation to a patient.
 - Routine PITC is encouraged in all health care settings.
 - Health care providers should offer an HIV test to every patient who requests health care, but especially patients in:
 - Inpatient wards
 - TB clinics
 - STI clinics
 - Antenatal care clinics
 - Therapeutic feeding centers
 - Maternal and under-fives health clinics (special attention should be paid to recognizing the manifestations of HIV in children)
 - All patients have the option to refuse testing.
 - Pre-test counseling can be provided in a group format (e.g., a health talk) but post-test counseling should be performed in private settings.
 - Pregnant women who test HIV-negative during the first trimester should be retested in the third trimester to rule out the possibility of a false negative diagnosis (i.e., testing negative during the window period) or a new infection.

Consent and Counseling

- All patients undergoing HIV testing must give their consent (oral or written) before a test is performed on their specimens.
- Doctors, nurses, midwives, and health personnel should be trained to offer pre- and post-test counseling. Ideally, this should be included in pre-service training.

Pre-Test Counseling

Counseling before testing should be provided to individuals who are considering being tested for HIV. The counseling should provide information on basic technical aspects of screening and the possible personal, medical, social, psychological, and legal implications of being diagnosed either positive or negative.

- In health care settings (hospitals and clinics)—health care providers should provide appropriate counseling so patients understand that with consent they will undergo a test for HIV.
- In VCT centers—counselors should perform more extensive pre-test counseling, which includes explaining how the diagnosis is made, risk factors for HIV, the course of the disease, available treatments, and the need for life-long therapy.

The counselor should:

- Determine the individual’s background information on HIV and AIDS.
- Provide information on HIV and AIDS in a manner easy to understand by using simple, common, and accepted language.
- Take an appropriate history to assess the likelihood that the individual has been exposed to HIV, such as risky sexual relations, injecting drug abuser, having received a blood transfusion, or having been exposed to non-sterile invasive procedures.
- Inquire about a person who would be able to provide emotional and social support for the individual.

Post-Test Counseling

Post-test counseling must be provided:

- In all circumstances irrespective of the test result
- In a private manner acceptable to the patient
- To the caregiver, in the case of a patient who is a minor

NOTE: The type of counseling will depend on the outcome of the test.

- 1) All people who test positive should be referred to the closest hospital or health center providing HIV care and treatment. Most counties have one or more such facilities.
 - 2) HIV care is a life-long commitment.
 - 3) Like other chronic diseases such as hypertension or diabetes, HIV can be treated, but it cannot be cured.
-

MANAGEMENT PROTOCOLS—the most important aspects of management for a health worker are:

- Recognize the signs and symptoms of HIV and of opportunistic infections.
- Counsel the patient that testing and treatment are available free of charge in every county of Liberia.
- Refer the patient (and his/her family) for testing, care and treatment.

Once found to be HIV-positive, a patient should be treated for any infections and started on prophylaxis for opportunistic infections until he/she can be enrolled in a care and treatment program at the closest hospital or health center.

Prophylaxis against HIV-Associated Infections with Cotrimoxazole Preventive Therapy (CPT)

Cotrimoxazole (CTX or TMP-SMX) is an essential aspect of HIV care. Its use can improve survival independently of specific HIV treatment with antiretroviral (ARV) medicines. Cotrimoxazole can prevent: bacterial pneumonia (streptococcus pneumonia), bacteremia (salmonella species), pneumocystis jiroveci pneumonia (PCP), diarrhea (from salmonella, isospora belli), and toxoplasmosis. In children, CPT also protects against malaria, otitis media, sinusitis, cellulitis, and septicemia.

Steps to Initiating Cotrimoxazole Preventive Therapy (CPT)

1. Identify potential recipients:
 - a. HIV-positive adults, adolescents, and children
 - b. HIV-negative but exposed children from 6 weeks of age and older
2. Take a medical history.
3. Conduct a physical examination.
4. Counsel on the opportunistic infections that occur in people with HIV infection.
5. Treat any opportunistic infections that the HIV patient already has developed.
6. Screen for contraindications to taking cotrimoxazole. Do not give to people with:
 - a. Known allergy to sulfa-containing drugs (which include both cotrimoxazole and sulfadoxine-pyrimethamine [Fansidar])
 - b. Kidney or liver disease
 - c. Seriously ill patients (refer for specialized medical care instead)
7. Counsel the patient on:
 - a. Drug adherence—the patient needs to know he must take the medicine every day and never stop
 - b. Possible side effects of cotrimoxazole—these are:
 - Skin eruptions, which may be severe (Stevens-Johnson Syndrome)
 - Nephritis (kidney disease)
 - Hepatitis (liver disease)
 - Anemia and other signs of bone marrow suppression
 - Hyperkalemia (too high serum potassium)
8. For most patients, the benefit of CPT will be much greater than the risks. Most patients do not develop a severe side effect and live longer with CPT.
9. **What should an HIV-positive mother do to feed her newborn infant?** The problem is that **breast milk can transmit the virus** to the baby. For the **educated mother with sufficient income, infant formula is a good option**, but this is **usually not possible for the many low-income mothers. However, the AIDS Control Program in Liberia will buy formula for an HIV-positive mother. Expressing breast milk and pasteurizing it** has been considered, but time-consuming and not very practical. **Nevirapin syrup** 1 tsp. daily given to the infant reduces the chance of the infant developing HIV from the breastmilk and is one option. See page 195 for options for HIV-positive mothers feeding their infants.

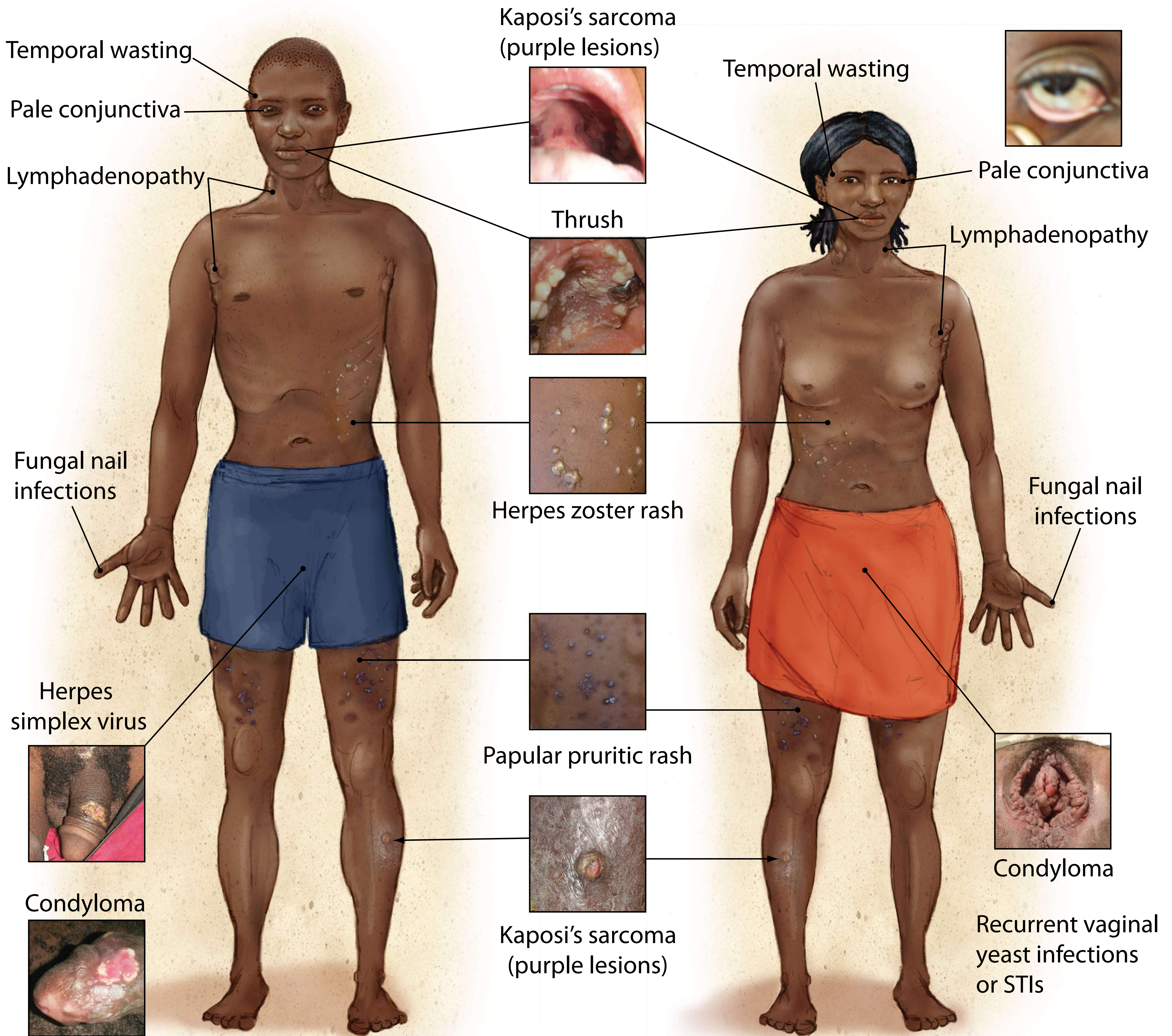
Recordkeeping--The only recordkeeping that an Officer In-charge has to complete is the National Aids Control Program (NACP) referral form, needed to send a patient for counseling, testing, and/or treatment.

Study the posters on the next 2 pages showing the symptoms of AIDS in adults and children.

WHO NEEDS AN HIV TEST?

Offer an HIV test to all patients with the following conditions:

- Unexplained anemia
- Chronic diarrhea
- Loss of weight or malnourished
- Chronic fevers
- New onset seizures
- Asymmetric weakness of face or extremities
- All patients with **sexually transmitted infections**
- All patients with **tuberculosis/suspected tuberculosis**



Healthcare providers should also **ALWAYS** offer a test to the following people:

- All **pregnant** women
- All infants and children (<8 years old) born to **HIV positive women**
- All **blood donors** prior to blood donation
- All people with **multiple visits** to the inpatient or outpatient ward

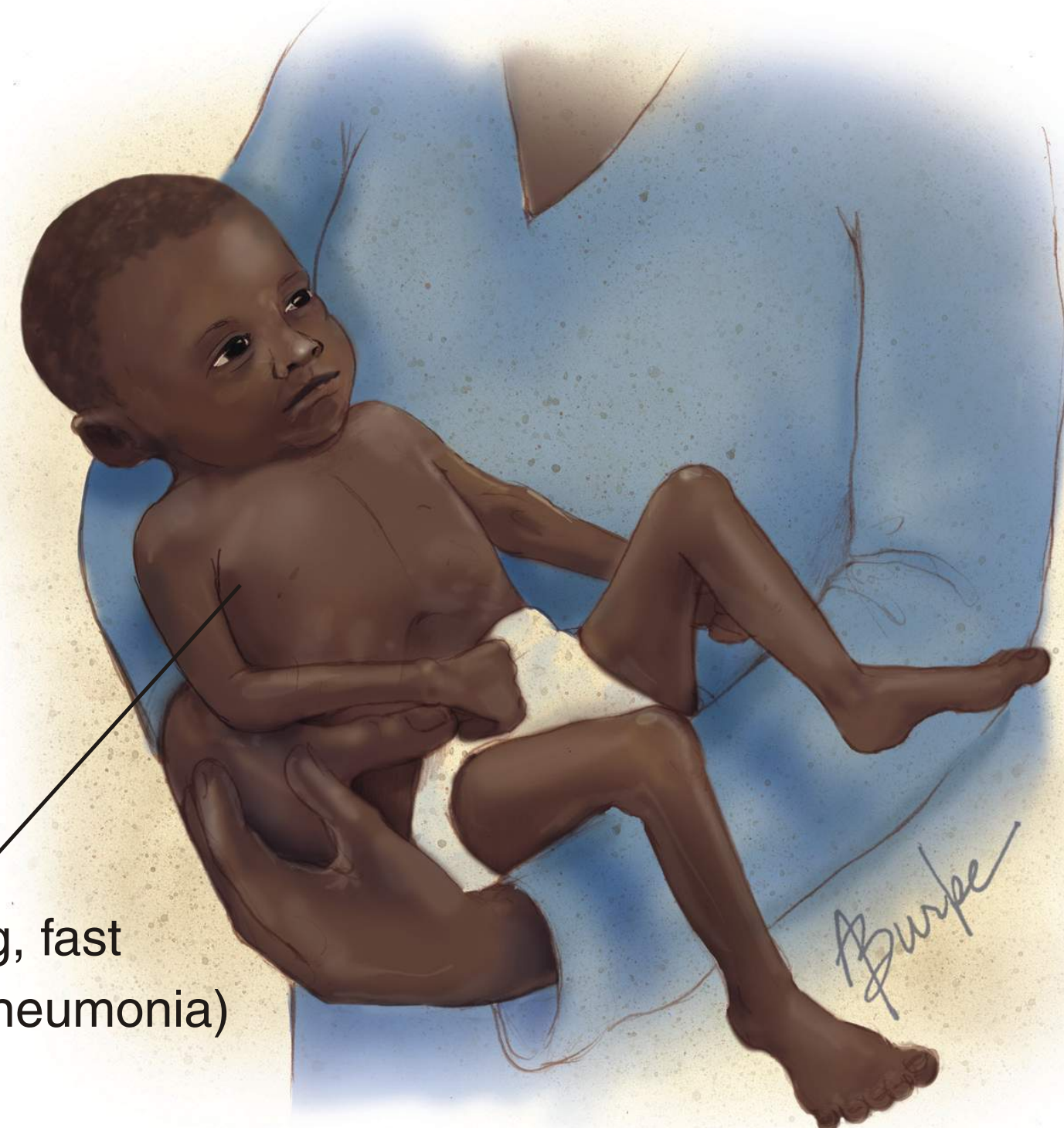
Also offer an HIV test to any patient who makes repeated visits to the clinic for any reason.
You could save their life.



Does This Child or Baby Have Any Of These Symptoms?

Infant under 18 months

Thrush after 3 months?



Ribs showing, fast breathing (Pneumonia)

- Losing or not gaining weight?
- Floppy, weak or tired?
- Unable to sit up by 6 months?
- Unable to stand up by 12 months?
- Unable to say one word by 15 months?
- Persistent diarrhea?

School age child

Thin hair

Draining ears (Chronic ear infection)

Sores on face (Molluscum)

Swollen cheeks (Parotitis)

Lumps in armpit (Lymphadenopathy)

White patches in mouth (Thrush)

Rash on body (Shingles)

Rash on arms (Papular rash)

Swollen belly (Large Liver or Spleen)

Thin legs

Thick fingers (Finger clubbing)

Frequent fevers?

Stunted growth?

Perform an HIV test and refer to ART Services.



CHAPTER FIVE



It is important to prevent illnesses and improve health in the community. As health workers, we sometimes get so busy treating illnesses that we have no time to prevent them. Yet prevention can save more lives than treatment. An excellent example of this is measles. In every measles epidemic we work hard to save the lives of many sick children. Yet, in spite of all our hard work, some still die. But measles epidemics can be prevented by vaccinating. It also is hard work to reach to all the surrounding towns and vaccinate correctly, but it prevents many deaths from measles and in addition saves the children from becoming very ill for 2 or 3 weeks. Other types of community health activities may not have results as easy to see as this, but just the same they are very important. In this chapter we shall discuss:

Health Education—pg. 177

Nutrition and Using ENA—pg. 185

Teaching Nutrition—pg. 207

Under-Fives Clinics—pg. 223

Maternal and Neonatal Care—pg. 263

Mental Health—pg. 315

Mobile Teams—pg. 327

Disease Surveillance—pg. 331

Environmental Sanitation—pg. 337

The Role of the Clinic Staff—pg. 347

COMMUNITY HEALTH IS MOST IMPORTANT

Chapter Five—Community Health and Preventive Medicine

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HEALTH EDUCATION GUIDE FOR RURAL HEALTH WORKERS

By Marion Subah, RBHS, updated from her 1989 revision
Original document by Florida Traub, Former Director of Health Education

WHAT IS HEALTH EDUCATION?

Health education is one of the essential services necessary in promoting and sustaining healthy behavior. Health education means more than “health talks.” In the past, we believed that giving health talks in the clinics or during home visits, lecturing about how illnesses are caught, and placing posters on the walls of our clinics were our greatest efforts in health education. What we did in the past were good efforts toward health education, but we need to look at the other important parts of health education that we left out. Health education programs must actually help people to solve the problems that keep them from behaving in a healthy way. It must encourage and enable people to acquire the information, skills, values, resources, and support they need to help them behave in ways that will make and keep them well or healthy.

Health education can be defined as:

“...that component of health and medical programs that consists of planned attempts to change individual, group, and community behavior (what people think, feel and do), with the objective of helping achieve curative, rehabilitative, disease preventive and health promotive ends.”¹

In other words, health education is any activity that teaches people how to treat illness, get well faster, avoid getting sick, or how to stay healthy.

The Aims of Health Education

There are four major aims of health education:

1. To teach them what to do to have good health.
2. To encourage people in the community to develop and use health services.
3. To make people value good health.
4. To encourage community efforts and actions to have a healthy community.

Methods of Health Education

To accomplish the four aims above, health workers must help people:

1. Acquire (learn and understand) basic health information
2. Examine attitudes and values about health and illness
3. Acquire new and/or improved healthful skills
4. Obtain needed resources for improving health
5. Become receptive to social support

¹ Guy Steward-Mustand, *Introduction to Public Health*, 1968, pg. 399.

HEALTH EDUCATION INVOLVES PEOPLE IN IDENTIFYING, PRIORITIZING, AND SOLVING THEIR OWN PROBLEMS.

Now to accomplish the four major aims, health workers need the following:

1. Community Diagnosis, to learn about the community
2. Community Organization, to work to help them organize
3. Community Education, to provide information
4. Clinic Health Education, to change harmful behavior

Community Diagnosis

When we as health workers want to know what is making a person sick, we take a history and examine the person to make a diagnosis. When we want to know what is causing ill health in a community, we must learn all we can about the community and its problems to make a community diagnosis as to what is causing ill health and death. Health workers must work with the people to identify and become acquainted with their problems in order to make such a diagnosis. Information on behavior can be collected by:

- OBSERVATION—Watching and listening
- INTERVIEWS—Both formal and informal, discussing and questioning, asking how, why, when and where (often when just visiting with people).
- RECORDS AND DOCUMENTS—Written observations and experiences of other people. Health facilities' records are a very good example.

Through the methods above, the following questions are asked to obtain information:

- How do people get rid of their garbage?
- How many latrines are in the town? Are they being used?
- Where do people get drinking water?
- Where do people wash clothes?
- What do most people do to earn money?
- What foods do mothers give babies 6 months of age and older?
- What kinds of illnesses do I have in my clinic records?
- What kinds of illnesses are common in town that I do not see at the clinic? And why do people not come to the clinic for these illnesses?
- Where do people go for treatment other than to the clinic?
- What associations or clubs exist in the community?
- How is the general sanitary condition of the town?
- How many schools are there in the community?
- Where do women deliver other than the medical facility and why?

After you get this information, you can use it to determine what problems you have in the community that are causing illness and death. To be sure you are right, check your clinic records for the number of cases of these diseases.

Another question you could answer from the results of your community diagnoses is “why do people not use the health facilities more often?” Ask yourself these questions:

- Are you greeting patients, establishing a relationship, explaining procedures and reasons, making sure patients understand, and encouraging and answering patients’ questions?
- Are your clinic hours convenient? Are your people mostly farmers who have to get to work very early to beat the sun and drive away the birds during rice farming season?
- How can you establish and maintain a cordial relationship with your patients or adjust your clinic hours to meet the time convenient for most people in the community? Could you visit patients or have other hours for the clinic?



Contaminated water sources and poor latrines mean poor health for the community.

To encourage people to make use of and take part in the development of health services, we must get them involved in problem identification, problem-solving, decision-making, planning, and implementing our health care delivery system. We can do this by organizing our community for the purpose of “action for health.”

Community Organization

Community organization means getting the community to participate in activities that they have decided will improve their health. For example, if a community of 2,000 people that has a lot of diarrhea and children dying as a result, decides that the community wants to build more latrines and dig more wells, and then proceeds to do so, this is community action, and community action is the result of community organization.

In working with the community, the person doing health education must realize that the community was organized before he or she came. Therefore, he/she must always promote harmless and good behavior. He must see what organization is in the community already, and always use the best part of it. He or she can work with the community by following the process below. Each stage fits in a circle of steps and one often has to go back to a previous step first to accomplish the present stage. These stages are:

Chapter Five—Community Health and Preventive Medicine

- **DIALOGUE (TALKING) WITH THE COMMUNITY**—Talk with the people in groups and as individuals. Include chiefs, teachers, and other leaders who can influence community opinion, as well as the average women, men, and children in the community. Ask questions and seek explanations to find out about the community and its health problems.
- **REPRESENTATION OF ISSUES BY THE HEALTH EDUCATOR TO BE SURE HIS PERCEPTIONS ARE CORRECT**—This can sometimes be done through drama, such as a play demonstrating the problems, or with visual aids. In other words, the health educator is asking, “Is this what you are saying?”
- **IDENTIFICATION OF PROBLEMS AND DECIDING ON SOLUTIONS**—In a town meeting, the health educator then listens to the problems that the people have identified and discusses with them how they can best solve these problems. The health worker should keep records during the meeting and at the end of each meeting review what was decided to stress the commitment that each community member has made. For example, if the community decided to dig four wells, and one well-digger volunteers to dig two wells, this commitment can be confirmed and established during a review at the end of the meeting. A Community Health and Development Committee, made up of representatives of the different groups in the community, should be set up to allow the people to play a key role in efforts to achieve better health for themselves. The officers of the community are primarily responsible for making sure that programs and projects are carried out. Among the officers should be a secretary to keep records. However, the health worker (who is also a member of the council) should also keep his own records.
- **PRIORITIZING**—The people of the community should then decide what problem they want to work with first and exactly what steps they will take in solving it, and by whom and when.
- **IMPLEMENTATION**—The health educator then works with the people to solve the problem. He must follow up the project selected by the community until it has been completed. After one project is underway, another project can begin. Also, the health worker should point out any difficulties that may delay the project. This will enable the community to anticipate some problems and find ways to avoid these problems. After you have helped the community to organize and a project is started, you can use your community meetings for giving “health talks.” Your topics should center on the project. For example, if the project was to build a well for safe drinking water, discuss how to keep the water free of germs from the time it leaves the well until it enters the stomach.

The whole project goes at the pace that the people are able to maintain.



HEALTH EDUCATION IN THE COMMUNITY AND CLINIC

Suggested Process for Conducting Health Education Sessions

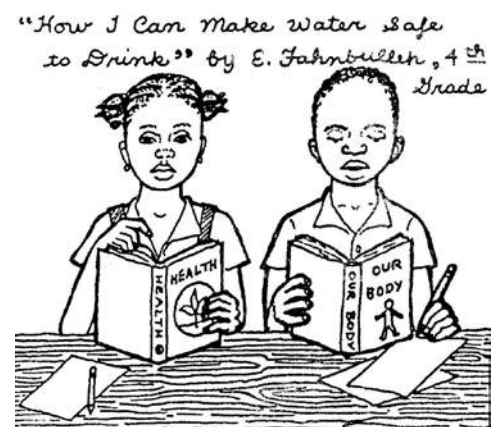
1. **BEGIN WITH A DISCUSSION STARTER**—Use a 3–5 minute visual aid, drama, story, or song to show a problem, such as measles, diarrhea, neonatal tetanus, difficulty breathing, convulsions, etc., that exists in your community or health facility. Do not show the cause of the problem.
2. **CHECK UNDERSTANDING** of the visual aid, drama, story or song. Ask questions: “What did you see or hear in this visual aid, drama, story or song?” “Why do you think this happens in this visual aid, drama, story, or song?”
3. **CHECK THE HAPPENING** of the problem in real life in the community— “Has anyone seen or heard about this happening in the community? What have you seen or heard in this community?” Check to make sure the people are actually not aware of the cause of the problem in their community.
4. Now lead the people to discuss: “Why did that happen in the community?” (The cause of the community’s problem can now be identified by the people.)
5. **PROVIDE INFORMATION**—Confirm what the audience said that was correct, and add any new information that was not mentioned. It is good to use demonstrations and visual aids as much as possible.
6. **CHECK LEARNING**—Involve as many persons as possible. Ask as many questions as possible. “What would you do now, if this happens?” Use return demonstration anytime you do a demonstration—use more than one person if it is an activity with many steps. Also, one person could say what should be done and one could demonstrate how to do it.

Types of Health Education Sessions

Community Health Education

Community health education can occur in any place where you have the opportunity to speak to the people and get them to participate by asking questions. Some of the places are: the market, churches, cinema halls, schools (school health education), and club meetings.

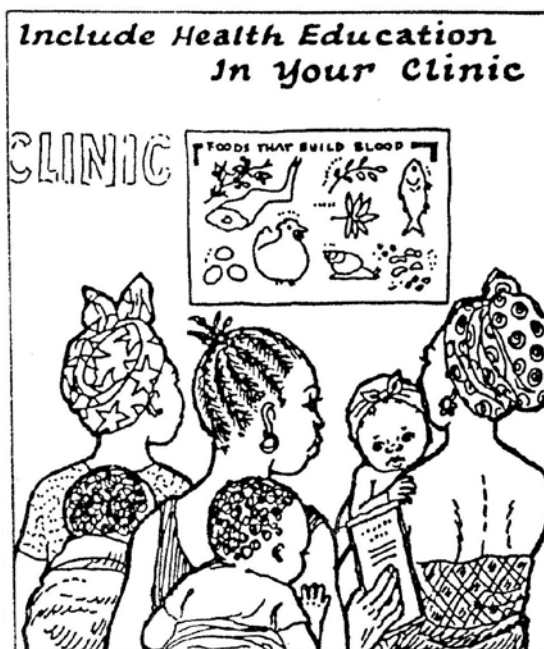
Community health education should always be given in the language of the people. If the health worker cannot speak the language, let him use an interpreter. Secondly, he must not use more than 30 minutes to talk and demonstrate to the people, and preferably less time (10 or 15 minutes is often better). Thirdly, talk to the people on only one topic. Use visual aids to help the people understand and also do some demonstrations. Visual aids do not always mean posters. For an example, if you are talking on nutrition, it is better to do a demonstration using the real local foods instead of posters.



ONE TOPIC, LESS THAN 30 MINUTES, IN THE LOCAL LANGUAGE

Before you do your health talk you must prepare:

- Decide on the topic. (It is best to choose a topic that is a problem of your community and patients.)
- Write down the points you want to stress.
- Collect the visual aids you will need.
- Make sure you get there on time.
- Speak in the language of the people or get an interpreter.



Clinic Health Education

Along with your community health education, you must have some health education in the clinic. You should plan your health talks for the clinic in the same way as the community health talks. However, it usually is more convenient to have your health talk for 5 to 10 minutes, just before clinic starts. A talk that includes a demonstration will take longer. Plan for the demonstration and return demonstration. When the patients have arrived at the clinic be sure to take care of emergency cases first before beginning the health talk. Posters and other visual aids can be used at the time. Place posters on the walls after the talk. They will remind the patients what you have talked about.

Evaluation of Health Education Services

To be able to measure your achievements and shortcomings, health educators must evaluate their activities. Evaluation enables them to plan better for activities they want to carry out in the future; allows them to improve activities that are being carried out now, and permits them to judge whether or not they are being successful. Evaluation can take place any time during the execution of activities.

There are several designs for evaluating, but for health education one of the best is the "before-after" design. In this design, baseline information is collected on the status of the community before the project is started. After the community chooses a project and completes it, evaluation is done again to determine what changes have taken place in the community status.

Below are some samples of methods for evaluating:

- Getting your patients or community members to answer questions at the end of your talks or having them repeat a demonstration. With this you can evaluate how well the people understand what you are trying to teach them.
- Looking at your clinic records for a period of time and comparing it with last year's record.
- Looking at the number of persons who attend your community meeting regularly.
- Comparing the number of diarrhea cases before the latrines were built and after the latrines were built and people were taught how to use them.
- Checking how many mothers know how to make and use sugar-salt solution for diarrhea.
- Checking how many projects were successfully completed and how many failed.
- Checking how many persons in your community are using the wells and latrines that were constructed through self-help.
- Comparing how many home visits you were able to make this year with the number you made last year.
- Comparing how many times you were able to visit the schools this year with the number of school visits made last year.

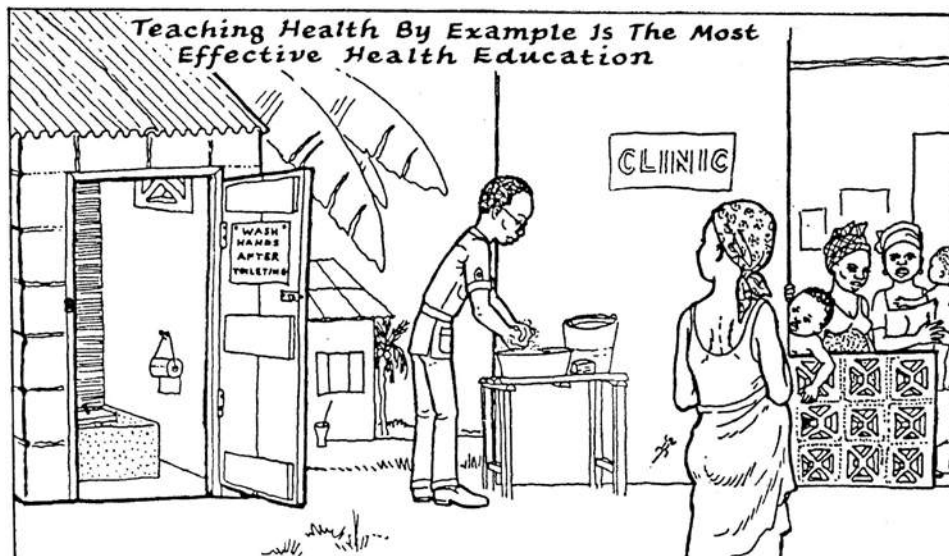
These are just examples of how you can determine your achievements and shortcomings. After you determine your shortcomings, you should find ways to overcome your difficulties.

Points to Remember on Health Education Services

1. Health education is a planned process, and planning it well is very important. Set up objectives for each program:
 - What do you want to do?
 - How will you accomplish your aims?
2. Health education must involve the people for which it is planned—you must have a target group. This group must actively participate in efforts to improve their own health.
3. Health education must be carried out or organized by health workers who are sincere, honest, trustworthy, and friendly. For you to communicate successfully with people, they must have confidence in you. Where there is no communication, health education will fail.

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4. Health education services need constant evaluation and follow-up. How much were you able to do, and why were you not able to do some of what you had planned?
5. Health education is teamwork. All members of the health care delivery system must be involved in health education services.



NUTRITION (SECTION ONE)

This part of the Handbook for Health Personnel in Liberia is divided into two sections: the first includes, primarily, what each formally trained health worker needs to know concerning nutrition (especially infant/child nutrition); the second is written as if the formally trained health worker were using it to teach less qualified personnel, such as traditional midwives or community health workers. This first section is primarily for instruction of formally trained health workers.

USING ESSENTIAL NUTRITION ACTIONS (ENA) TO IMPROVE THE NUTRITION OF CHILDREN AND WOMEN IN LIBERIA

Adapted from the reference handbook by Marion Subah

Introduction

This first section is based on the training course developed by the Ministry of Health and Social Welfare (MOHSW) in March 2010. The reference handbook from which this is taken is intended to equip health providers with the basic information on implementing the Essential Nutrition Actions (ENA) framework in Liberia, using multiple channels (e.g., health centers, health clinics, and the communities) and multiple contacts (critical health contacts).

In addition, the six maternal and child health (MCH) job aides assist the health providers to deliver the right nutrition support during each of the key health contacts. The booklet on ENA messages serves as a reference to deliver key messages tailored to Liberia.

Learning Objectives

The readers will be able to:

- Outline the different activities and places when health providers can support the improvement of women and their children's nutrition practices.
- Explain how a health provider can support optimal breastfeeding practices and other essential nutrition actions (from pregnancy until the baby is 6 months old).
- Recite the benefits of breastfeeding for the infant, the mother, the family, and the community/nation.
- Explain proper positioning of the infant and attachment to the breast for breastfeeding.
- Explain the difficulties of breastfeeding, and how to prevent and treat these difficulties.
- Explain how a health provider can support complementary feeding practices and other health and Essential Nutrition Actions (from 6–24 months old).
- Explain what is active/responsive feeding.
- Describe the techniques to assess acute malnutrition and how to identify children with severe acute malnutrition (SAM).
- Recite protocols used for vitamin A supplementation for children and women.
- Recite protocols used for iron/folic acid supplementation and treatment for children and women.

The Role of the Health Providers in Implementing Essential Nutrition Actions (ENA) to Prevent Malnutrition

The health worker must know the ENA, and when and where to teach or do them.

The Seven Essential Nutrition Actions

1. Optimal breastfeeding practices
2. Appropriate complementary feeding with breastfeeding (starting at 6 months)
3. Nutritional care of sick and/or malnourished children
4. Women's nutrition
5. Control/prevention of vitamin A deficiency
6. Control/prevention of anemia
7. Control/prevention of iodine deficiency disorders

The Seven Health Contact Points, where nutrition must always be taught:

1. At every contact with a pregnant woman at the health clinic and in the community
2. At delivery in hospital or at home
3. During postpartum family planning sessions at health clinic and in the community
4. During immunization sessions
5. During well-baby clinic sessions
6. During sick child visits (IMCI and CCM)
7. During community management of acute malnutrition (stabilization centers, outpatient therapeutic care, food supplementation)

Also teach and emphasize the importance of nutrition at or to:

- Community level
- Credit meetings
- Farmers' schools
- Literacy groups
- PTA meetings/school gardens
- Religious leaders
- Others

Explain the Benefits of Breastfeeding

Explain the benefits to the mother and other caretakers such as grandmothers and other family members.

Benefits of breast milk for the infant and young child:

- Breastmilk saves lives.
- Is a complete food for the infant because it contains balanced proportions and a sufficient quantity of all the nutrients needed during the first 6 months.
- Breastfed infants have less diarrhea and respiratory infections since breast milk contains antibodies that protect against diseases, especially against diarrhea and respiratory infections.
- The infant benefits from the colostrum, which protects him/her from diseases. The colostrum acts as a laxative, cleaning the infant's stomach.
- Promotes adequate growth and development, thus preventing stunting.
- Is always clean.
- Is always ready and at the right temperature.
- Is easy to digest. Nutrients are well-absorbed.
- Protects against allergies. Breast milk antibodies protect the baby's gut, preventing harmful substances from passing into the blood.
- Contains the right amount of water to meet the baby's needs (up to 80% is water).
- Helps jaw and teeth development; suckling develops facial muscles.
- Frequent skin-to-skin contact between mother and infant leads to better psychomotor, affective, and social development of the infant.

Benefits for the mother:

- Putting the baby to the breast immediately after birth facilitates the expulsion of the placenta because the baby's suckling stimulates uterine contractions.
- Reduces risks of bleeding after delivery.
- When the baby is immediately breastfed after birth, breast milk production is stimulated.
- Immediate and frequent suckling prevents engorgement.
- Breast milk is available at anytime and anywhere, is always clean, nutritious and at the right temperature.
- Breast milk is economical, whereas commercial formula is very expensive.
- Stimulates the bond between mother and baby.
- Reduces the mother's workload (no time is involved in boiling water, gathering fuel, or preparing milk (all of which must be done to prepare formula).
- Reduces risks of pre-menopausal breast and ovarian cancer.
- Breastfeeding is more than 98% effective as a contraceptive method during the first 6 months provided that breastfeeding is exclusive and amenorrhea persists (i.e., the Lactation Amenorrhea Method or LAM).

Benefits for the family:

- No expenses in buying formula, firewood, or other fuel to boil water, milk or utensils. The money saved can be used to meet the family's other needs.
- No medical expenses due to sickness that formula could cause. The mothers and their children are healthier.
- As illness episodes are reduced in number; the family encounters fewer emotional difficulties associated with the baby's illness.
- Births are spaced thanks to the contraceptive effect.
- Time is saved.
- Feeding the baby reduces work because the milk is always available and ready

Benefits for the community:

- Not importing formula and utensils necessary for its preparation saves hard currency that could be used for something else.
- Healthy babies make a healthy nation.
- Savings are made in the health area. A decrease in the number of child illnesses leads to decreased national expenses of treatments.
- Improves child survival. Reduces child morbidity and mortality.
- Protects the environment (trees are not used for firewood to boil water, milk and utensils, thus protecting the environment). Breast milk is a natural renewable resource.

Support Optimal Breastfeeding Practices

Health providers can support optimal breastfeeding practices by knowing the answers to the following questions:

1. How can health providers assist to achieve optimal breastfeeding practices?
 - By discussing the benefits of breastfeeding and birth spacing with the mother, her husband, grandmother and family (if possible).
 - By helping the mother to breastfeed immediately after delivery at hospital, at home, or when assisting delivery. Breastfeeding immediately will:
 - Help expel the placenta more rapidly and reduce blood loss
 - Help expel meconium, the infant's first stool
 - Stimulate breast milk production
 - Keep newborn warm through skin-to-skin contact
 - The baby will receive the colostrum that will protect her/him from diseases by providing the infant's first vaccine

- By promoting exclusive breastfeeding from 0–<6 months because:
 - Breast milk contains all the water and nutrients that an infant needs to satisfy hunger, thirst, and growth.
 - No other foods for liquids should be given during the first 6 months.
 - Infants are likely to have fewer episodes of diarrhea, respiratory, and ear infections.
 - Exclusive breastfeeding helps space births by delaying the return of fertility (Lactation Amenorrhea Method or LAM).
 - By demonstrating the proper positions and attachments for breastfeeding.
2. Which questions must health providers ask pregnant mothers?
- How will you feed your baby?
 - If the mother does not plan to breastfeed her baby, ask why she doesn't plan to breastfeed.
 - Ask: Have you heard of exclusively breastfeeding? Reinforce the key points about exclusive breastfeeding (0–<6 months).
 - Did you encounter any difficulties breastfeeding with other children? What difficulties?
 - Have you already been to a health clinic for antenatal care and for iron/folic acid supplementation? Do you take the supplements every day?
 - Did you get your de-worming medicine?
 - Did you get your tetanus vaccination?
 - Do you sleep under an insecticide-treated net?
 - If HIV testing and counseling is available, ask: Have you thought of taking an HIV test?
3. Why must the mother take a vitamin A capsule within 6 weeks after delivery?
- A mother needs to increase her vitamin A stores for hers and the baby's health (vitamin A passes into breast milk).
 - But vitamin A capsules should NOT be administered during the woman's pregnancy because it is not good for baby then. This is why vitamin A should be administered within 6 weeks after delivery, when the woman has no risk of being pregnant.
- But pregnant and lactating mothers must be encouraged to eat food rich in vitamin A (papaya, mangos, carrots, pumpkin, green leafy vegetables, liver). Adequate vitamin A is needed during pregnancy, but not as much as in a 200,000 IU capsule, which is too much at one time for the developing infant during pregnancy.

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4. Why should iron supplementation be continued after delivery?
 - The iron/folate supplementation should be given to the mother for a total of 6 months. After delivery the mother has to continue the supplementation to complete the 6 months to prevent iron deficiency anemia.
 - Because the mother has lost blood during delivery, she needs to increase her iron stores for the sake of her health and the baby's health (iron passes into breast milk to help the baby make hemoglobin).
 - Breastfeeding mothers should be encouraged to eat food rich in iron (greens, meat, liver, legumes).
5. What must be done when a child under 6 months is sick?
 - Mother should increase breastfeeding frequency during illness.
 - After each illness, increase the frequency of breastfeeds for 2 weeks so that the child may regain strength and weight.
 - Ensure that the child receives all the appropriate immunizations.
 - If the child has fever or convulsions take the child immediately to the health clinic.
6. Which immunizations should a child receive before the age of 6 months?
 - BCG + Polio-0, at birth
 - Polio-1 + Pentavaccine-1, at 6 weeks
 - Polio-2 + Pentavaccine-2, at 10 weeks
 - Polio-3 + Pentavaccine-3, at 14 weeks

Explain Proper Positioning and Attachment for Breastfeeding

1. PREPARATION AND HOW TO BREASTFEED (proper positioning)
 - The mother must be comfortable.
 - Hold the infant in such a way as to have his/her face at the mother's breast level. (The infant should be able to look up at the mother's face, not flat to her chest or abdomen.)
 - The infant's stomach should be against the mother's stomach.
 - The infant's head, back, and buttocks are in a straight line.
 - The infant needs to be close to the mother.
 - The infant is brought to the breast; the baby's whole body should be supported, not just the head and shoulders.
 - The mother should hold her breast with her fingers in a C shape, the thumb being above the areola and the other fingers below. Fingers should not be in scissor hold because this method tends to put pressure on the milk ducts and can take the nipple out of the infant's mouth.

1. **SIGNS OF PROPER ATTACHMENT**—Good attachment is important to enable the infant to suckle effectively, to remove the milk efficiently, and stimulate an adequate supply.
 - Tease the infant’s lower lip with the nipple, in order for the infant to open wide his/her mouth.
 - The infant’s mouth covers a large part of the areola (there is more areola showing above rather than below the nipple).
 - The areola and the nipple will stretch and become longer in the infant’s mouth.
 - The infant’s chin touches the breast.
 - Both lips are turned outward
 - Poor attachment results in incomplete removal of milk, which can lead to sore nipples, inflammation of the breast and mastitis.
2. **SIGNS OF EFFICIENT SUCKLING**
 - Slow and regular sucking at the following rhythm: 2 suctions and 1 swallowing.
 - The infant takes slow deep sucks, sometimes pausing.
 - Suckling is comfortable and pain free.
 - The mother hears her baby swallowing.
 - The breast is softer after the feed.



Describe and Demonstrate Different Breastfeeding Positions to the Mother

1. **SITTING POSITION**
 - Usual position of most mothers.
 - Make sure infant’s and mother’s stomachs are facing each other.
2. **SIDE-LYING**
 - This position is more comfortable for the mother after delivery and it helps her to rest while breastfeeding.
 - The mother and infant are both lying on their side and facing each other.
3. **AMERICAN FOOTBALL**—This position is best used:
 - After a cesarean section
 - When the nipples are painful
 - To breastfeed twins
 - The mother is comfortably seated with the infant under her arm. The infant’s body passes by the mother’s side and his/her head is at breast level.
 - The mother supports the infant’s head and body with her hand and forearm.

NOTE: Regardless of the position chosen, the mother must be comfortable. She should not lean toward the infant but rather draw him/her towards herself. For example, sitting position: back resting on the chair’s back or cushion, feet crossed or raised on a stool.

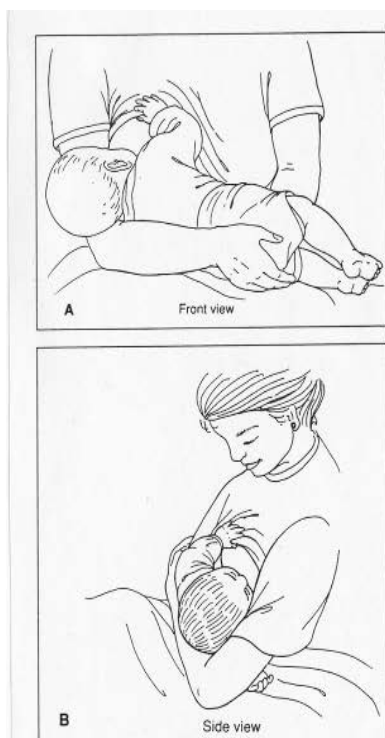


FIGURE 9-9. Madonna (cradle) position. A. Front view. B. Side view.

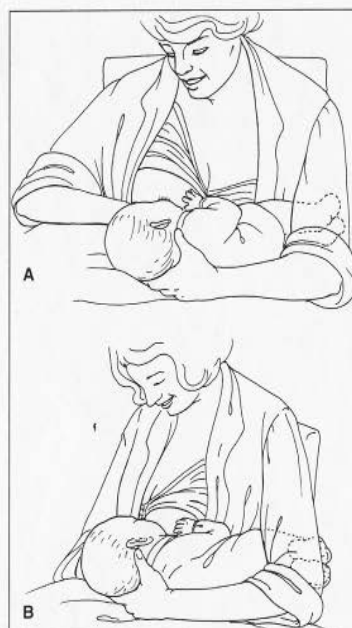


FIGURE 9-10. Football position. A. Modified clutch position. B. Clutch hold.

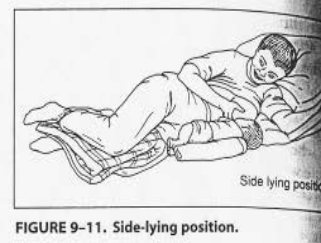


FIGURE 9-11. Side-lying position.

How to Prevent and Treat Common Breastfeeding Difficulties

Difficulty or Condition	Prevention	Solutions
Engorgement	<ul style="list-style-type: none"> • Correct positioning and attachment. • Breastfeed the infant immediately after birth. • Breastfeed on demand (as often and as long as baby wants) day and night: 10–12 times per 24 hours. • Allow baby to finish first breast before switching to the second breast. 	<ol style="list-style-type: none"> 1. Apply cold compresses to breasts to reduce swelling; apply warm compresses to “get milk flowing.” 2. Breastfeed more frequently or for longer periods of time. 3. Improve infant positioning and attachment. 4. Massage breasts. 5. Express some milk. 6. Apply a warm bottle (demonstrate use of warm bottle).
Sore or Cracked Nipples	<ul style="list-style-type: none"> • Correct positioning of baby. • Correct latch-on. • Do not use bottles, dummies, or pacifiers. • Do not use soap on nipples. 	<ol style="list-style-type: none"> 1. Make sure baby is positioned well at the breast. 2. Make sure baby latches on to the breast correctly. 3. Apply drops of breast milk to nipples and allow to air dry. 4. Remove the baby from the breast by breaking suction first with your small finger. 5. Begin to breastfeed on the side that hurts less. 6. Do not stop breastfeeding. 7. Do not use bottles, dummies, or pacifiers. 8. Do not use soap or cream on nipples. 9. Do not wait until the breast is full to breastfeed. If full, express some milk first.

Difficulty or Condition	Prevention	Solutions
Plugged Ducts and Mastitis	<ul style="list-style-type: none"> • Get support from the family to perform non-infant care chores. • Ensure correct attachment. • Breastfeed on demand. • Avoid holding the breast in scissors hold. • Avoid sleeping on stomach (mother). • Avoid tight clothing. • Use a variety of positions to rotate pressure points on breasts. 	<ol style="list-style-type: none"> 1. Apply heat before the start of breastfeeding. 2. Massage the breasts before breastfeeding. 3. Increase mother’s fluid intake. 4. Rest (mother). 5. Breastfeed more frequently. 6. Seek medical treatment; because with mastitis antibiotics may be necessary. 7. If mother is HIV-positive: express milk and heat treat or discard. 8. Position baby properly.
Insufficient Breast Milk Mother “thinking” she does not have enough milk Insufficient weight gain Fewer than 6 wet diapers/day Dissatisfied (frustrated and crying) baby	<ul style="list-style-type: none"> • Breastfeed more frequently. • Exclusively breastfeed day and night. • Breastfeed on demand at least 10–12 times during the day and night. • Correct positioning of baby. • Encourage support from the family to perform non-infant care chores. • Avoid bottles and pacifiers. 	<ol style="list-style-type: none"> 1. Stop use of any supplement, water, formulas, tea, or liquids for the baby. 2. Feed baby on demand, day and night. 3. Choose a quiet place and comfortable position to breastfeed. Do not rush. 4. Increase frequency of feeds. 5. Wake the baby up if baby sleeps throughout the night or longer than three hours during the day. 6. Make sure baby latches on to the breast correctly. 7. Reassure mother that she is able to produce sufficient milk. 8. Ensure that the baby empties one breast before taking the other to get the fore and hind milk. 9. Explain that around 3–4 months, the baby is growing faster. The mother needs to increase frequency of breastfeeding and make sure she empties her breasts when feeding the baby.

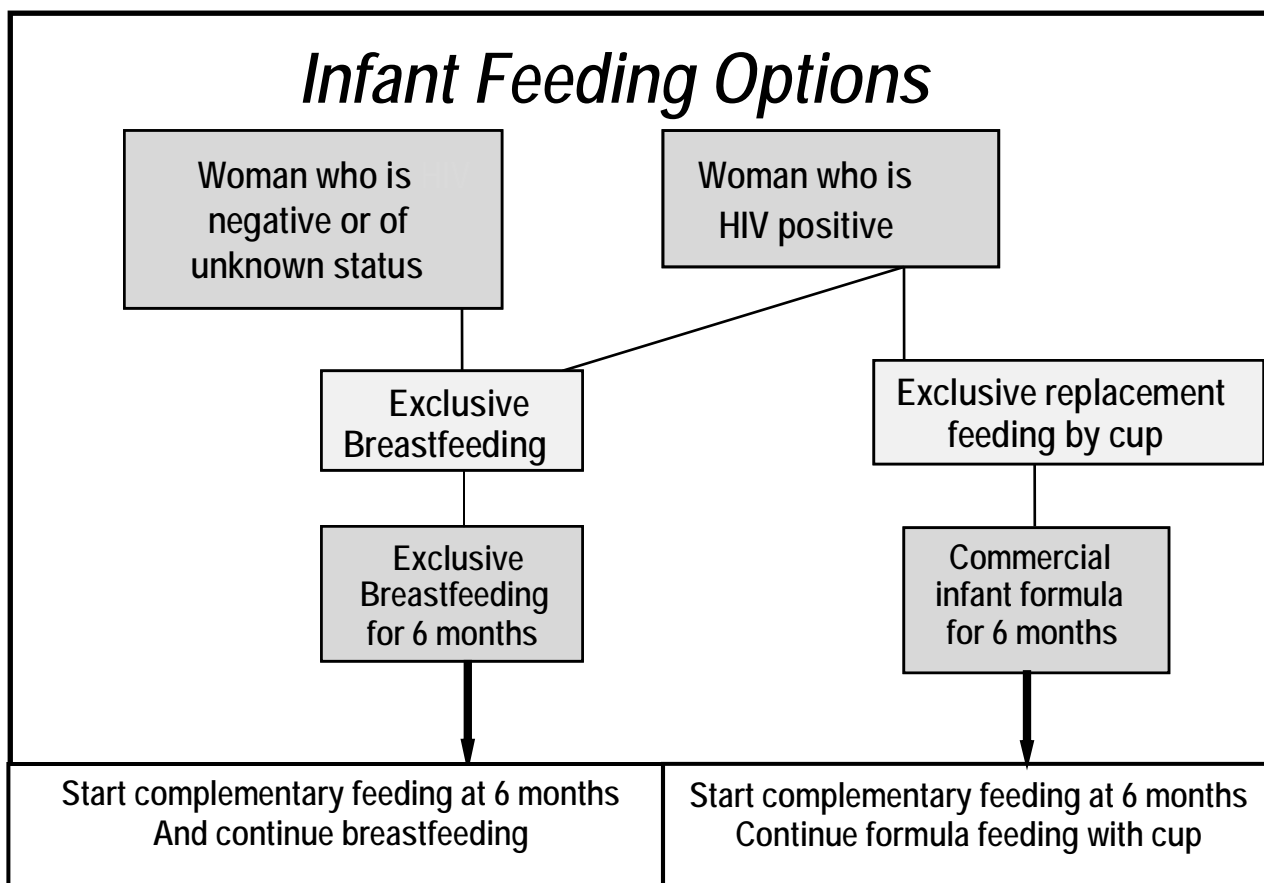
How to Answer Some Special Situations

Special Situations	Solutions
Sick baby	<ul style="list-style-type: none"> • Baby under 6 months: If the baby has diarrhea or fever the mother should breastfeed exclusively and frequently to avoid dehydration or malnutrition. With fever take the baby to the clinic. • Breast milk contains water, sugar, and salts in adequate quantities, which will help the baby recover quickly from diarrhea. • If the baby has severe diarrhea and shows any signs of dehydration, the mother should continue to breastfeed and provide ORS either with a spoon or cup. • Baby older than 6 months: If the baby has diarrhea or fever, the mother should breastfeed frequently to avoid dehydration or malnutrition. She should also offer the baby bland food (even if the baby is not hungry). To clinic if fever. • If the baby has severe diarrhea and shows any signs of dehydration, the mother should continue to breastfeed and add ORS.

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Special Situations	Solutions
Sick mother	<ul style="list-style-type: none"> • When the mother is suffering from headaches, backaches, colds, diarrhea, or any other common illness, she SHOULD CONTINUE TO BREASTFEED HER BABY. • The mother needs to rest and drink a large amount of fluids to help her recover. • If mother does not get better, she should consult a doctor and tell the doctor that she is breastfeeding.
Premature baby	<ul style="list-style-type: none"> • Mother needs support for correct latch-on. • Breastfeeding is advantageous for pre-term infants; supportive holds may be required. • Direct breastfeeding may not be possible for several weeks, but expressed breast milk may be stored for use by infant. • If the baby sleeps for long periods of time, he/she should be unwrapped to encourage waking and held vertically to awaken. • Mother should watch baby’s sleep and wake cycle and feed during quiet-alert states. • NOTE: Crying is the last sign of hunger. Cues of hunger include rooting, licking movements, flexing arms, clenching fists, tensing body, and kicking legs.
Malnourished mothers	<ul style="list-style-type: none"> • Mothers need to eat extra food at meals (“feed the mother, nurse the baby”), and mother should also take extra meals and snacks. • Mothers need to take micronutrients.
Mother who is separated daily from her infant	<ul style="list-style-type: none"> • Mother should express or pump milk and store it for use while separated from the baby; the baby should be fed this milk at times when he/she would normally feed. • Mother should frequently feed her baby when she is at home. • Mother who is able to keep her infant with her at the work site should take her baby to work and feed her infant frequently.
Twins	<ul style="list-style-type: none"> • The mother can exclusively breastfeed both babies—must eat more food. • THE MORE THE BABY NURSES, THE MORE MILK IS PRODUCED.
Inverted nipples	<ul style="list-style-type: none"> • Examine breasts during pregnancy to detect the problem. • Try to pull nipple out and rotate (like turning the knob on a radio). • Make a hole in the nipple area of a bra. When pregnant the woman wears this bra, and the nipple protrudes through the opening. • If acceptable, ask someone to suckle the nipple.
Baby who is refusing the breast (Be sure such an infant is not seriously ill)	<ul style="list-style-type: none"> • Position the baby properly. • Treat engorgement (if present). • Avoid giving the baby teats, bottles, and pacifiers. • Wait for the baby to be wide awake and hungry (but not crying) before offering the breast. • Gently tease the baby’s bottom lip with the nipple until he/she opens his/her mouth wide. • Do not limit duration of feeds. • Do not insist more than a few minutes if baby refuses to suckle • Avoid pressure to potential sensitive spots (pain due to forceps, vacuum extractor, and clavicle fracture). • If still unable to get baby to suckle, express breast milk, and give by cup.

Special Situations	Solutions
Medications for mother	<p>Three things are known about drugs and human milk:</p> <ol style="list-style-type: none"> 1. Most drugs pass into breast milk. 2. But almost all medication appears in only small amounts in human milk, usually less than 1% of the maternal dosage. 3. Very few drugs are contraindicated for breastfeeding women.
Cleft lip and/or palate	<ul style="list-style-type: none"> • Let mother know how important breast milk is for her baby. • Try to fill the space made by the cleft lip with the mother’s finger or breast. • Breastfeed infant in a sitting position. • Express milk and give to the infant using a cup or a teaspoon. • Cleft lip and/or palate can be repaired surgically by a specialist.
Mother who will be away from her infant for an extended period expresses her breast milk. Caregiver feeds the expressed breast milk from a cup.	<ul style="list-style-type: none"> • Mother expresses breast milk by following these steps: <ol style="list-style-type: none"> 1. Washes hands. 2. Prepares a clean container. 3. Gently massages breasts in a circular motion. 4. Positions her thumb on the upper edge of the areola and the first two fingers on the underside of the breast behind the areola. 5. Pushes straight into the chest wall. 6. For large breasts, first lifts and then pushes into the chest wall. 7. Presses the areola behind the nipple between the finger and thumb. 8. Presses from the sides to express milk from the other segments of the breast. 9. Repeats rhythmically: position, push, press; position, push, press. 10. Rotates the thumb and finger positions. • Mother stores breast milk in a clean, covered container. Milk can be stored 8–10 hours at room temperature in a cool place and 72 hours in the refrigerator. • Mother or caregiver gives infant expressed breast milk from a cup. Bottles are unsafe to use because they are difficult to wash and can be easily contaminated.
HIV-positive mother who chooses to breastfeed	<ul style="list-style-type: none"> • Mother should practice exclusive breastfeeding for 6 months. At 6 months mother should introduce appropriate complementary foods. • Infant should take Nevirapin syrup 1 teaspoon daily until completely weaned—helps protect infant from developing HIV from mother’s breastmilk. • At 6 months the mother should consider shifting to replacement feeding and if selected should not mix-feed. (Only formula or milk, not breastfeeding.) • Mother who experiences breast difficulties such as mastitis, cracked nipples, or breast abscess should breastfeed with the unaffected breast and express and discard milk from the affected breast. • Mother should seek immediate care for a baby with thrush or oral lesions. • Mother who presents with AIDS-related conditions (prolonged fever, severe cough or diarrhoea, or pneumonia) should visit a health center immediately. • NOTE: Lactating woman should use condoms to protect herself from exposure to infected semen.
HIV-positive mother who chooses to replacement feed	<ul style="list-style-type: none"> • Mother should practice safe and appropriate use of infant formula exclusively for the first 6 months. • Mother should use a cup, not a bottle. • Mother should NOT mix-feed—give only breast milk substitutes—do not breastfeed.



Support Complementary Feeding Practices and Child Health

Health providers can support complementary feeding practices and child health by answering the following questions and teaching the information to mothers.

1. Which questions should be asked to mothers whose baby will soon be 6 months old?
 - Do you know why it is important to wait until 6 months before you start feeding your child anything besides breast milk?
 - How often will you need to feed your 6–8 month old child?
 - What should you feed your child?
 - What consistency should the food be?
 - What amount should you feed your 6–8 month old child?
 - Do you know where to get vitamin A supplements when your child is 6 months old?
 - What immunization has your child received?
2. Why should vitamin A be administered to children every 6 months from the age 6 months to 5 years? (Ask the question and teach mothers the following:)
 - Vitamin A supplementation ensures the child’s growth.
 - Reinforces the child’s health.

- Protects the child from severe forms of infections such as diarrhea and respiratory diseases, thus reducing the risk of death.
- Improves the child's sight and prevents night blindness that can lead to childhood blindness.

Which foods are rich in vitamin A in your community?

- Colostrum and breast milk are important sources of vitamin A
- Ripe orange/yellow fruits (papaya, mangos)
- Orange/yellow vegetables (carrots, pumpkins)
- Liver and green leafy vegetables

3. Why should a baby eat foods rich in iron?
- To gain more strength.
 - To reinforce a child's health, physical and intellectual development.
 - To prevent anemia.

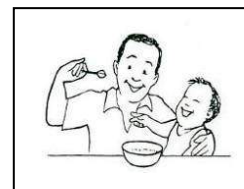
Which foods are rich in iron?

- Breast milk, green, leafy vegetables, liver, meat, fish, and lentils.

4. Why should children be de-wormed every 6 months starting at 2 years?
- Some worms exclusively feed on blood and if the child has them s/he then becomes thin and weak.
5. Why should children sleep under an insecticide-treated bed net (ITN)?
- Sleeping under an ITN protects the child from getting malaria, which is also a cause of anemia.
6. Why encourage mothers/caregivers, and parents, to use iodized salt for the whole family, including children who start complementary feeding?
- To prevent goiter and its complications.
 - To ensure the child's and the whole family's physical and intellectual development.
 - To prevent poor work performance in adults.
 - For pregnant women, to prevent miscarriage, stillbirth, low birth weight, and cretinism in the developing infant.
7. How could a health provider help mothers/caregivers/parents to make sure their children are properly fed?
- Discuss the feeding recommendations with the mother, the father, the grandmother, and other family care providers according to the child's age.
 - Congratulate and encourage the mothers/caregivers to continue breastfeeding for 2 years.

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- Encourage parents to give many different types of food including foods rich in vitamin A and iron to their children.
 - Encourage parents to bring their children to the health center in case of malnutrition, weight loss, or edema.
 - Encourage parents to have a garden with different green, leafy vegetables, and orange/yellow vegetables and fruits.
 - Raise awareness among the population to **use only iodized salt**. (NOTE: **ocean fish also contain significant iodine**.)
 - Encourage parents to go to the health centers or community out-reach for immunization (measles at 9 months), for vitamin A at 6 months and deworming starting from 2 years.
 - Explain that LAM for birth spacing is not effective after 6 months and parents must go to the health center for other family planning methods.
 - Encourage sleeping under a long-lasting insecticide treated mosquito net (LLITN) every night to protect child/mother/families against malaria.
8. How do mothers/caregivers actively feed a young child?
- Active/responsive feeding is a method that encourages the child to eat and to finish his/her meals.
 - When feeding him/herself, a child may not eat enough. S/he is easily distracted. Therefore s/he needs help. When a child does not eat enough, s/he will become malnourished.
 - Let the child eat from his/her own plate (the caregiver will then know how much the child is eating)
 - Sit down with the child and encourage her/him if needed.
 - Offer food the child can take and hold; the young child often wants to feed him/herself. Encourage him/her to do so, but make sure most of the food goes into his/her mouth.
 - Mother/caregiver can use her fingers (after washing with soap) to feed child.
 - Feed the child as soon as s/he starts to get hungry.
 - The child eats in his/her usual setting.
 - As much as possible, the child eats with the family in order to create an atmosphere promoting his/her psycho-affective development.
 - Do not insist if the child does not want to eat.



- If the child refuses to eat, wait or put it off until later.
 - Talk or play with the child while s/he eats.
 - Congratulate the child when s/he eats.
 - Parents, family members (older children), child caretakers can participate in active feeding.
9. **How to counsel on child feeding during and after illness:**
- A sick child usually does not feel like eating. But s/he needs even more strength to fight sickness. Strength comes from the food s/he eats. If the child does not eat or does not breastfeed during sickness, s/he will take more time to recover.
 - If the child does not eat sufficiently to make up for the losses during the illness, the child will be in a chronic state of malnutrition, and may end up with a physical or intellectual disability related to malnutrition. The child will take more time to recover, and sometimes the child's condition may worsen and s/he may even die.
 - Therefore, it is very important to encourage the sick child to eat during sickness, and to eat even more during recuperation in order to quickly regain strength.
10. **How to assist mothers/caregivers in appropriate home care management for prevention and treatment of diarrhea? Teach them the following:**

To Prevent diarrhea:

- Exclusive breastfeeding 0–6 months
- Timely initiation of complementary feeding with FADUA (Frequency, Amount, Density, Use of food, and Active feeding)
- Handwashing with soap before preparing food
- Handwashing with soap before feeding infants and young children
- Handwashing with soap after using the toilet
- Appropriate disposal of wastes
- Personal and environmental hygiene
- Adequate and safe water supply
- Vitamin A supplementation
- Vaccinations
- Avoid bottle feeding

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In management of child with diarrhea:

- Continue exclusive breastfeeding if less than 6 months, but increase frequency.
- Increase liquids and foods if greater than 6 months, and increase frequency of breastfeeding.
- Increase frequency of feedings.
- Never use bottle feeding.
- Identify and treat underlying cause.

Teach them to identify signs of severe dehydration:

- Sunken eyes, dryness of eyes.
- Skin pinch goes back very slowly.
- Lethargic or unconscious.
- Failure to suckle, drink, or feed.

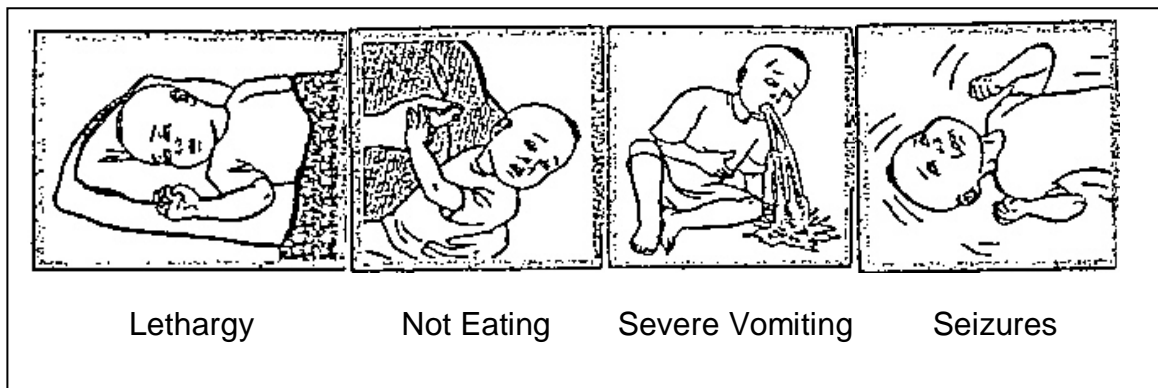
Also teach them to identify general danger signs of illnesses:

- Inability to drink and eat.
- Loss of consciousness or lethargy.
- Vomits everything.
- Convulsions (seizures).
- High fever

For more danger signs see p. 247 (neonates) and 252 (ages 3 mo. to 5 yr.)

With danger signs, go immediately to the nearest health clinic!

Danger Signs



Acute Malnutrition—Marasmus and Kwashiorkor

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A small percentage of children may suffer from acute malnutrition (moderate or severe), also known as Marasmus and Kwashiorkor. During times of severe food shortages, it can be expected that a larger percentage of young children will develop Marasmus and Kwashiorkor, but also high rates are found during non-crisis times due to feeding-related behaviors, disease, and other factors.



Marasmic children have specific clinical manifestations from **lack of sufficient calories**, including:

- Wasting of subcutaneous fat and muscles (flabby muscles), ribs and bones are easily seen, and buttocks are wrinkled from severe loss of fat
- “Old man” face
- Sunken eyes
- Child is very quiet and apathetic.

Children with Kwashiorkor have specific clinical manifestations from **lack of sufficient protein**, including:

- Bilateral pitting edema of the lower limbs (but can be located on the child’s feet, hands, eyelids, and/or belly; or the edema can spread to the whole body)
- Difficulty to begin walking
- Moon face due to hanging cheeks
- Loss of appetite
- Lack of interest in surroundings, little energy
- Skin changes—lighter reddish thinning skin with dark black patches.
- Hair changes (straightening of hair and presence of light or reddish coloured bands of the hair indicating periods of malnourishment and darker bands when the hair was growing during periods of better nourishment (flag sign).
- Straightening of hair at the bottom and curling on the top giving an impression of a forest (forest sign), and easily pluckable hair.



Children with **Marasmic Kwashiorkor** severely lack both protein and calories, and therefore have both:

- **Bilateral pitting edema, and**
- **Severe wasting**

NOTE: One should not wait for these signs to appear before acting to improve nutrition because when the signs of Severe Acute Malnutrition (SAM) do become apparent, it means the child is in great danger. At this stage, the child may require intensive care. However, the signs of the onset of malnutrition, as well as the signs of malnutrition which has developed often remain unrecognized. Possible conditions/early signs that could result in malnutrition are:

- 1) Recurrent or prolonged illness or diarrhea;
- 2) Growth or weight leveling off or decreasing; and/or
- 3) Feeding issues – fussy baby, breastfeeding problems.

How to Assess Child Malnutrition at the Community Level

Checking for Bilateral Edema

- **Bilateral pitting edema is the sign of Kwashiorkor. Kwashiorkor is always a severe form of malnutrition.**
- There is usually no need to take another anthropometric measurement for children with bilateral edema as they are directly identified to be severely malnourished with complications. (Occasionally a child with severe anemia and low serum protein will have bilateral pitting edema, but this child usually will also be developing Kwashiorkor.)
- Those children are at high risk of mortality and need to be treated in a stabilization center urgently.

Malnutrition with a medical complication

- Bilateral pitting edema +++ OR
- Poor appetite and/or one of the following
 - Pneumonia
 - High fever (> 38°C)
 - Persistent diarrhea
 - Dysentery
 - Low blood sugar
 - Hypothermia (< 35.5°C)

Give initial treatment and refer to inpatient stabilization center.

To determine the presence of edema, normal thumb pressure is applied to the both feet for three seconds. If a shallow print persists on both feet, then the child is recorded as having nutritional edema.



Notice how the indentation continues after thumb pressure is released

Measuring the MUAC (Mid-Upper Arm Circumference)

MUAC is used to measure “thinness.” It is the preferred method for screening for malnutrition, and admission to a stabilization or feeding center (WHO 2007).

1. Ask the mother or the care-taker to remove clothing that may cover the child’s left arm.
2. Find the midpoint of the child’s left upper arm.
 - a. Locate the tip of the child’s shoulder with your fingertips.
 - b. Bend the child’s elbow to make a right angle.
 - c. Measure from the tip of the shoulder to the tip of the elbow and divide this number by two to get the midpoint.
3. Straighten the child’s arm and wrap the tape around the arm at the midpoint.
4. Inspect the tension of the tape on the child’s arm. Make sure the tape has the proper tension and is not too tight or too loose.
5. Read the number between the two arrows to the nearest 0.1 cm.
6. Immediately record the measurement.
7. **Interpret the MUAC measurement:**
 - >135 mm—well-nourished
 - 125–135 mm—at risk for malnutrition
 - 115 (or 110)–125 mm--moderately severe acute malnutrition
 - <115 (or 110) mm—definitely severe acute malnutrition

Treating Malnourished Children without Medical Complications

Malnourished children require a supplementary feeding program with CSB and oil—may be treated as an outpatient if:

- No medical complications
- With MUAC greater than 115 mm
- With length (height of child) more than 65 cm
- Clinically well
- Good appetite
- No edema, and
- Alert

Malnourished children also require supplementation with vitamin A, treatment of anemia, control of malaria and helminths, and control of diarrhea (when it occurs).

Vitamin A Administration Protocol in Liberia

Targets	Age Group	Dose	Frequency And Opportunities
Preventive supplementation with Vitamin A			
Children under 5 years of age	Infants 6–11 months	100,000 IU	Administer with measles vaccine. Repeat dose every 6 months during campaigns or MCH contacts.
	Children 12–59 months	200,000 IU	
Postpartum women on delivery or within 6 weeks of delivery		200,000 IU once before 6 weeks postpartum	During BCG vaccine for newborn, family planning or postnatal visits
Treatment			
With moderate or severe malnutrition	Infants 6–11 months	100,00 IU on diagnosis Repeat same dose on day 2 and 14 if there are clinical signs of Vitamin A Deficiency (VAD)	EPI, IMNCI, MCH, and other contacts. Repeat preventive dose every 4–6 months
	Children 12–59 months	200,00 IU on diagnosis Repeat same dose on day 2 and 14 if there are clinical signs of Vit. A Deficiency	
Children with symptomatic HIV Infection	Children 6–59 months	Every 6 months	
With persistent diarrhea	Infants 6–11 months	100,00 IU once	
	Children 12–59 months	200,00 IU once	
With measles	Infants 6–11 months	100,000 IU on day 1, day 2 and day 14	
	Children 12–59 months	200,000 IU on day 1, day 2 and day 14	
	Infants below 6 months	50,000 IU on day 1, day 2 and day 14	
With xerophthalmia (Vit. A Deficiency)	Infants 6–11 months	100,000 IU on day 1, day 2 and day 14	
	Children 12–59 months	200,000 IU on day 1, day 2 and day 14	

IRON/FOLIC ACID SUPPLEMENTATION AND TREATMENT

Iron and Folic Acid Doses for Supplementation for Pregnant and Lactating Women, and Iron and Folic Acid Treatment for Iron-Deficiency Anemia

Targets	Dosages	Duration
Preventive supplementation		
Pregnant and lactating women	Iron: 60 mg/day Folic acid: 400 mcg/day	During 6 months To take iron and folic acid for 6 months in pregnancy, and to be continued into the postpartum period to reach the 6 months total
<ul style="list-style-type: none"> • DON'T give iron/folic supplementation for children under-five in malaria-endemic areas who are not anemic, and DO NOT TREAT Sickle Cell Anemia with iron* • Identify if the child has anemia (clinical assessment or laboratory evaluation) • If anemia, treat the anemia, and • Simultaneously treat Malaria with Amodiaquine 153 mg + Artesunate 50mg for 3 days (correct dose for a 33 lb. child) Also de-worm if over 1 year and not done for 6 months 		
Treatment for Iron Deficiency Anemia (Do <u>Not</u> use for Sickle Cell Anemia)*		
Children < 2 years old	Iron: 25 mg/day Folic acid: 100–400 mcg/day	Treat for 3 months
Children 2–12 years old	Iron: 60 mg/day Folic acid: 400 mcg/day	Treat for 3 months
Adolescents and adults	Iron: 120 mg/day Folic acid: 400 mcg/day	Treat for 3 months

What levels of Hemoglobin show the person to be anemic?

Hemoglobin Values Defining Anemia for Population Groups	
Age or Sex Group	Hemoglobin Value Defining Anemia (g/dL)
Children 6–59 mo.	<11.0
Children 5–11 yrs	<11.5
Children 12–14 yrs	<12.0
Nonpregnant women >15	<12.0
Pregnant women	<11.0
Men >15	<13.0

*Children with Sickle Cell Anemia are anemic from rapid breakdown of their red blood cells and often not iron deficient. In the usual case their anemia will not improve at all with iron. If given iron they can develop hemosiderosis (chronic iron poisoning) and die. Therefore **DO NOT GIVE IRON** to a patient with Sickle Cell Anemia unless that person has just had hookworm or major blood loss such as hemorrhage, and then only give a short course—perhaps 2 to 4 weeks, and do not give if the person has just had a blood transfusion to replace lost blood (blood contains iron). However, Sickle Cell patients are usually short of FOLIC ACID—supplementing with folic acid but no iron is usually helpful.

Malaria Control

Targets	Prophylaxis	Treatment
Pregnant and Lactating Women	Sleep under an Insecticide Treated Net (ITN)	1 dose Fansidar (3 tablets) in the 2nd trimester and 1 dose Fansidar (3 tablets) in the 3rd trimester
Children	Sleep under an Insecticide Treated Net (ITN)	Immediate access to treatment –give 10 mg Amodiaquine/kg & 3.5 mg Artesunate/kg/day x 3 days. (See Malaria p.46 – 48.) Therefore a 15 kg (33 lb) child would need 150 mg Amodiaquine and 52.5 mg Artesunate each day for 3 days. Each tablet contains Amodiaquine 153 mg + Artesunate 50 mg. Therefore give 1 tablet daily for 3 days .

Helminthiasis Control (De-worming)

Targets	Treatment	When
Pregnant and Lactating Women	Mebendazole 500 mg (single dose)	1 dose in the first trimester of pregnancy
Children older than 12 months	Mebendazole 500 mg (single dose)	1 dose every 6 months

Zinc Treatment during Diarrhea

Targets for Treatment	Dosage	Duration
Children < 6 months old	10 mg/day	10–14 days
Children > 6 months old	20 mg/day	10–14 days

Do not forget ORS if diarrhea is significant.

With **Kwashiokor**, counsel mothers the child will pass loose stools when eating until nutrition starts to improve. The child must continue to eat even if having diarrhea.

NOTE: Severe acutely malnourished children often do not have sufficient serum proteins to make adequate digestive enzymes. Therefore, severe acutely malnourished children usually have diarrhea when they eat until their nutrition improves sufficiently for them to produce enough digestive enzymes to properly digest their food. Mothers may be afraid to feed them if they have loose stools every time they eat—inform the mothers this will stop when nutrition improves.

TEACHING NUTRITION (SECTION TWO)

Adapted by Stella C. Subah, Technical Assistant, Nutrition, FHD/MOHSW

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From original by Evangeline C. Norman, R. D., Nutritionist and

Linda Lou Kelley, M.N.S., Nutritionist, Preventive Medical Services

Although this Handbook for Health Personnel in Liberia was written for use by health personnel with diplomas or certificates representing two to four years of formal training, this section is written as if the formally trained health worker were using it to teach less-qualified personnel, such as traditional midwives or community health workers.

Study this section, therefore, to gain ideas on how and what to teach about nutrition to these health workers, as well as ideas for health talks for health education, and review for your own use the basic information it contains in simplified vocabulary.

INTRODUCTION

What Is Nutrition?

Nutrition is much more than just the food we eat. Nutrition is about the food we eat—what we eat and when and how we eat it, how we preserve, prepare and cook it, and how our body uses the food we eat for growth, development, resistance to infection, and maintenance of good health. As you read this section, remember that:

- Good nutrition is the foundation for health, especially for the child and mother, the 2 groups that most frequently become malnourished:
 - Healthy, well-nourished children do not die from illnesses such as measles.
 - Healthy, well-nourished children and adults have better resistance, and are less likely to develop illnesses such as TB.
 - Children with adequate protein intake have better brain growth and can do better in school.
 - Well-nourished mothers are less likely to develop certain difficulties during pregnancy, and as a result bear healthier babies.

Therefore, teaching nutrition so that it can be understood is very important.

Remember to teach by example as well as by word:

- **Is your own baby breastfed?**
- What do you grow in your garden?
- Remember to practice what you preach.

Different Foods Have Different Work to Do—The Three Food Groups

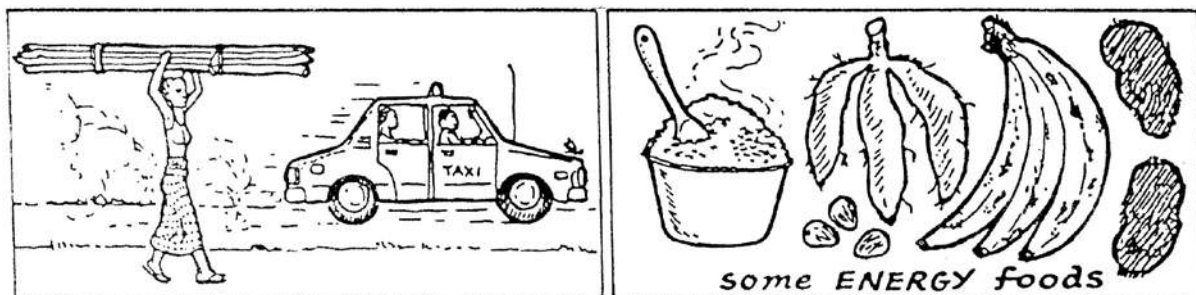
GROUP 1-*Body-Building (Protein) Foods* (from animals, fish, birds, and some plants)

Most of your body is made of protein. Children need protein to grow (build up their bodies). Everyone needs protein to repair parts of the body that wear out. Body-building foods are: Breast milk, fish, meat, chicken, eggs, groundpea, beans, snails, benniseed, keffiseed, breadnuts, bug-a-bugs, and bamboo worms.



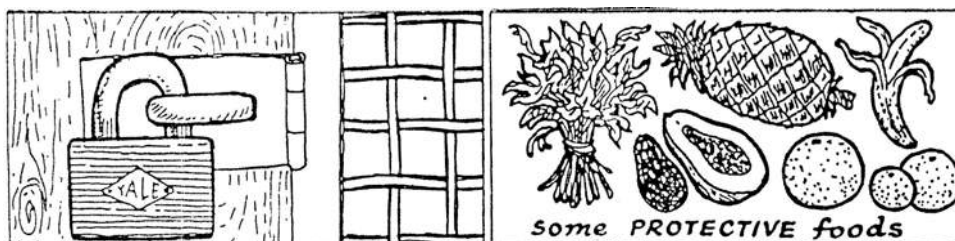
GROUP 2. *Energy Foods* (Starchy Foods and Grease)

Energy foods give our bodies power and heat and make us active. They are like gasoline for a car or wood for a fire. Some energy foods are: rice, cassava, plantain, palm oil, yam, potato, eddo, breadfruit, banana, full coconut, country bread, sugar cane, and palm oil.



GROUP 3. *Protective Foods* (Fruits and Vegetables)

Like the lock on a door to keep out rogues, protective foods help to protect our bodies against sickness. Greens, bitter balls, pumpkin, eggplant, peppers, okra, tomato, butterpear, plums, paw-paw, grapefruit, guava, tangerine, orange, pineapple, lime, soursop, and palm butter are all protective foods.



To remain strong and healthy, people need to eat some foods belonging to each of the three food groups every day. This is called a “balanced diet” or mixed food.

DIFFERENT FOODS HAVE THEIR DIFFERENT WORK TO DO
MIXED FOOD = GOOD FOOD
 Our traditional soups and rice are mixed food.

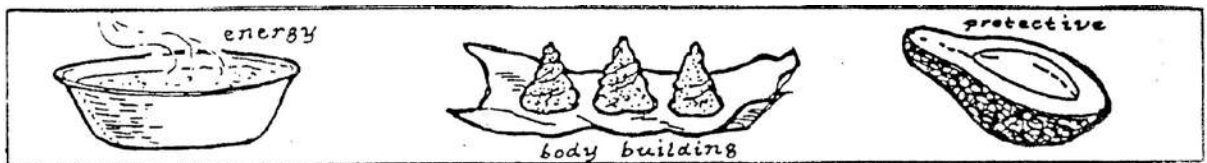
Here are some examples of mixed food:



1. Fufu and palm butter with fish is a mixed food.



2. Rice and cassava leaf soup with beans is a mixed food.



3. In the morning, a mother feeds her baby rice pap with groundpea paste. Later, she feeds him mashed butter pear. This is mixed food for a baby.

Liberian Food for Liberian Families

Liberia is a lucky country, because all the different kinds of food we need can grow here.



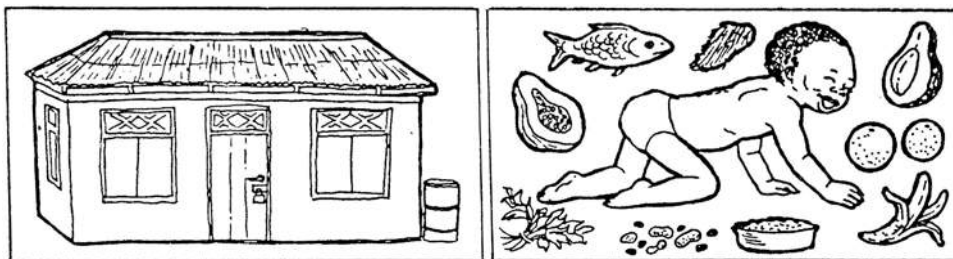
The best foods are the ones we can grow on our own farms and home gardens. Fresh foods have more good things (vitamins and minerals) inside. Foods put into cans and bottles and shipped from far places have lost many good things and are expensive.



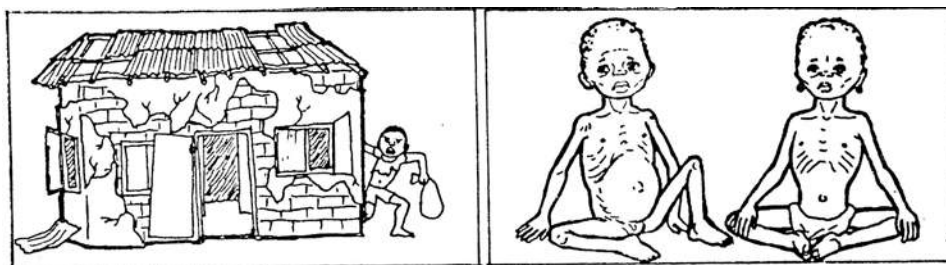
Nutrition for Children

Getting plenty of mixed food is especially important for small children. They are growing (building their bodies) very fast. A baby doubles his birth weight in the first 6 months, and triples it in the first year!

Building a Body (Growing) Is Like Building a House



It takes plenty of all the different materials to make a house strong. Each one has its different work to do to make the house strong. A child needs plenty of mixed food to grow strong. Rice alone cannot make him strong and clever.



This house was not built with enough of the right things. Rain will spoil the things inside. There is no lock to protect against the rogue. Like the house, malnourished children are quick to get trouble—they easily get diarrhea and cough. Measles can kill them.

We must be sure that our children are getting enough energy foods for their needs, enough protein foods for growth and repair, and the different protective foods for them to be less likely to get sick. Small children should eat at least three meals a day, with a small snack in between meals.

For babies, breast milk is the best food. And it is the only food babies need for the first 6 months.

(NOTE: The only really good reason not to give the baby breast milk is if the mother has HIV—the virus also is found in the breast milk and can pass to the baby if an HIV-positive mother breastfeeds. However, Nevirapin syrup 1 teaspoon daily given to the baby gives some protection to the infant from developing HIV from breast milk. See page 172.)

Why We Say “Breast Is Best”

Because God gave mothers the milk He wanted them to feed their babies.

1. Only breast milk is human milk.
2. Breast milk has antibodies that help protect babies against sickness.
3. Breast milk helps children to become strong and clever.
4. Breastfeeding builds more love and closeness between mother and baby.
5. Breastfeeding saves money for the other things a family needs.
6. Breastfeeding helps to protect women against breast and cervical cancer.
7. Exclusive breastfeeding reduces the chance of becoming pregnant again too soon.
8. Breast milk is always there and ready.
9. It is always clean, safe, and warm.
10. It contains all the nutrients that baby needs for growth and health, including water.
11. Breast feeding helps the body return to its pre-pregnancy shape and state, including the uterus.
12. Breast feeding helps to prevent and/or control excessive postpartum hemorrhage.
13. Breast milk changes to suit and meet baby’s needs.



People sometimes say to clinic workers, “**People are telling me that my breast milk isn’t good and that I should feed my baby with baby milk from a can.** They tell me the milk in the tin has all the vitamins and protein inside. Are they telling me wrong?” **The answer: Breast milk is never bad for babies. Babies given breast milk have less runny stomach and other sicknesses and do not die as easily as babies given milk from a can.**

**BREAST MILK IS ALWAYS GOOD AND
ALWAYS BEST**

(Unless the mother is HIV positive)*

*The one exception is when the mother is HIV positive—the baby could become HIV positive from the breastmilk. Niverapin syrup reduces the chance of the infant becoming HIV infected. Here formula might be considered if somehow the money can be found, based on AFASS (Affordable, Feasible, Available, Safe, and Sustainable). Currently the MOHSW pays for formula for HIV-positive mothers. The formula should be fed from a cup—not a bottle—see page 195.

Facts about Bottle Feeding—It can cause sickness and death

People also say, “You say the milk companies are looking for money. If that is true, why do they give out cans of milk free sometimes?” This is a trick, you know. **If a mother takes the free can and uses it for one week, her own milk may dry up. Then she will have to buy the formula milk.** The company can easily afford to give out 1 can free because the mother will have to buy at least 89 more cans to feed her baby for the rest of the year. If all the mothers in Liberia stop breastfeeding their babies, they will have to spend about \$50 million or more U.S. dollars a year to buy the formula milk for the babies.

It is easy for babies fed bottle milk to get sick. This is because:

- The milk powder must be mixed with boiled water so germs in the water will be killed and not grow in the milk and make the baby sick with runny stomach.
- The milk bottles and dish for mixing the powder with water must also be cleaned well and free from germs by being boiled or the baby will get sick.
- The baby must drink the milk soon after it is made so it will not spoil.
- The baby will get sick with malnutrition if there is not enough money to buy sufficient milk formula powder. **Many Liberian babies have died from malnutrition because the formula powder was too expensive.**
- Formula does not contain the protective antibodies that are present in breast milk to help keep the baby well.

Therefore the following information should appear on the front of every small (450gm) can of baby milk:

“FOLLOW THE DIRECTIONS CAREFULLY OR YOUR BABY WILL

Did you know?

- It will take 90 cans to feed your baby for one year.
- This will cost about \$800 USD at \$8.50 to \$9.00 per can.
- This size of can will feed a baby for only one week during the first month after birth.
- This size of can will only feed a 3-month-old baby for 3 days.

**BREAST MILK IS ALWAYS
THE MOST NUTRITIOUS
FOOD FOR A BABY—
IT IS ALWAYS BEST**

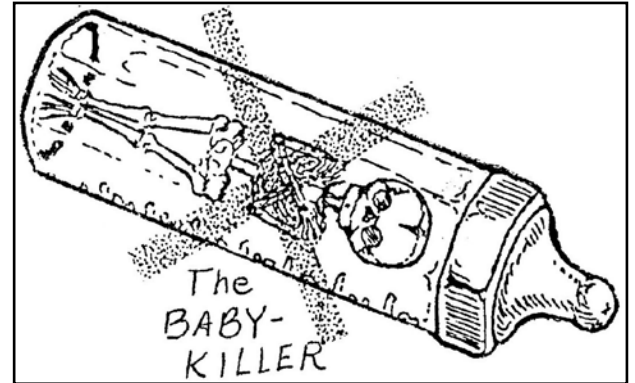
**MOTHER’S BREAST MILK
IS ALWAYS GOOD
AND NEVER BAD**

(unless the mother is HIV positive)

A mother needs plenty of good food while she is breastfeeding her baby, but the food will always cost her less than the price of the formula milk. (See page 102 for why the formula milk in a bottle is often dangerous for the baby of a low-income mother and may cause sickness and even death.)

Why do many babies fed infant formula from a nursing bottle die?

**BECAUSE
MOST MOTHERS DON'T HAVE ENOUGH
INCOME TO AFFORD BABY FORMULA
AND DON'T UNDERSTAND HOW TO
PREPARE SAFE FORMULA
and DON'T HAVE TIME TO BOIL WATER to
STERILIZE BOTTLES and MAKE FORMULA
MANY BABIES FED FORMULA IN BOTTLES
DIE FROM MALNUTRITION
AND DIARRHEA**



**ALWAYS ADVISE MOTHERS TO BREASTFEED
REMEMBER THAT “BREAST IS BEST” IN MANY WAYS
TEACHING BABIES TO EAT**

**(Advise formula only if
the mother has HIV-
but feed it from a cup)**

- Mothers must understand that babies will not like to eat any new thing at first. They must bear patience and teach their babies to eat.
- Some mothers feel that feeding babies with a cup and spoon wastes time, but stuffing causes diarrhea and pneumonia, and baby may die. A mother will also waste more time and money if she has to carry her sick baby to the hospital.
- Give a new food to the baby when he is hungry, before giving the breast. After he learns to eat the new food, then give the breast first. Breast milk has more good things inside than any other food you can give him.

FEEDING SICK CHILDREN

Often children do not feel hungry when they are sick, and they become dry. This is dangerous, because any child who is not growing is getting malnourished. The malnourished child is slow to get well and quick to get sick again. Some children always seem to be getting sick. These children need more good food.

Teach mothers of sick children that good food will help their children get well soon.

1. If her child will not eat plenty, she can give him smaller amounts of food more often.
2. She can help her child to eat, but she must not force him.
3. She should give him his own bowl of food. He may be too weak to try for his own with the other children.
4. Never stop breast feeding a sick child! Give more breast milk. Sometimes a sick child will take breast milk when he doesn't want to eat anything else!
5. When a child is getting well, he may be too hungry. He is not being greedy! He needs the extra food to build up his body again. Feed him more often. He needs to eat the food he missed while he was sick. He should get one extra meal (bowl) while he is sick and for 2 weeks after he recovers.

Foods Children Need to Eat at Different Ages

Age	What the Child Should Eat
Months:	
1–6	<p>Breast milk is all he needs. Mother should begin exclusive breastfeeding (breast milk only, day and night; nothing else to eat or drink—no sugar water, water, tea or herbs—except prescribed medicines) within 1 hour after delivery up to when baby is 6 months old. If the baby has diarrhea, teach his mother to give breast milk more often. If the diarrhea is very severe or continues, she should add ORS and bring the baby to the health facility.</p>
6–8	<p>Mother should start teaching the baby to eat pap made from rice dust. (Plantain dust, eddo dust, cassava, or corn meal can also be used; but rice dust has more protein.) Feed baby with a clean cup or bowl and spoon.</p> <p>In a few days, when baby is eating plain rice pap well, always add any of these foods to the pap or soft rice (all should be mashed well or pounded): groundpea, benniseed, keffiseed, dried fish dust, cooked fish with bones removed, greens, pumpkin, okra, bitter balls with seeds removed, mashed banana, paw-paw, plum, and orange and pineapple juice.</p> <p>Add 1 or 2 teaspoons of red palm oil to the baby’s food. Red palm oil will help to make him healthy and fine. Add a pinch of iodized salt to baby’s food.</p> <p>Baby should be eating pap or soft rice at least twice a day. Mother should continue breastfeeding the baby.</p>
9–12	<p>Baby should be eating at least 3 times a day (2–3 meals and 1–2 snacks) plus taking breast milk. If the baby (such as the baby of an HIV-positive mother) does not take breast milk, he will need more food.</p> <p>Baby can start learning to eat the family food, but he should still get his own food until he can eat family food well. Also give him small-small things, such as banana, orange with seeds removed, butter pear, paw-paw, breadnut, and groundpea paste. Give him groundpea paste, not whole groundpea, because if he chokes on a peanut, he may die!</p>
Years:	
1–5	<p>Children need to eat at least 4 times a day. Little children need to eat more often than big people because their stomachs are small and they are growing fast. Continue breast milk at least until age 2.</p> <p>Mothers don’t have to cook more often, but they should cook enough family food to have cold bowl to serve. Store cooked food carefully in a clean, well-covered bowl or pot, and protect from flies, roaches, and rats. Mothers should give their children plenty of small things, too. Mother’s and baby’s hands should be washed with soap and water before eating. Serve food in clean bowls.</p> <p>When children get sick, they should be breastfed more during and after the illness. Children over 6 months should get one extra meal (bowl) during and for 2 weeks after an illness.</p>

Anemia

Too little red blood—looking pale

Anemia is common in Liberia! Some studies have shown that 60% (6 out of every 10) children and women are anemic. **One way to prevent anemia is to eat plenty of body-building foods and greens.** These foods have the things (iron, folic acid, and protein) that our body needs to make blood. **Meat liver** is really good to build the blood. (It has plenty of iron and protein.)

Nutrition for Pregnancy and Lactation

The pregnant woman and the breastfeeding woman need extra food. They must eat enough to feed both themselves and their babies. How can a mother have plenty of milk for her baby when she herself is hungry?

There are a few things that will help mothers get extra food without having to cook more often:



- They should eat plenty of small things during the day:

Doughnut	Kala	Cucumber	Paw-paw
Groundpea	Oranges	Pineapple	Plums
Butter Pear	Sugar Cane	Coconut	Guava
Breadnuts	Kanya	Keffiseed	Banana
Baby Palm Nuts	Country Bread		

- In the morning they should eat eddoes, cassava, plantain, or cold bowl.
- When pregnant she should eat one extra bowl (meal) a day.
- When giving breast milk she should have 2 extra bowls (meals) a day. If she doesn't keep herself strong, her next baby will be very weak.
- The whole family should use iodized salt—a small amount of iodine prevents goiters.

Pregnant women need to eat some of the foods that build blood every day, because it is easy for them to become anemic. Greens will also help to prevent “sore corner,” (which is often caused by too little riboflavin). Recommend fresh fruits and green leafy vegetables to relieve constipation.

What the Health Worker Can Do to Prevent Malnutrition

Every time you weigh a baby, record the weight on the growth chart carefully and correctly. Compliment the mother if her baby is growing well. If not, explain how her baby is not growing well, and that this could result in malnutrition. Then explain to her how to improve the child's nutrition. Always teach the mother something about feeding her baby, and about environmental and food hygiene. Teaching prevents malnutrition. The Road-to-Health Card is a guide for teaching.

VITAMIN A SUPPLEMENTATION—Give vitamin A to:

- Breastfeeding mothers—200,000 units—within 6 weeks after delivery
- Children 6–59 months should have vitamin A twice a year (at 4–6 month intervals)
 - 6–11 months 100,000 units
 - 12–59 months 200,000 units every 4 to 6 months

DE-WORMING

De-worming should be done with 500 mg. **mebendazole** as a single dose:

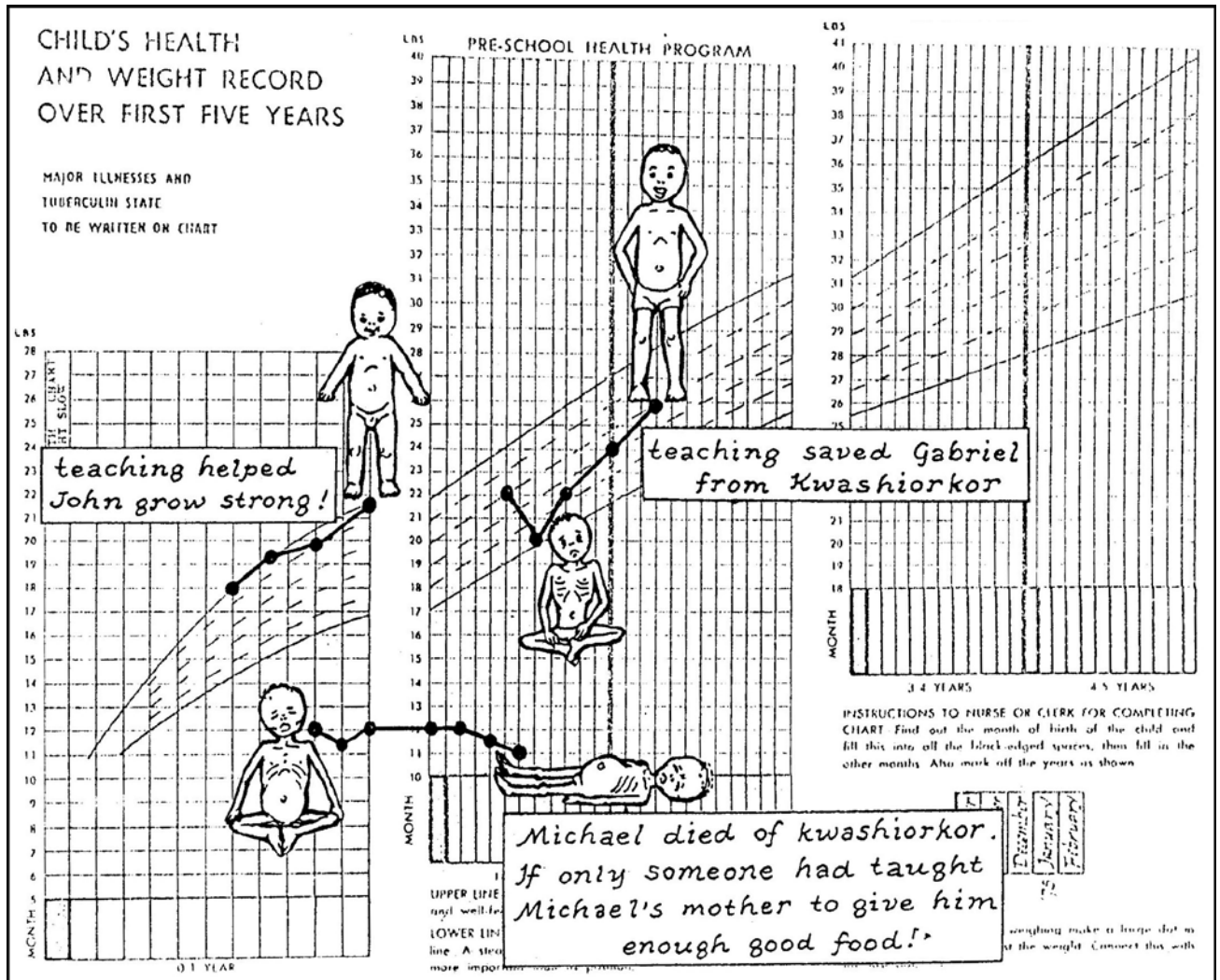
- De-worm pregnant women once during the third trimester
- Children 12–59 months—twice a year at 4–6 month intervals (not for children less than one year)

WEIGHING AND THE ROAD-TO-HEALTH CARD

Now, let us talk about weighing and what the Road-to-Health Card can show us about the children we weigh, and how we can use the card to guide us in teaching the mothers.

Let's tell the stories of John, Gabriel, and Michael. We put their pictures beside their weight marks on the Road-to-Health Card on the next page.

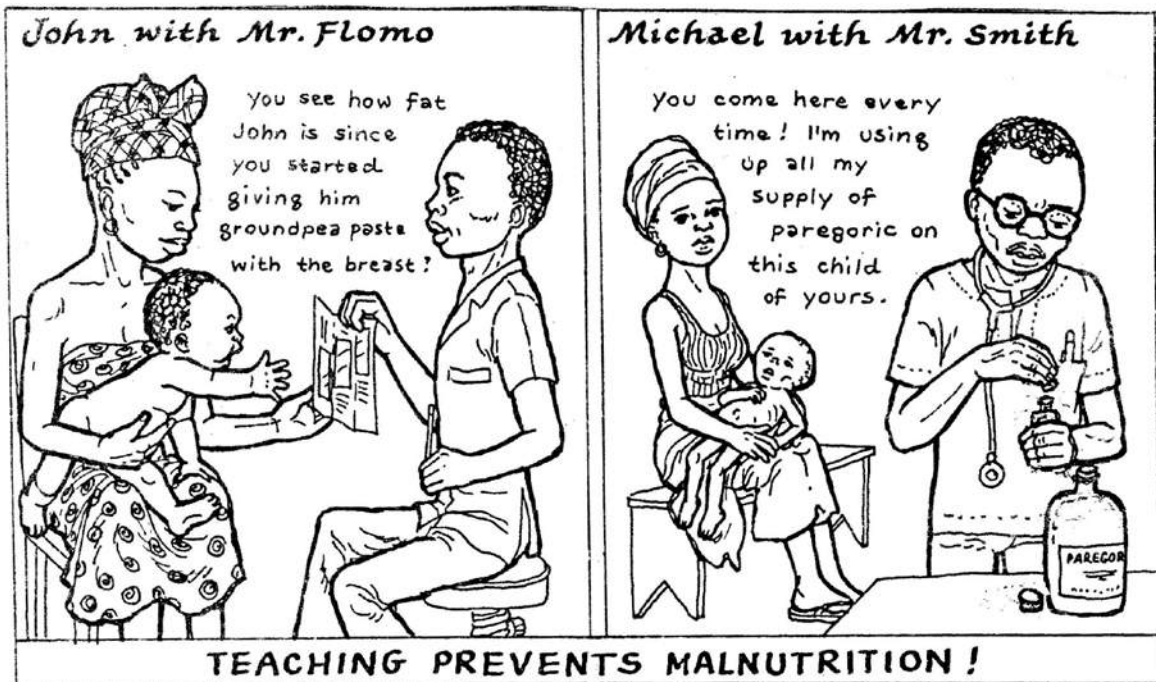
The Road-to-Health Card



JOHN'S STORY—John is a healthy child; he is strong, fat, and happy. You can see from his Road-to-Health Card that he is growing well: the marks show that his weight is always going up. Why is John so healthy? The Physician Assistant in his town, Mr. Flomo, works hard to improve the health of people in his town. He is especially concerned about malnutrition, because his own sister's son died of Kwashiorkor.

Mr. Flomo has studied the sheet in this chapter on "WHAT FOODS SHOULD CHILDREN BE EATING AT DIFFERENT AGES?" so that he can talk with mothers about feeding their children. Whenever he weighs a child, he asks the mother what she is feeding him, and how often. If she is not feeding him often enough, he advises her on how often to feed the child. If the child is old enough, Mr. Flomo tells the mother about 1 or 2 new foods she can give him to keep him strong and fat.

Mothers walk from other towns to bring their children to Mr. Flomo, because he is always kind and polite. He always thanks mothers for bringing their children to under-fives clinic (a clinic for children under the age of 5).



GABRIEL'S STORY—When Mr. Flomo saw Gabriel at 17 months, he noticed that Gabriel's weight had gone down since his last visit to the clinic. Mr. Flomo got concerned. He knew that if Gabriel continued to lose weight, he would get Kwashiorkor. He asked Gabriel's mother, "What are you feeding Gabriel?" He learned that Gabriel ate the family food once or twice a day, but he did not get any of the meat or fish in the soup. Mr. Flomo showed Gabriel's weight chart to his mother. He explained that Gabriel was reducing because he needs to eat at least 3 or 4 times a day. He also asked her to put an extra spoon of red palm oil on Gabriel's rice to make him fat, and to be sure he ate fish and small pieces of meat. Gabriel's mother grows groundpea. So, Mr. Flomo advised her to give Gabriel some groundpea paste (not whole groundpeas) every day, to build up his blood.

You can see from the Road-to-Health Card that Gabriel's mother followed this advice. Gabriel stopped reducing, and began to grow rapidly again.

MICHAEL'S STORY—If children do not get enough good food for them to grow, they will die. That is what happened to Michael.

Notice that the weight marks for Michael on the Road-to-Health Card go straight across. This shows that he was not growing, right? The Physician Assistant in Michael's town, Mr. Smith, weighs the children but does not take time to teach their mothers.

Michael's mother was always bringing him to the clinic for diarrhea. (Remember, diarrhea can be a symptom of malnutrition). Mr. Smith gave Michael medicine for the diarrhea, but the diarrhea always came back. When Michael got Kwashiorkor, Mr. Smith advised Michael's mother to buy milk for Michael. But she did not have money to buy milk and Michael died!

If only Mr. Smith had tried to convince her to give Michael plenty of the good foods she grows on her own farm, Michael would still be alive!

(A further note on Mr. Smith's treatment of Michael—what Michael needed most was more food, and especially protein foods. But for the diarrhea, Mr. Smith gave paregoric. We no longer give paregoric—Loperamide is safer to slow down diarrhea for children 2 years or older, but what is most needed is ORS. Teach mothers how to make it at home.)

What Can We Learn from these Stories?

You can prevent malnutrition and save the lives of children in your town by teaching their mothers to feed them better.

Teaching prevents malnutrition. Weighing without teaching does nothing. Whenever you weigh a baby, teach his mother:

- Even people who don't know how to read and write can understand the Road-to-Health Card. Explain to each mother what it means when the marks go up or down.
- Ask each mother what she's feeding her child. What other foods does he need at this age?
- Recommend 1 or 2 new foods for the child. Recommending too many foods at one time is confusing.
- A mother is more interested in hearing what foods her baby needs now than a long lecture about all the foods children need at different ages.
- The best food in the world will not prevent malnutrition if the child does not get enough of it. Be sure to teach mothers how often to feed their children, too.
- What foods do people in your town grow on their farms? Don't recommend expensive imported foods.
- Compliment mothers when their children are growing well. Thank them for taking good care of their babies. Mothers have so much work to do besides feeding their babies and bringing them to the clinic. Also, their own mothers may be giving them a hard time for trying new ways of feeding children.



The next pages talk not only about good nutrition for all ages, but also other helpful ways to promote good health and a long life.

HOW TO LIVE LONG, HEALTHY LIVES

Most human beings (depending on each person's genes) are made with the capability to live to age 90 or 100. In the 18th and 19th centuries, people in the developed world often died early from infectious diseases such as TB, pneumonia, smallpox, typhoid, and gastroenteritis with dehydration. In the 20th century, with antibiotics, vaccines and excellent sanitation the infectious diseases no longer caused most deaths, but people moved to cities instead of farming, got jobs sitting behind desks, drove cars everywhere instead of walking and stopped getting good exercise, started smoking, and ate too much food (and the wrong kinds of food) and became overweight. Now, a new set of illnesses started causing most deaths due to the new comfortable life-style, and although life expectancy improved from ages 50–55 to ages 70–75, most people still did not live to be age 90–100. The majority of these present illnesses which now cause most deaths are:

1. Heart attacks
2. Cancer
3. Strokes
4. Diabetes
5. Emphysema
6. Vehicle accidents

The causes of these six illnesses becoming very common are:

- **OBESITY**—From eating too many calories without sufficient exercise to burn the extra calories. Overweight people very often become diabetic and hypertensive, and have elevated cholesterol levels. All 3 of these conditions lead to heart attacks and strokes. Obesity also increases the chance of developing cancer.
- **EATING THE WRONG FOODS**—Too much fat (especially the saturated fats from red meats and artificial trans-fats) raise the cholesterol levels, causing atherosclerosis and heart attacks and strokes, and promoting the development of cancer. Too much sugar is also a contributor. Breads made with white flour, sugar, sweetened soft drinks, and foods with high fructose corn syrup should be avoided. Healthy foods are whole grains, such as brown rice, fruits and vegetables that protect against cancer, fish and chicken, olive oil, and a limited amount of palm oil (not too much).

- **TOO LITTLE EXERCISE**—A good amount of exercise done daily (or at least 3 times per week) helps protect against heart attacks and burns calories to prevent obesity.
- **SMOKING**—There are many cancer-causing substances in cigarette smoke. Although lung cancer is the most common cancer from smoking, many other types of cancer also develop much more frequently in smokers. Also people who smoke often ruin their lungs and die from emphysema if they don't die from cancer. Cigarette smoke also damages the arteries and leads to heart attacks and strokes.
- **CARELESS DRIVING**--Speeding, driving when tired, driving after drinking or after using drugs are main causes of car accidents causing deaths.

Therefore, to live long:

- **EAT CORRECTLY**—Whole grains (such as brown rice), fruits and vegetables, fish, chicken, eggs, ground peas, beans, olive oil, and some palm oil. Eat three meals a day—but do not eat so much that you become overweight. Avoid sugar, trans-fats, and too much animal fat.
- **GET PLENTY OF EXERCISE**—Driving and desk work are okay, but do walk and exercise daily.
- **DO NOT SMOKE!** It wastes your money, and causes early death.
- **AVOID ALCOHOL**—at least **DO NOT DRINK TOO MUCH**, and never drive after drinking.
- **AVOID ACCIDENTS**—If you drive a car or motorcycle, drive carefully and do not speed. Do not talk on your cell phone when driving.
- **NEVER USE ADDICTING DRUGS** such as marijuana, amphetamines, cocaine, or heroin.
- **GET SUFFICIENT SLEEP**—but not too much--7 or 8 hours is sufficient for most people. Only six hours is too little.
- **Remember your ABCs: ABSTINENCE** until marriage, **BE FAITHFUL**, and (otherwise) use **CONDOMS**—don't get STIs, and have a happy, faithful family life.
- Of course, **get all your VACCINES**, and take antibiotics and antimalarials when really needed. Check any symptoms with your doctor quickly before illness becomes severe.

Not everyone has genes for a long life, and accidents and unexpected illnesses occur, but at least give yourself a chance to have a happy, healthy and long life.

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UNDER-FIVES CLINICS

By Karen Tompkins, Maria Johnson, and Joyce Sherman
Continuing Education Project, Ministry of Health—1989
Large additions and updating by Marion Subah, RBHS Project, 2009

WHY HAVE CLINICS ESPECIALLY FOR YOUNG CHILDREN?

We all know that it is the young children who are often ill and who can die so easily, while older children and adults are usually stronger.

What are the diseases that children most often suffer and die from in Liberia? These diseases include:

1. Pneumonia (and acute respiratory infections)
2. Malaria
3. Diarrhea with dehydration and enteric infections
4. Malnutrition (Kwashiorkor)
5. Measles
6. Tuberculosis
7. Anemia
8. Tetanus (especially Tetanus Neonatorum)
9. Pertussis (Whooping Cough)
10. Septicemia and Meningitis
11. Aspiration (from force-feeding or stuffing)

Most of the diseases listed above are preventable. Those we cannot prevent, if we can get treatment for the child soon, would not cause him to die. If we can prevent these diseases, Liberia could have plenty of healthy children who are active and clever in school. The children of today will be the adults in our nation tomorrow.

**MOST OF THE DISEASES THAT CAUSE CHILDREN TO DIE IN LIBERIA
ARE PREVENTABLE!**

OUR CHILDREN, OUR NATION, OUR FUTURE

If we are going to prevent the diseases that kill our children, besides seeing them at the clinic anytime they are brought in by their parents, we need to have a special time and place to do our work with them. For this reason we must plan to set aside a day for under-fives clinic. It can be held in the clinic building or even in the palaver hut of a village that you visit regularly.

Is the under-fives clinic the same as the well-baby clinic? NO! ALL children must receive our help, not just the ones that are well on the day we set aside for them. (We will explain about special care for sick children below). Besides, which one of us usually has mothers telling us that their babies are well? Most mothers with well babies will complain that the baby has cough, fever at night, or mucous stools, or that the baby is crying with stool and urine (usually “nonsense complaints”) because they want to be sure to have medicine to carry home with them.

The purpose of the under-fives clinic is to help mothers in our communities to be sure that their children grow up strong and healthy.

What Happens In an Under-Fives Clinic?

The exact things we do depend upon what equipment and supplies are available to us. But we can say that we:

- **PREVENT** diseases and complications by:
SUPERVISION
EARLY TREATMENT
VACCINATION
EDUCATION
- **TREAT** minor illnesses, such as fresh cold, simple anemia, diarrhea, and craw-craw (scabies).
- **TEACH** mothers to keep their children healthy.



Weighing children can tell us when they are becoming malnourished

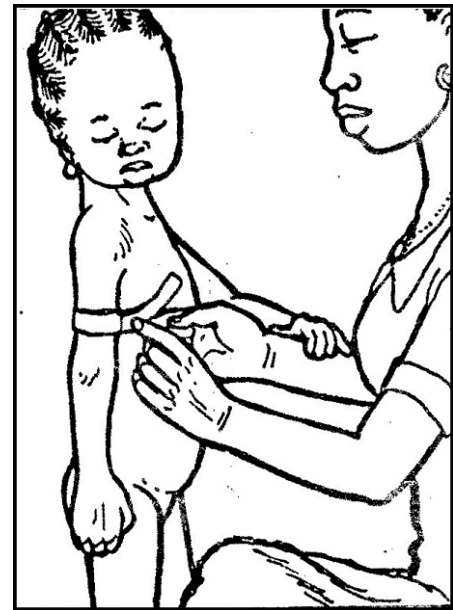
Let us take each of these activities and learn more about how we can do them in our own clinic (or borrowed piazza or palaver hut).

- **PREVENTION**—There are three steps we can use to prevent the diseases and complications that are now killing our children (in addition to health teaching). These three steps are listed on the next page.

STEP 1. Detect Malnutrition—by weighing or arm circumference

First, weigh the child and record the weight on his Road-to-Health Card. Then, look at the dots on the graph. Does the child weigh enough so that his dots are on the Road-to-Health Card? Is the weight above the lower normal curve? This is very important—you should know whether the child is gaining or not. This way you can supervise the growth of the child to prevent malnutrition. If there is no weighing scale in your clinic, then you can use a special piece of paper to measure the arm circumference of the children between one and 5 years of age.

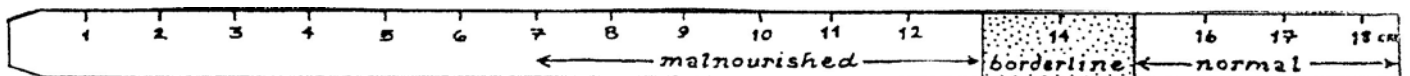
Arm circumference—Between the ages of 1 year and 5 years a child's arm grows very little in circumference. So for children of these ages, the normally nourished child will have an upper arm circumference between 16 and 18 cm. If it is smaller than 14 cm, the child has become malnourished.



Measuring arm circumference

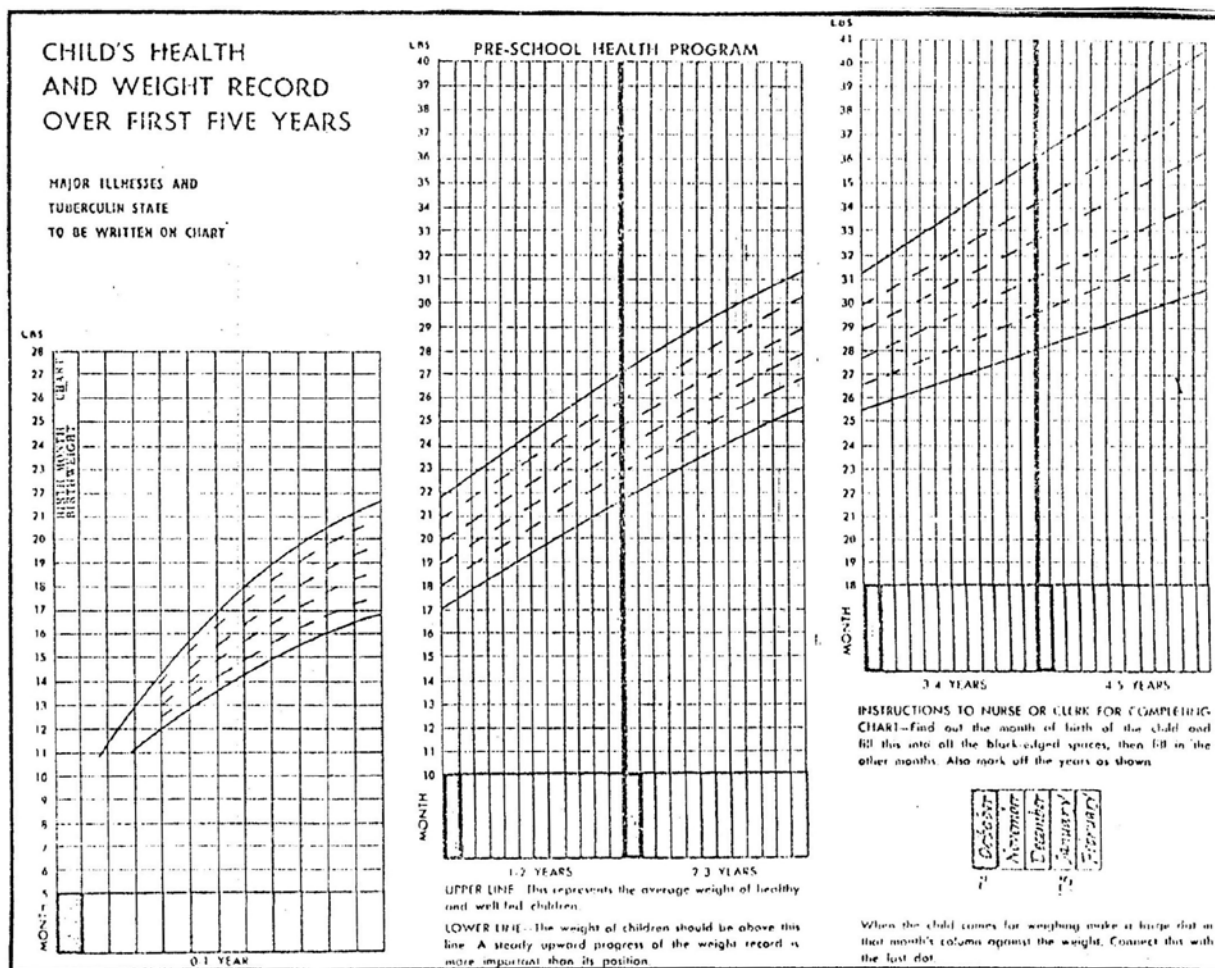
This is so because malnourished children lose the subcutaneous fat from their arms. The measurement is always taken around the mid upper arm as shown in the picture. The measurement can be taken with a tape measure or with a paper strip with normal measurements marked on it. Such a strip is very easy to make. Use it to measure the Mid-Upper Arm Circumference (MUAC). Its actual size is shown below.

A Shakir Strip for detecting malnutrition is easy to make (actual size).



Measuring the mid-upper arm circumference is a good way to detect malnutrition in a child age 1 – 5. Be sure to use it to screen for malnutrition when no scale is available.

The Liberian Road-to Health Card



STEP 2. Vaccinate

Second, prevent illness by **vaccinating** all the children who come to your clinic. Make sure they have all the vaccines supplied by the Expanded Program in Immunization (EPI).

Vaccines for Single Illnesses:	Pentavalent Vaccine Prevents These 5:
1. TB	1. Diphtheria
2. Polio	2. Pertussis (Whooping cough)
3. Measles	3. Tetanus
4. Yellow Fever	4. Hemophilus Influenza B (Hlb)
	5. Hepatitis B (surface antigen) (HBs)

Of course, neonatal tetanus is prevented by vaccinating the mothers. Read about this in the section on **PRENATAL CLINICS** on pg. 280.

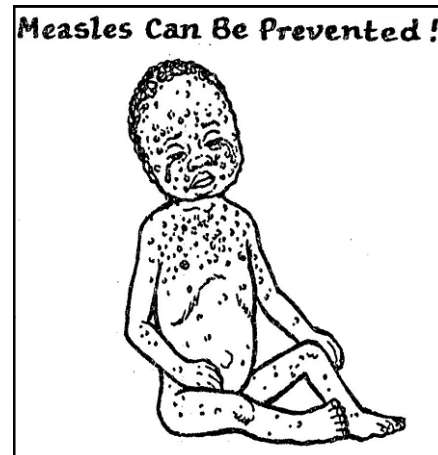
- **THE COLD CHAIN**—Vaccines must be kept cold from the time they are made at the factory, all the way until they are given to the children in the village. All the people and equipment that work to bring effective vaccine to children make up what we call the cold chain.

THE COLD CHAIN IS ALL THE PEOPLE AND EQUIPMENT THAT KEEP VACCINES PROPERLY COLD UNTIL THEY ARE GIVEN TO OUR CHILDREN IN THE VILLAGES.

- **REFRIGERATION**—If your clinic has a refrigerator, when you receive the vaccines from the county cold store, you must be sure the clinic refrigerator is working well. The freezer must be freezing water, and the lower section should have a temperature between 2 and 10 C. Check the temperature twice each day to be sure the box is keeping cold.

- Vaccines can spoil very easily. Be sure that you put each type of vaccine in its correct place:

- 1) Measles vaccine and BCG are dried powders and are stored in the freezing compartment and kept frozen.
- 2) The pentavalent vaccine, diluent, tetanus toxoid, and yellow fever vaccines are liquids and are kept cold in the refrigerator but must not be frozen.
- 3) For polio vaccine read the label; some types are to be kept frozen and other types are just to be kept cold.



- Take care that your vaccines do not spoil; be sure that:
 - 1) If you are taking vaccines out to use, open the refrigerator, take the vaccine out quickly and close the door again. Keep the cold in the refrigerator!
 - 2) Do not keep food in the refrigerator—opening and closing the door frequently to take out food can spoil the vaccine!
 - 3) If you are going to defrost the refrigerator, have your cold box ready with cold dogs in it to keep the vaccine cold.
 - 4) Do not let the kerosene finish—if no kerosene, carry the vaccines immediately in the cold box to the nearest working refrigerator.
- **SHADE**—Since some vaccines are killed by sunlight, always do your vaccinating in the shade (such as inside a building) to keep your vaccines out of the sun.

- **VACCINATION SCHEDULE**—We must know when and how to give the vaccines to our children. Even if you have no refrigerator, you can encourage the mothers to bring their children, when the vaccinating team comes, to get these vaccines at the ages given in the table below.

Age	Vaccines
Birth or first visit up to age 3 years	<ul style="list-style-type: none"> • BCG Vaccine • OPV-0 (must give before day 15)
Age 6 weeks or first visit after 6 weeks up to age 3	<ul style="list-style-type: none"> • 1st DPT-Hib-HBs (pentavalent) if 5 yr. or younger • 1st POLIO if 3 yr. or younger
At least 1 month later	<ul style="list-style-type: none"> • 2nd DPT-Hib-HBs (pentavalent vaccine), and 2nd POLIO
At least another month later	<ul style="list-style-type: none"> • 3rd DPT-Hib-HBs, (pentavalent vaccine) and 3rd POLIO
9–11 months-up to 3 years of age (Encourage mothers to bring the child at age 9–11 months)	<ul style="list-style-type: none"> • Measles vaccine • Yellow fever vaccine
PREGNANT WOMEN and all other females in the childbearing age group	<ul style="list-style-type: none"> • 1st TT at first contact with clinic • 2nd TT 1 to 3 months after 1st • 3rd TT 1 to 3 months after 2nd • (TT = Tetanus Toxoid) (If previously had 3 DPT, or 3 pentavalent or 3 TT, only one TT booster during pregnancy is required)

Table updated from: *EPI Handbook for Health Workers*, Continuing Education Joint Project, Ministry of Health and Social Welfare, R.L./Christian Health Association of Liberia, 1980.

- 1) **MEASLES VACCINE and YELLOW FEVER VACCINE**—From 9 months to 3 years of age. (If there is a fresh vial of measles vaccine that is not completely used, children older than 3 whose mothers say they have never had measles or measles vaccine may also be vaccinated.) Only 1 injection is needed. If measles is beginning to be seen in the area, also vaccinate children 6–9 months of age, but be sure to give them a second injection when older than 1 year of age.
- 2) **PENTAVALENT DPT-Hib-HBs VACCINE**—To protect against diphtheria, whooping cough, tetanus, hemophilus influenza B, and hepatitis B (3 injections, 1 month or more apart, starting at age 6 weeks). You can give a single TT injection as a booster to an injured older child who had DPT or pentavalent vaccine as a baby to protect against tetanus, or 3 TT injections at least 1 month apart if the child never had DPT.
- 3) **ORAL POLIO VACCINE**—4 doses at least 1 month apart, starting the day after the baby is born—this first dose must be given before day 15 after birth.

- 4) BCG VACCINE—To give some protection against TB (it is not fully protective, but good at preventing serious TB complications)—give one single dose from birth to age 3.

MAKE SURE TO GIVE BCG AND ORAL POLIO VACCINE BEFORE THE NEW BABY GOES HOME

- GIVING VACCINES—We all know that we must clean the vaccination site and allow the place to dry. Then inject the following amount of vaccine:

Vaccine	Amount/Technique	Site
Measles	0.5 cc SC	Upper arm or leg
Polio	1–3 drops orally. Stop breastfeeding 1 hour before and after giving	Mouth
Pentavalent (DPT, Hib, HBs)	0.5 cc SC	Upper arm or leg
BCG	0.1 mL ID (Intradermally)	Right upper arm
TT for women	0.5 cc SC	Upper arm

STEP 3. Detect and Treat Illness Early

Third, treat illnesses early. Prevent serious illness or possibly death by having the mother watch for fever, and treat malaria quickly. (Malaria weakens children too much, and can cause them to die.) See pg. 46 to 48 for the treatment of malaria.

For a critically-ill child with malaria, give the initial dose of malarial treatment and send the child to the hospital. For malaria not improving with treatment, also send the child to the hospital.

- TREATING MINOR ILLNESSES—Not only can we keep diseases from getting worse by treating them early, but we are able to give the mothers what they think is important; medicine they can see. The person who examines the children in the under-fives clinic can have the common treatments on his table and give them to the mother. In a small clinic, we would do this anyway. In a big clinic, it takes away the confusion at the pharmacy window! (For treating acute illnesses, see pg. 57–110.)
- TEACH MOTHERS about things they can do to keep their children healthy. There are many ways to teach mothers! Usually when we talk about teaching mothers, we think of giving lectures to them before we begin clinic. Lecture is one way to teach, but there are many other ways to teach in the under-fives clinic and we must use all of them:

When a child is weighed and the weight is put on the Road-to-Health Card, the mother should know whether her child is growing and what foods she should feed him to help him to continue to grow. If he is not growing, she needs to learn about what foods to give him and how many times a day to feed him so that he will grow. See the NUTRITION section, especially pg. 214, for the list of foods children can be given at each age. Use that list to advise mothers who come to your clinic.

When the child is examined, every good and bad thing you observe about the child can be a subject for teaching. Does he have crawl-craw? What will you advise? If the skin is clear and clean tell the mother how fine and good this is. Does the child have worms? Explain how the child got them. No worms? Compliment the mother. Is the child underweight? Teach again what foods can help the child grow. Is the child fat? Praise the mother.

**WHEN YOU FIND A PROBLEM, TEACH THE MOTHER.
WHEN YOU DON'T FIND A PROBLEM, PRAISE HER!!**

When you give medicine to the mother, teach her what each is for, and how she must give it. Then ask her to tell you how she will give it and how much she will give the child when she reaches home.

When you give vaccinations, explain what diseases you are protecting the child from. Let her know how important it is for her child to have all of his immunizations!

If you have to dress a sore on the child, teach the mother how to keep cuts and sores clean, so they don't get infected.

If the child is having diarrhea but has normal skin elasticity, teach the mother how to make ORS.* Perhaps you will also need to teach her how to give the solution with a clean cup and spoon. Teach her not to stuff the child but give it slow with the spoon. The way you should teach the mothers is found on pages 232 - 235.



*NOTE: Children who are moderately dehydrated do better with IV fluid. Children who are severely dehydrated must have IV fluid soon, and must be given it, or sent immediately where they can get it. See pg. 11-19.

There are two kinds of ORS: 1) The kind to teach the mother to make—it works best for children who are not yet dehydrated to prevent dehydration, is made less accurately, and contains less salt; and 2) ORS packets for the clinic to make solutions for mildly or moderately dehydrated children.

Teaching one mother at a time takes longer, but it is also a more effective way than group lectures because a mother will listen more carefully when you are talking about her child. How can we make better use of the time it takes to teach one mother? Allow other mothers to listen and learn by overhearing. That is, let the mothers who are waiting their turn in the line hear what you say. That way, by the time a mother reaches you, she might have already heard you tell another woman what you will tell her.

**ONE MOTHER CAN LEARN FROM WHAT SHE HEARS YOU TELL
ANOTHER MOTHER.**

The next 4 pages have information we can teach mothers about **making sugar-salt solution** (home-made ORS) and **treating diarrhea to prevent dehydration**.

CARING FOR CHILDREN
WITH
RUNNING STOMACH

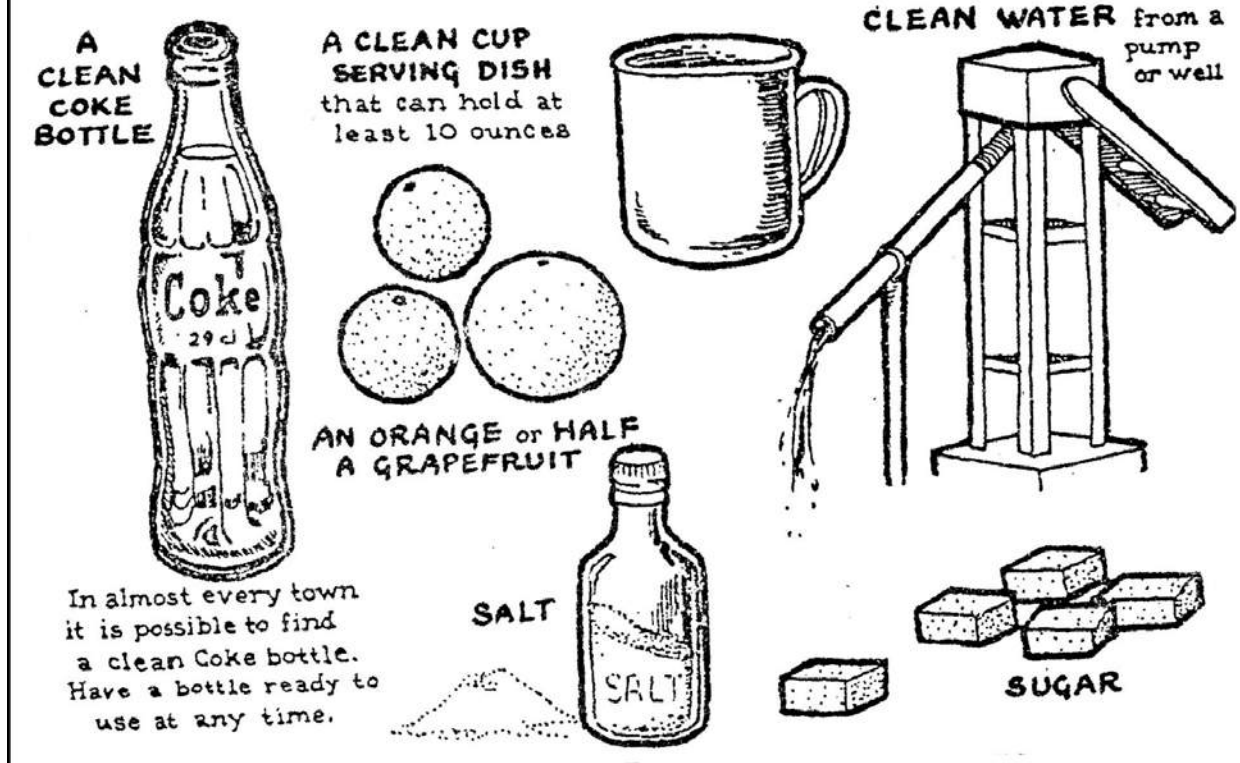
Introduction:

Running Stomach is a bad disease. It has killed many children in Liberia. Many mothers get worried when their children have it.

HERE IS HOW YOU CAN TEACH PEOPLE TO MAKE THE BEST MEDICINE FOR RUNNING STOMACH:

"From today let's be happy for the new medicine that has been found for running stomach. Anybody can make this medicine in the house."

TEACH ALL THE MOTHERS IN YOUR TOWN HOW TO MAKE THE MEDICINE:



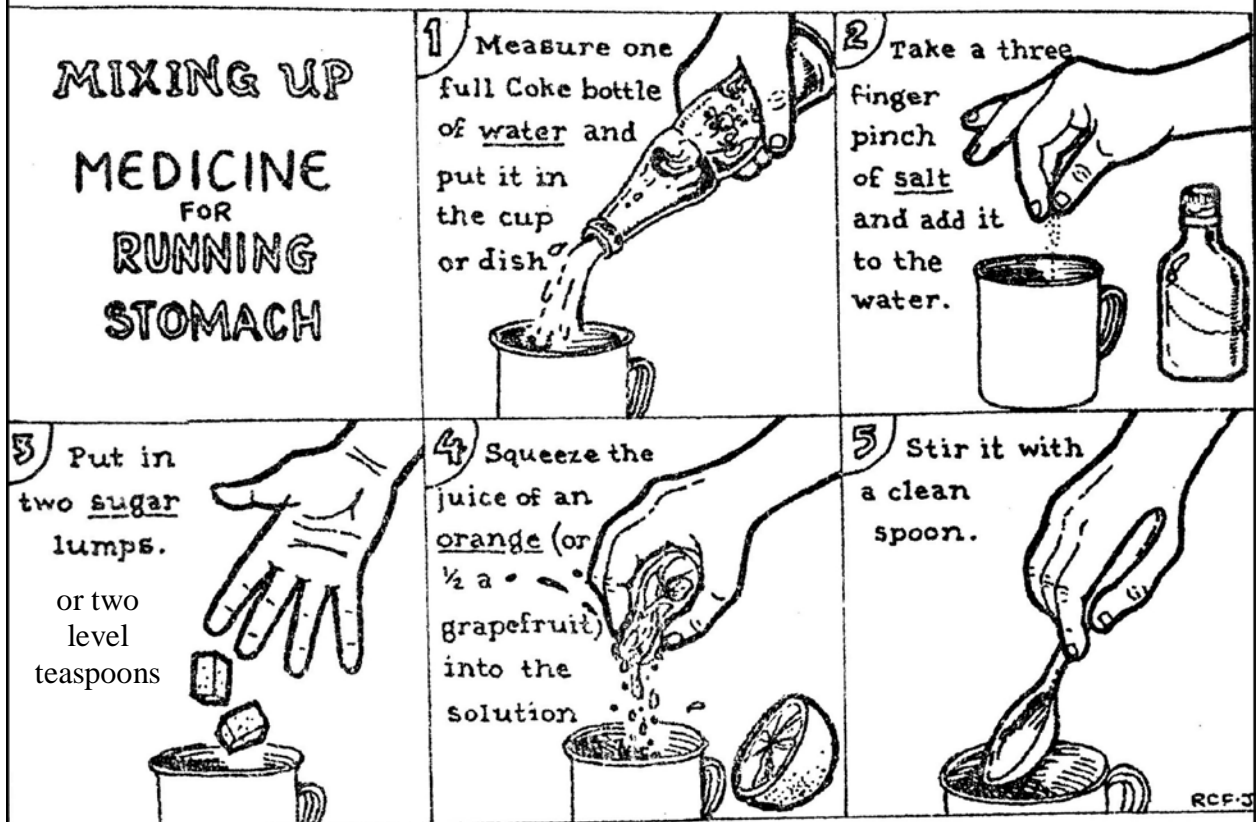
These four pages are extracted from: *Caring for Children with Running Stomach*. Continuing Education Joint Project, Ministry of Health and Social Welfare, R.L./Christian Health Association of Liberia, 1980. Although over 30 years old, this simple sugar-salt solution still works well.

We teach mothers to add orange or grapefruit juice to the sugar-salt solution to **replace the potassium** which the child loses in the diarrhea.

SOME THINGS THAT MOTHERS MUST DO BEFORE STARTING TO MIX THE MEDICINE:

1. Boil the water and let it get cold--or take it from the pump.
2. Wash the cup and Coca Cola bottle clean.
3. Wash the mixing spoon clean.
4. Bring all these things together: a. cold boiled or pump water
b. 2 sugar cubes
c. salt
d. 1 orange

Look at the picture and see how to mix the medicine. Once you make it, you will never forget it.



Take out the orange pieces and seeds from the medicine. Then keep it in a clean bowl or jar for the day.

THIS MEDICINE MUST NOT SLEEP OVERNIGHT BECAUSE IT WILL GET SPOIL.

Don't wait for long. Make the medicine and start giving it to the child small-small when you see the first watery poopoo. Keep making it and giving it until the running stomach stop. Every time he poopoo, give the medicine.

If the stomach is still running, take him to the clinic after 4 or 5 poopos.

PLEASE LOOK: Here is how you give this medicine to the child.



Also, breastfeed while giving the medicine.

NO STUFFING

If you do, the child will vomit!

Why?

Even though you do not need to teach the mothers this information, it is important for you to know because people will ask you why you add these things to the water.

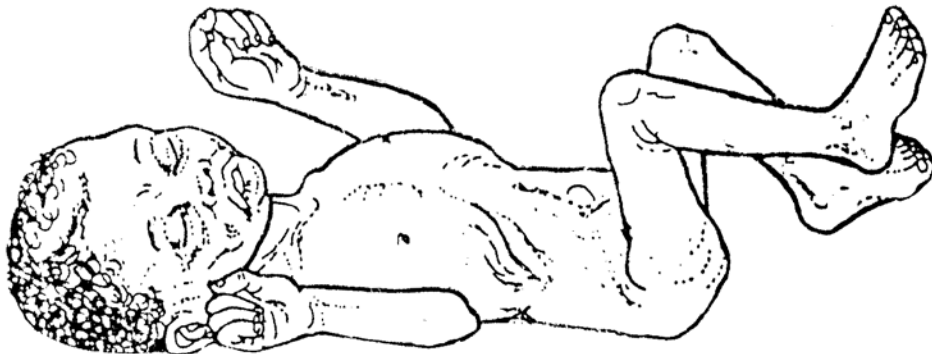
We add sugar . . . for energy.

We add orange . . . to replace the potassium
that is lost in the poopoo.

We add salt . . . to replace the salt that
is lost in the poopoo.

We use a coke . . . because it holds the right
bottle amount of water for the
quantity of things we add.

If the running stomach goes on for a long time, or if the child poopoos plenty and he does not get this medicine, his mold will sink in and he will have OPEN MOLD. That is what happened to this baby.



GIVE THIS MEDICINE SOON AND PREVENT OPEN MOLD.

- Who keeps the Road-to-Health Card? Each mother keeps the Road-to-Health Card for her children. We provide each mother with a plastic envelope to keep the card in. We must also teach her that if she goes away to another town, she should carry the card, to take with her to under-fives clinic in that town. Wherever she takes the child for clinic or for immunization, she should have the card along with her.
- The child's **CLINIC RECORD FORM** or CARD is a record that stays in the clinic. (Not all clinics use the same form.) The information on vaccinations must be on this form, too. It is for this record that you issue a clinic number. This is what one form for children looks like:

CHILD WELFARE CLINIC RECORD					Clinic # _____
Name _____	Birth Date _____	Sex: M [] F []	Father _____	Town _____	Quarter _____
Date of Vaccinations:	DPT # 1 _____	Polio # 1 _____	Measles _____		
BCG _____	DPT # 2 _____	Polio # 2 _____	Other _____		
Scar _____	DPT # 3 _____	Polio # 3 _____			
	DPT Booster _____				
Date	Wt.&/or Temp.	Complaint	Lab., Findings, Diagnosis	Treatment	

Notice that there are spaces for you to write what you learn and what you will do for the child. Always write down what you find and what you have done for the child! (**Abbreviate, write small, and only use necessary words.**)

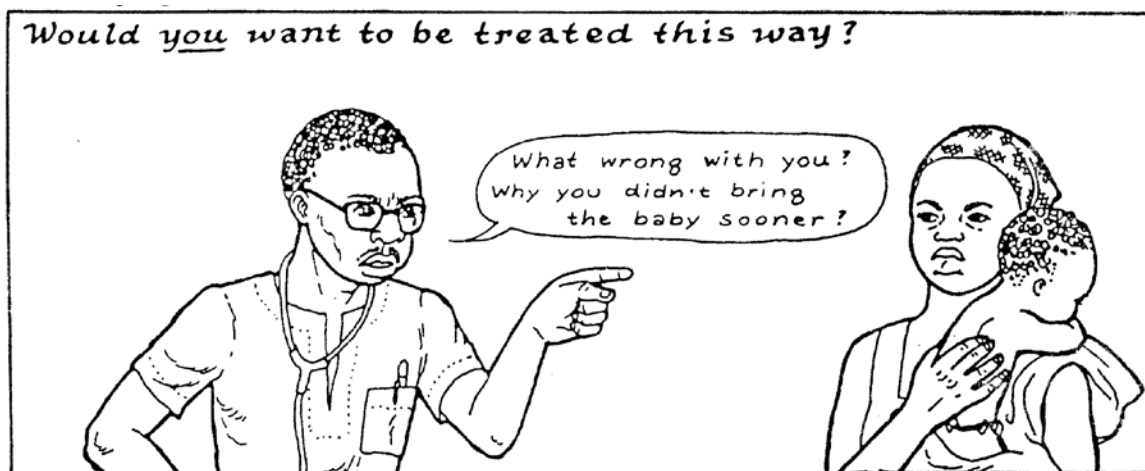
You have to spend a bit of time to write everything on the cards, but it is important to keep good records.

All of these things we need to do in the under-fives clinic take a rather long time, and busy mothers who are trying to go to the farm don't like to have their time wasted.

Keeping Mothers Happy

Of course, it takes time for any one mother to get through the under-fives clinic, whether it is in a big hospital or a small clinic. Doing so many things for each child will take time. But mothers don't seem to mind waiting in line so much if they can see you working. If they see the line progressing, it is easier to be patient. What do mothers not like?

- Mothers don't like to arrive at the clinic at 8:00 a.m. and have to wait until all the other mothers have arrived before the health workers agree to start.
- Mothers don't like to have to sit for a long time while someone gives a boring lecture. (Giving health talks is good, but making health talks—which should be short—into long lectures is bad.)
- Mothers don't like to be the first to arrive but the last to receive the record form from the record clerk's file.
- Mothers don't like it if all the children must be registered, then all weighed, then all examined, then all vaccinated. There should be a flow for mothers to follow.
- Mothers don't like to wait while the clinic staff make palaver, or gossip about their friends.
- Mothers don't like to be told they are stupid or bad, or be talked bad to, no matter what!
- Mothers don't like to be sent home because they came on the wrong day! (If this happens, help the mother by taking care of the baby anyway, and advising her of the proper schedule.)
- Mothers don't like to walk through the bush for several hours to reach the clinic to be given a hard time by the staff for coming late.
- Mothers don't like to have to wait longer because their babies are wearing Fanti cloth diapers or because the baby is not properly dressed.



Using Mothers' Time Well

There are many things that mothers don't like. So, what can we do to keep from wasting the time of the mothers?

First, we can explain (teach) that as long as the child is well, a mother only needs to bring him once in the month. (If you hold under-fives clinic weekly, mothers can choose a less busy week in the month to attend.)

Second, we must plan and organize our time, equipment, staff, and drugs in such a way that we can give the children the best care in the least time—we need a good clinic flow pattern.

Clinic Organization and Flow Patterns

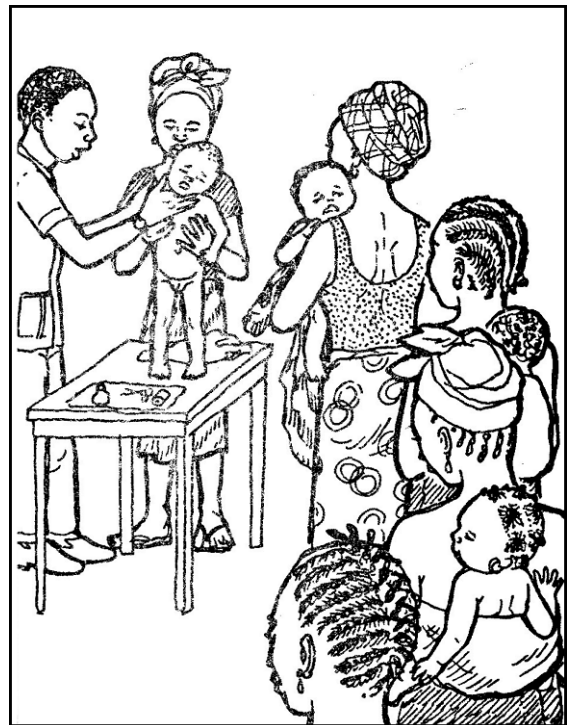
Not all clinics are built alike, and besides, sometimes under-fives clinic is held in a village palaver hut. There is no one way we can say is the right way to organize the clinic. But the clinic needs good organization in such a way that the mother can move from one thing to the next in an orderly way that permits her to get the baby properly taken care of in the least amount of time. We call this organization a flow pattern. Although there are different good ways to organize a clinic, it is better if certain things happen before some other things. It is best to follow the order given below for the following main four steps:

1. REGISTER THE CHILD.

Since it is important to record what we do for each child, it makes sense that registration should be the first thing the mothers should do. Then the records are ready to write on.

2. WEIGH THE CHILD (and give advice about what to feed).

Before we examine and treat children, we need to know how much they weigh. If a child is underweight, we will need to find out if he is ill and whether the mother is not feeding him sufficient food. The mother will need to be advised about what foods to feed the child and how much and how often to feed him.



Let mothers standing in line with a child who is sick or running a fever learn by overhearing.

3. EXAMINE THE CHILD, LISTEN TO THE MOTHER, AND TEACH HER, and GIVE SIMPLE TREATMENT from the medicines on your desk.

After you have listened to the mother, do an appropriate examination according to the mother's complaints or to be sure the child is well. Then teach the mother. Be sure to let the other mothers in the line overhear what you are saying so that they may learn too. Be sure to prevent sickness or keep the baby well. Finally give simple treatment. Giving the medicines yourself from your desk permits you to explain them to the mother and be sure she knows how to use them, and it saves the mother time because she doesn't need to stand in line again for the pharmacy.

4. IMMUNIZE THE CHILD (and give dressings or other special treatments).

Be sure to check what immunizations the child needs and order them. With some ill children it may be better to delay the immunization until the next visit. See instructions in the EPI Manual. It is also convenient to give special treatments (such as dressings or injections) as the last things done.

The people who work in your clinic should meet together to talk about their under-fives clinic. How often? That depends on how well the clinic runs, and whether mothers say their time is being wasted. When the staff in your clinic meet, be sure to talk about the "flow" that is the way mothers move from one place to the next. Do mothers have to cross in front of other mothers to reach the weighing scale? Can mothers pass in one door and along a line so that they get everything done in some good order?

Good Example of Clinic Flow

Here is one good example of how a clinic organized its "flow." This clinic was fortunate in having the following personnel, each with the responsibilities on under-fives clinic day as shown below:

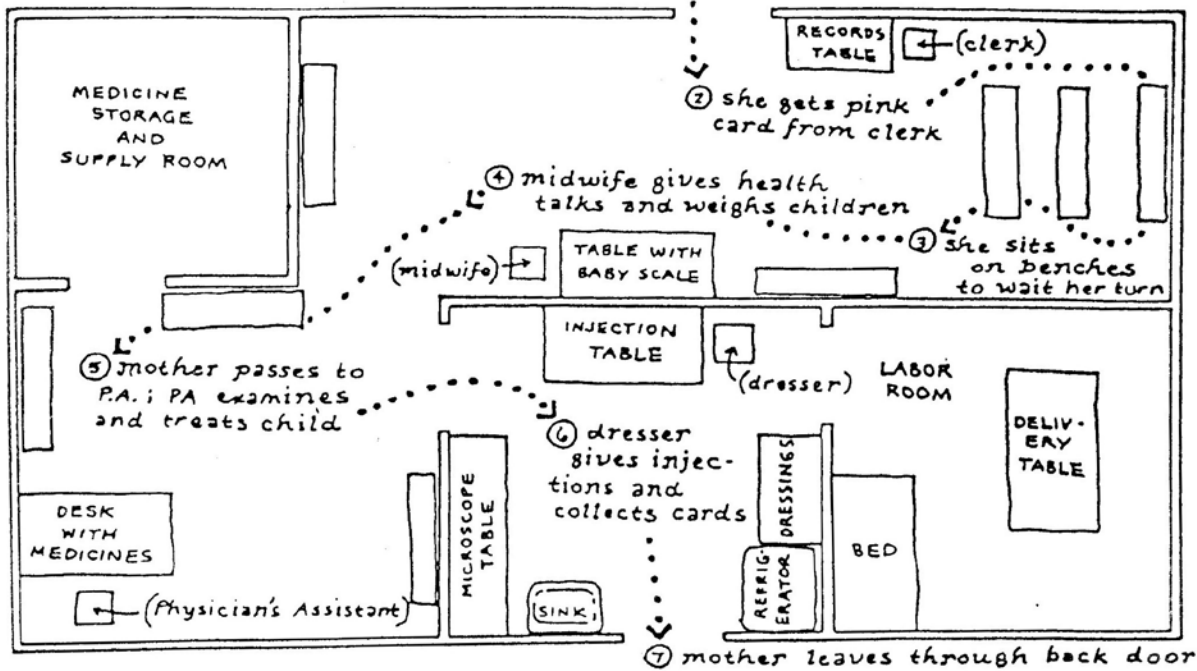


- CLERK—able to read and write sufficiently to register the children and find the records for the mothers and file them correctly by number again at the end of the day. He also is responsible for carrying any child who is actually looking sick directly to the midwife or Physician Assistant without any waiting.

- **CERTIFIED MIDWIFE**—She is the next person seen, and sits at the weighing table. When 8 to 12 mothers have received their clinic records she gives them a short and well-prepared health talk (5 to 8 minutes in length). She weighs some of the first babies to arrive before each health talk, and the others in the group after the talk. She finds out from each mother what foods she is feeding her child, and tells each mother what foods to add. When a child is not gaining well she talks with the mother about how to improve the child’s nutrition. On following visits she looks for weight gain and spends extra time with the mother. When a child is gaining well she praises the mother. She is careful to explain to each mother what the weight graph of her baby is showing. The mothers like to bring their babies to her.
- **PHYSICIAN ASSISTANT**—After being weighed and listening to a short health talk, the mothers take their children to the physician assistant for treatment of complaints or for well-baby medicine such as small iron syrup with vitamin C. He examines the babies and explains to the mothers what he is finding. He praises the mother whose children are doing well. He has common medicines right on his desk and dispenses them to the mothers and explains how to give them. He tries not to give more than 2 medicines to any mother so that she will not become confused. He orders vaccines and special treatments (dressings, penicillin, etc.) for the dresser to give. Both the physician assistant and the midwife teach mothers whose children have diarrhea how to make and give ORS. He also uses the microscope when needed. (This clinic is fortunate to have a microscope.)
- **DRESSER**—This clinic is also fortunate because their dresser can read a little and has been very carefully taught how to give certain injections correctly and sterilely and how to apply dressings. He gives pentavalent vaccine to children any day of the week. The physician assistant helps him give measles and BCG vaccine on the monthly vaccination day. After the mothers carry their babies to him, they leave through the back door. He collects the clinic records from them and returns them to the clerk.

Usually this clinic sees about 50 children on under-fives clinic day each week. On the monthly vaccination day they may see 60 or 70. The mothers enjoy bringing their children to this clinic because they feel the staff is really concerned about them, does not talk bad to them, and is really helping them. A diagram of the clinic showing how the mothers pass from place to place is shown below. Notice that the mothers always move along a line in one direction and never have to cross through a line of other mothers waiting for someone on the staff.

A Good Clinic Flow Pattern



Health Talks

Remember that while it is very important to teach each mother, health talks to groups are also important. But who will give health talks? And when will they be given? This Handbook for Health Personnel cannot answer that question for you; you yourself must look for the best time when more mothers are still in the clinic, but without making early mothers wait for late ones to arrive. (Note how the midwife in the example clinic above gives short talks to groups of 8 to 12 mothers.)

YOU MUST FIND THE BEST TIME TO GIVE HEALTH TALKS!

Sick Children and Triage

If all children come to the under-fives clinic, then there is a chance that some very sick ones will be brought by worried mothers. Since we encourage mothers to stay in line and not try to crowd or push, a worried mother may not talk her problems. Sometimes in big clinics, children have died in the waiting line. We must never let this happen!

How can we find very sick children quickly? One person who is trained to know what to look for (usually the most highly trained person in the clinic) should take time to pass along the line, looking at the children. It does not take long to do this. If more mothers come, this person should pass by again after some time. In fact, this is patrolling. But it doesn't take much time.

Also, be sure everyone working in the clinic, from the registrar to the aide, is looking out for sick children. Everyone should be watching for children with measles and listening for bad coughs—even whooping cough! If children are found with communicable diseases, they should be taken to a separate place and be seen immediately! Once they have been examined, the health worker should treat them and wash his hands well before returning to the clinic line.

Finding and separating sick children so that they can be treated early is called triage. But in some clinics, sick children are separated out of the line and left until last to be seen. This is very bad. Sometimes the sick children even die while the worried mother waits for the health worker to finish seeing the well children first. This must never happen. We must help sick children quickly. Some of the sick children can be treated in the clinic and some must be sent to the hospital.

CARING FOR THE SICK CHILD—THE IMNCI PROGRAM

To improve the care of ill children, the Liberian Ministry of Health and Social Welfare has adopted a program designed to **systematically screen every ill child for all common serious childhood conditions** and **standardize care**. The program is called **Integrated Management of Neonatal and Childhood Illnesses** or **IMNCI**.

Integrated Management of Neonatal & Childhood Illnesses (IMNCI)

IMNCI is divided into two main parts:

1. **Care of the neonate** from birth to age 2 months
2. **Care of the child** 2 months to 5 years of age

This section is an adaption of the IMCI program, and will basically follow the program's outline; first for the neonate, and then for the 2-month to 5-year-old child.

Caring for the Neonate

General Information

Providers, a rapid initial assessment is vital to caring for children! You must:

- Wash your hands with running water and soap or alcohol-based rub between each patient.
- Introduce yourself to the mother or caretaker.
- Ask the mother to describe the infant's problem(s).
- Determine if this is an initial or follow-up visit for this problem.
- Take the baby's axillary temperature for 3 full minutes.
- Measure the baby's pulse (apical), 1 full minute.
- Measure the baby's respiration, 1 full minute.
- Ask about baby's posture/movements/alertness and nursing.

Health workers must remember in caring for sick children to:

- Be nice to the mother and family members.
- Provide support to mother and family members.
- Wash hands before handling neonates and in between patient contacts.
- Ask about clinical history of the neonate.
- Always explain the neonate's condition to the family.
- Provide relevant and correct education depending on condition.

IMNCI Plan of Procedure for Examining the Neonate

Do the following:

1. Record the Birth date _____ Present date _____ Age _____ (days)
2. Screen for pre-term/low Birth weight: _____ (below 2,500 gm is low)
3. Record if Full-term _____ or if less than 37 weeks _____
4. Record Present wt. _____ -- Wt. is normal [] low [] **very low** []*
5. Screen for Neonatal Sepsis: No danger signs [] **Danger signs** []* (Page 247)
6. Screen for Severe Respiratory Infection: No symptoms [] Some [] **Severe** []*
7. Screen for Jaundice: None [] Mild [] **Significant** []*
8. Screen for Tetanus: None [] **Present** []*
9. Screen for Umbilical Infection: None [] < 1 cm [] **>1 cm (Significant)** []*
10. Screen for Naval Bleeding: None [] Present [] Resolved []

***Give initial treatment, and refer or admit these serious starred conditions.**

Caring for Neonates and Infants to Age 2 Months

The NORMAL, WELL FULL-TERM NEONATE

- **The normal, well neonate will be :**
 - Nursing well and gaining weight (although losing a few ounces in the first 2–3 days of life is normal),
 - Not jaundiced
 - Normal temperature and
 - None of the danger signs listed on pg. 247.
- If the mother does not bring a record, ask if the child delivered in a health facility or in the village, and whether the mother had her prenatal tetanus toxoid. Then **record birth date, weight, and vaccines on the Road-to-Health Card.**

Do a rapid newborn assessment, (be sure to pay attention to the umbilicus), and treat or admit if danger signs are present

If not ill and requiring admission, give BCG and OPV-0 vaccines if not already given (see the Vaccine protocol on pg. 262.)

Check how well the infant is breastfeeding, and advise only breast until 6 months of age.

Educate the parents concerning the danger signs, and explain the necessity of bringing the child immediately if any occur.

Tell the mother to bring the child again at 6 weeks for a re-check and for vaccines (Pentavalent and OPV-1).

The Pre-Term/Low Birth Weight Neonate

Identifying the Pre-Term/Low-Birth-Weight Neonate

- The underweight/premature neonate—child may not be feeding well and not gaining well.
- If the mother has the record card, check the birth date, birth weight, and weeks of gestation at birth. If no record, ask if the mother knows if the infant was born early, and make a new record card for the neonate.
- Weigh the neonate—a weight of less than 2,500 gm is low (compare the weight today with the birth weight)
- Look at the baby—the pre-term neonate has the following characteristics:
 - Skull is soft, sutures and fontanelles are wide and soft, and ear cartilage is poorly formed
 - Thin and transparent skin with visible veins
 - Lanugo hair
 - Limbs are thin and poorly flexed
 - Chest is small and narrow, with little breast tissue—less than 5 mm
 - Relatively large abdomen
 - Small genitalia
 - In the female baby, the labia major does not cover labia minor
 - In the male baby, the testes may not have descended into the scrotum
 - Sluggish neonatal reflexes (sucking, rooting, and moro)

Assessing the Low Birth Weight Neonate

- **Now examine the neonate**, check vital signs, and look for any danger signs (see DANGER SIGNS on the next page). If no danger signs, proceed as below.
- Check how well the baby is nursing, and ask how often mother nurses baby. If mother does not understand nursing technique well, teach her what to do to nurse better.

If baby doesn't suckle well because of prematurity, teach mother to express breast milk and feed with a cup or spoon.

- The small pre-term baby must not get cold—teach mother to nurse the baby in a warm environment—25° C or warmer, and to provide Kangaroo Mother Care.

Kangaroo Mother Care—to keep the low birthweight neonate warm

- Clothe the baby with a pre-warmed shirt open in the front, a napkin, a cap, and socks.
- Place the baby on mother's chest.
- Place the baby in an upright position directly against the mother's skin.
- Ensure that the baby's hips and elbows are flexed in a frog-like position.
- Baby's head and chest lie on the mother's chest with the head in a slightly extended position.
- Skin-to-skin contact starts at birth and may be continued day and night. There may be brief interruptions such as during the baby's bath and changing nappies.

If staying at the clinic or health center, the neonate's weight and breastfeeding and condition can be watched more closely and additional teaching given to the mother, but the infant must be totally separated from ill children.

If living at home, she must bring the baby for a weight check twice a week until it is gaining well. She also must bring the baby quickly if any danger signs develop. With serious weight loss, refer the neonate for possible admission.

Danger Signs for Neonatal Bacterial Infections (Sepsis)

Check for these signs in all sick neonates, and infants less than 2 months brought to the health facility. (Take axillary temperature for 3 minutes, count pulse and respirations each for 1 full minute.)

- **Central nervous system (CNS) signs: seizures** by observation or history, **unconsciousness**, or **irritability**
- **Bulging fontanel**--this is meningitis
- **Not able to nurse, not eating**
- **Vomiting everything**
- **Lethargy, not moving much, high-pitched cry**
- **Breathing: tachypneic or slow respirations** (for an infant less than 2 months, greater than 60 breaths per min. or less than 20), **grunting breathing, flaring nostrils, or chest retraction**
- **Hypothermia: less than 36.5 ° C or fever, more than 37.5° C** (axillary, 3 minutes)
- **Reddened skin around umbilicus**, perhaps draining pus with a bad smell (neonate: usually first 2–3 weeks)
- **Many severe skin pustules**, or purulent discharge from eyes
- **Abdominal distention**

COMMON NEONATAL ILLNESSES

Neonatal Sepsis (Bacterial Infections)

- Signs and symptoms—see the danger signs above. (Seizures are a probable sign and a bulging fontanel is a late sign of meningitis and this neonate needs immediate special treatment in the hospital (See NEONATAL MENINGITIS below.)
- Lab—Hgb, WBC/Diff, U/A and culture, CSF with culture, and blood culture would be ideal, if available. Cellulitis of the umbilicus, skin pustules, and eye infections as the only symptoms would not require such extensive labs. Do an RDT to rule out needing to also treat the neonate for malaria.
- Medication—Ampicillin 50 mg/kg IM or IV twice daily and gentamycin 4–5 mg/kg IM or IV once daily for 10 days will cure most sepsis. Skin infections (umbilical cellulitis, pustules) may require anti-staphylococcal antibiotics. Any really ill baby with sepsis should be given the first doses of antibiotics and referred to the hospital. Do **not** give chloramphenicol. (See meningitis.)
- If critically ill and not nursing and being referred, after giving the initial antibiotics give 50 mL sugar water by NG tube to avoid hypoglycemia.
- Neonate should breastfeed. If unable to nurse and you are treating the neonate in your facility, insert an NG tube and give expressed breast milk. Alternately, IV fluids with glucose at maintenance levels for no more than 2 days can be used (but neonates need the nourishment from breast milk).
- Check vital signs every 4 hours. Refer quickly if not improving.

Neonatal Meningitis

Neonates appearing critically ill, who have stopped nursing and are having seizures may have meningitis. Also check an RDT for malaria. If the fontanel is bulging, this is a late sign of meningitis. Seizures should be stopped with rectal diazepam, 0.3 mg/kg. (Given with a syringe with the needle removed—this may be repeated twice if necessary.) They should be given the initial Ampicillin and Gentamycin injections IM or IV as in **Sepsis** (above on this page) and referred immediately to the hospital. (Chloramphenicol is used in infants 3 months or older for meningitis, but in prematures especially or neonates who have not sufficiently developed their liver enzymes it may cause Grey Syndrome and they may die—do not give chloramphenicol to neonates less than 3 months of age.)

Neonatal Jaundice

Many infants become jaundiced in the first 3 - 7 days of life. The majority of these have **Physiologic Jaundice**—that is, their liver enzymes are not sufficiently developed to rapidly conjugate the bilirubin formed from the breakdown of Hgb. so it can be excreted in the bile. This is not serious and will correct itself in a week or two. But jaundice can also occur with sepsis, and the sepsis must be treated; and also with Rh or ABO incompatibility (the mother having a different blood type and having developed antibodies against the infant's blood). If the bilirubin level

rises too high it can damage the child's brain. We call such damage from high bilirubin **kernicterus**. Never let such brain damage occur! Therefore:

- Ask if the mother ever had a jaundiced neonate previously; if so, jaundice may be from **Rh or ABO incompatibility**.
- Check the infant for signs and symptoms of **sepsis**—if present, treat sepsis.
- **Bilirubin levels must not rise too high. They are rising too rapidly if:**
 - The child is visibly jaundiced when examined in good daylight the first day of life (look particularly at the sclera of the eyes)
 - Not only eyes but also arms and legs appear jaundiced on day 2
 - In addition to eyes, arms and legs, hands and feet are jaundiced day 3
 - Rapid development of jaundice (as above) is especially serious if the infant also is low birth weight (2,500 gm) or was born before week 37
- If no signs of sepsis but significant jaundice (levels rising too rapidly), have the lab. check the Rh and ABO blood types of mother and child if possible, and the infant bilirubin level and Hgb (if possible), and refer to the hospital immediately (if not already there) for **phototherapy** to reduce the bilirubin level. Give 50 mL of sugar water orally or by NG tube if the neonate is unable to nurse before the baby goes.
- Mother should continue breastfeeding exclusively.
- Recommended checking of degree of jaundice and vital signs is every 4 hours.
- For jaundice that is not significant (mildly jaundiced infants), and the neonate is otherwise well, the child may be taken home and come back to be rechecked in 2 days.
- The mildly jaundiced infant treated at home should be **uncovered** and exposed to **sunlight** in a **warm room** through a window (the child must not get cold) for a few hours each day. (Either sunlight on the skin or phototherapy will conjugate the bilirubin so it can be excreted.)

Tetanus Neonatorum

This serious illness occurs when the cord becomes contaminated with tetanus bacteria from being cut with an unsterile instrument or from an unsterile dressing. It almost never occurs in sterile deliveries of infants in clinics or hospitals, unless the cord is contaminated after discharge. Most cases can be prevented by immunizing the mother during her pregnancy with TT vaccine. It usually develops from 1 to 2½ weeks after birth.

- Signs and symptoms—The infant's muscles stiffen from the tetanus toxin and go into spasms with stimuli such as loud sounds or being touched. His jaw clenches tightly shut so he cannot nurse. The muscle spasms may become so severe and prolonged that he cannot breathe adequately.

- Tetanus neonatorum requires 24 hours of continuous nursing care for survival. It should not be attempted in a clinic. Stabilize the infant with diazepam and give initial TAT, TT, and benzyl penicillin as below and refer the neonate stat to a hospital or very well-staffed health center.
- Ask the mother whether she received TT during the pregnancy and where she delivered, how the cord was cut and tied, and how the cord has been dressed, and record her answers.

MEDICATIONS AND TREATMENT:

Control the spasms and tight muscles with diazepam—recommended is one mg/kg (given slowly IV, or through NG tube) every 30 minutes and withhold if respirations decrease below 30/minute. It is **important not to be concerned with treating every 30 minutes**, but instead **adjust the schedule to prevent the severe spasms as much as possible without over-sedating the baby or slowing the respirations too much**—and if the infant starts to have significant spasms between doses, give some more—**adjust your schedule to the needs of the infant**. Most infants die from spasms so severe and prolonged that they cannot breathe, or from aspiration pneumonia—**not** from over-sedation. Most infants require diazepam for 2½ to 3 weeks. Diazepam IM or rectally should be avoided if the infant has an IV or NG tube.

Give penicillin for 7 days—Benzyl penicillin 100,000 IU/kg preferably IV Q 12 H (or IM) to start, and when the spasms are better-controlled, change to 125–250 mg. penicillin V TID **orally** through an NG tube.

Give 1,500–3,000 IU human TAT (or 3,000–6,000 IU bovine) IM the first day as soon as spasms are a bit controlled and 0.5 mL TT IM (use different syringes and inject in different sites).

In the hospital, preferably start with IV fluids the first day until spasms are better-controlled by titrating with diazepam IV. Then place an infant NG tube, be sure it is in the stomach, and tape it in place. Change diazepam from IV to giving it through the NG tube, and have the mother express breast milk and give it in frequent small amounts through the tube. Have suction ready next to the baby in case it regurgitates.

Official recommendations are to treat the infant in a quiet, warm, and darkened room. This is a good recommendation, because stimuli that cause spasms are reduced in such a room. **But the greater problem is that the infant requires 24-hour skilled nursing—and this is the most critical factor.** If nursing personnel are not available to assign specifically to the darkened room on a 24-hour basis, **too many infants die in the dark. Some hospitals abandoned the dark room concept, and achieved a much better survival rate of about 65–70% by placing the bassinets, with the heads mildly raised, right in front of the nursing desk in the noisy, lightened ward where the nurses could constantly see the infants and titrate them with their anti-spasmodic medication (usually diazepam).**

Neonatal Umbilical Infection (without Tetanus)

When a neonate is brought to clinic with a reddened area around the umbilicus, and perhaps draining foul-smelling pus, the baby has an umbilical infection. It may be mild or severe.

- Ask the mother where she delivered, and whether any unclean or harmful substances were applied to the baby's umbilicus.
- Determine the degree of the redness and swelling around the umbilicus. If the redness extends for more than 1 cm out from the umbilicus the infection must be considered severe, especially if the area of redness is definitely swollen, with a foul discharge, or if the abdomen is distended. Such skin infections may be penicillin-resistant staph, and should be treated with cloxacillin IV instead of ampicillin. But if you do not have cloxacillin, give ampicillin 50 mg/kg IM and gentamycin 5 mg/kg IM, clean and dress the cord, and refer the neonate to the county hospital or to a health center that has cloxacillin.
- If the area of redness extends less than 1 cm, the red skin is not hard or swollen, the abdomen is not distended and the discharge is mild, then the infection does not appear severe. This can usually be managed by cleaning the umbilical area with 0.05% chlorhexadine, and then swabbing the area 4 times a day with 0.5% gentian violet until the redness is gone and no drainage is evident. If the baby is feeding well, and has no other problems, the mother can then take it home, perhaps with a little gentian violet to swab for a few more days. Return in 1 week (or sooner) to recheck the umbilicus.

Bleeding from the Umbilical Cord

Usually this is a neonate 1–3 days old.

- Observe that the bleeding is actually only from the cord.
- If so, re-tie the cord and stop the bleeding.
- Order a Hgb if possible—at least check the neonate for pallor. If very pale or Hgb is less than 8 gm., the neonate may need a transfusion. Refer if the Hgb is below 8 gm. or if the child does not seem to be doing well.
- Give vitamin K (phytomenadione) 1 mg SC.

Caring for the Older Infant (2–12 Mo.) and Young Child (1–5 Years)

These children also need screening for severe bacterial infections, malaria, and dehydration. Tetanus is uncommon (but look for it), and umbilical infections are very rare in this age group.

Common Danger Signs for the Older Infant and Young Child Include:

- **Tachypnea—Respirations over 50/min. ages 2–12 months
Respirations over 40/min. ages 1–5 years**
- **Respiratory symptoms—Severe chest in-drawing, grunting, rales, ronchi, nasal flaring, expiratory wheezes (usually asthma), and inspiratory stridor (usually croup)**
- **CNS symptoms—Seizure (cerebral malaria or meningitis), bulging fontanel (meningitis), unconsciousness, lethargy, or significant irritability**
- **Chills or fever—higher than 38°C, or hypothermia—less than 35.5°C.**
- **Skin—cellulitis, abscesses**
- **Not able to nurse, not eating, or vomiting everything**
- **Signs of dehydration—Dry mouth, sunken eyes, decreased skin elasticity**

General Plan for Screening for Serious Illnesses, age 2 months – 5 years-- Do and/or record the following:

1. Name _____ Age _____ Complaint _____
2. Ax. Temp. _____ (3 min.) Pulse _____ (1 min.) Resp. _____ (1 min.)
3. Weight _____ Normal for age Low High Height _____
4. Danger Signs? No Yes Which signs? _____
5. Cough? No Yes Difficult breathing In-drawing Stridor Rales
6. Diarrhea? No Yes Days ____ Blood in stool Restless Sunken eyes
Dry mouth Lethargy/coma Skin elasticity: Good Poor Bad
Drinking/nursing: Eagerly OK Poorly Unable Vomiting all
7. Fever? No Yes Days ____ Every Day RDT Neg. Pos. Not done
8. Measles within 3 mo.? N Y Now? N Y Cough Runny nose
Red Eyes with matter
If recent measles: Mouth ulcers Deep? Cloudy cornea Pus in eyes
9. Ear Problem? N Y Days ____ Pain Drainage Tender mastoid
10. Malnutrition: None Wasting Legs swollen Hair red Low wt
11. Anemia: None Conjunctiva pale very pale Palms pale Hgb _____
12. Vaccines and Vit. A: Tick those previously given, circle those needed today
BCG Pentavalent 1 Pentavalent 2 Pentavalent 3 Measles
OPV-0 OPV-1 OPV-2 OPV-3 Yellow Fever Vitamin A

13. Assess feeding if anemia, low weight, or less than 2 years

Breastfeeding? No Yes At night? How many times/24 hr.? _____

Any other foods/fluids? N Y What others? _____

How many meals/snacks per day? _____ What is used to feed child? _____

If weight is very low for age, also ask: How large are servings? _____

Does child receive his own serving? Y N Who feeds child and how? _____

During this illness, has child's feeding changed? N Y How? _____

Now treat the child according to what you have learned from your questions and examination.

SERIOUS ILLNESSES, 2 MONTHS TO 5 YEARS

Diarrhea with Dehydration

Diarrhea with dehydration is still a major cause of death in children (and adults) in Liberia, but deaths are almost entirely preventable with correct procedures for rehydration. Firestone Hospital proved in the 1960's that nearly all dehydrated children were critically low on sodium and potassium, and unless IV fluids contained sufficient sodium and potassium, mortality continued to be unacceptable. Ringer's lactate with 4 to 5 mEq of K⁺/liter does well for volume expansion, but does not begin to make up for potassium losses. D-5 -½ NS or D5W have no potassium. Acceptable solutions after initial volume expansion would be D-2½ % in ½-strength Darrow's (61 mEq Na⁺ and 17 mEq K⁺/liter), or D-5-½ NS or D-2½-½ Ringer's, either with 10 mL of 10% KCl added/500 mL. If the child is drinking after initial volume expansion and not vomiting, you can change to ORS, which has sufficient potassium and sodium (but no calories in UNICEF packets), and further IV fluids may not be needed.

- When a mother brings a child complaining of diarrhea, ask:
 - How long has the child had diarrhea? How severe is the diarrhea?
 - Is the child also vomiting? Vomiting all, or able to keep some fluids down?
 - Having any fever or chills? Any blood in the stool?
- Screen for bacterial infections and do an RDT for malaria while checking hydration (malaria or bacterial infections can cause diarrhea in children).
- Now examine the child's state of hydration—pay particular attention to state of consciousness, activity, moisture (or lack thereof) in the mouth, skin elasticity, quality of pulses, eyes (normal or sunken) and fontanel in an infant. Grade the dehydration as follows:
 - Alert, playful, skin elasticity normal, eyes not sunken and mouth wet—this child is **not dehydrated**. Unless vomiting everything, send this patient home with ORS to drink. Return tomorrow for a recheck if diarrhea continues.
 - Maybe less alert, somewhat restless and irritable, may be thirsty, but eyes are not sunken, mouth is wet, and skin elasticity is normal (skin on the abdomen snaps back immediately when pinched)—this child is likely **mildly dehydrated, but not significantly**—unless vomiting everything, give ORS to drink at home and definitely recheck tomorrow.

- Restless and irritable, eyes somewhat sunken, mouth rather dry, skin on the abdomen is rather slow to snap back when pinched (but does so in less than 2 seconds), pulse quality feels normal, urine output is decreased—this child has **moderate to severe dehydration**—it is best to rehydrate with IV fluids—start with Ringer’s lactate. Follow with ½-strength Darrow’s or D-5-½ NS with 10 mL of 10% KCl added per 500 mL.
- Less alert (or unconscious), lethargic, eyes very sunken, mouth dry, skin snaps back very slowly—in greater than 2 seconds), pulse quality poor, very little urine output, fontanel definitely sunken in an infant—this is **very severe dehydration**—IV Ringer’s stat, and follow-up as above.
- Advise the mother to continue breast feeding during the diarrhea in all children still on the breast, and advise proper hand hygiene to limit spread of the infection.
- For amounts of fluid to give and further information, see pg. 11 - 19.
- Refer the child urgently to the hospital if:
 - Signs of a severe bacterial infection
 - Diarrhea has lasted over 14 days
 - Blood in the stool—the lab can distinguish between bacillary and amebic dysentery, or other causes, and a physician can treat the cause
 - The dehydration is severe and the present clinic cannot monitor IVs through the night

Respiratory Infections, Coughs

- **Ask the mother:**
 - How long has the child been coughing?
 - How severe is the cough?
 - Any fever?
 - Any difficulty breathing? Wheezing?
- **Examine the child:**
 - Take the axillary temperature (3 min.) and count the pulse and respirations (1 min. each)
 - Danger sign if: 2–12 months old, and respirations more than 50/min.
or age 1–5 years, and respirations more than 40/min.
 - Look at the chest: Retractions? Difficulty breathing? Are the nostrils flaring?
 - Listen to the lungs: Any abnormal sounds? Rales? Ronchi? Wheezes? Stridor?
 - Listen to the cough: Severe? Long coughing spasms causing vomiting?

Now choose the cause of the cough and treatment from the table below.

Cough Less than 2 Weeks, and:	Assessment:	Plan of Treatment (15 KG Child)
1. Cough, but no fever and no rapid or difficult breathing, B/S normal	Common cold (no rales heard)	Paracetamol and/or cough syrup (do not give antibiotics)
2. Definite fever, but has no rapid or difficult breathing, & no rales	Early pneumonia? Or Flu? Also check RDT	Paracetamol for flu, antibiotics later if not improving, or if very ill
3. Cough, fever, breathing fast but without any difficulty (often rales or ronchi in chest)	Pneumonia	Amoxicillin syrup or caps 250 mg QID or erythromycin 125 mg TID x 10 days or penicillin 2 cc IM BID x 7 days
4. Cough and fever with both rapid and difficult breathing (usually rales can be heard)	Severe pneumonia	1)Give ampicillin 50 mg/kg IM 2)& chloramphenicol 25 mg/kg. IV/IM 3)Send immediately to hospital.
5. Child over 6 mo. old with cough, runny nose, red eyes and fever for 1-4 days and no previous measles or vaccine	Measles developing Check mouth for Koplik's spots (expect rash in 1 or 2 days)	1)Paracetamol and cough syrup 2)Later add ampicillin or penicillin if pneumonia develops. 3)Watch state of hydration.
Cough More than 2 Weeks		
1. Cough for more than 3 weeks (sometimes cough with blood), fevers, losing weight, night sweats	Possible TB (many children with TB do not have cough)—see pg. 122-124.	1)Unless real sputum can be obtained, refer to physician for diagnosis—may need chest x-ray. 2)If TB diagnosed, see section on TB.
2. Expiratory wheezing and real difficulty breathing—has had such attacks of wheezing in the past (recurrent episodes)	Asthma	1)Epinephrine 0.1–0.2 cc SC—may repeat in 20 min. 1–3 times 2)Aminophylline or salbutamol tabs or inhaler QID (dosage pg. 107 & 109)
3. Child—spasmodic cough and whoop. May vomit after cough. (see note below)*	Pertussis* (check vaccination status)	To hospital if under 1 year Erythromycin 250 mg TID If older

***NOTE ON PERTUSSIS**—Small infants less than 1 year easily block off their bronchial tubes with thick mucous. Send them to the hospital. Chloramphenicol or erythromycin is effective if started early. Therefore it is very important to diagnose pertussis in infants less than one year of age as early as possible. Add cough syrup for older children if available.

Anemia

All ill children (as well as all apparently well children) should be screened for anemia. Moderate anemia can cause the child to be more easily fatigued and short-of-breath with exercise. Very severe anemia can cause heart failure and lack of sufficient oxygenation for the brain and body cells, and death. To screen for anemia look at the color of the conjunctiva and palms—in anemia they are pale instead of a normal pink.

■ **Causes** of anemia are usually:

- Poor diet deficient in iron (and possibly deficient in folic acid)
- Chronic malaria
- Hookworm causing chronic blood loss
- Other causes of blood loss (frequent nosebleeds, cut with much bleeding)

- The sickle cell condition will also cause anemia but must be treated differently (see pg. 163–166).
- With pallor, check the Hgb (if available) to get a more exact level of anemia.
- Also check a malaria smear or RDT, and stool for hookworm (if available).
- Ask the mother what the child eats. Give counseling for improving the diet.
- Treatment: (if anemia is **not** from the sickle cell condition)
 - If positive for malaria (or unable to check) or spleen is enlarged, treat for malaria, and repeat the treatment in 3 months.
 - If hookworm is found (or unable to check), de-worm with 5 tablets of mebendazole if 1 year of age or older (unless de-wormed in last 6 months).
 - Give an iron supplement (see 20 lb child’s dose on pg. 81) for 1 month, then recheck pallor, Hgb, and diet. (May need 2 months more.)
 - If Hgb still low, give a 2nd month of iron supplement, then recheck again.
 - With Hgb of 5 or 6, Refer for possible admission and transfusion.

Fever

Fever is not a disease—it is a **symptom** which occurs with many diseases.

Find what disease is causing the fever.

- Ask the mother the following questions:
 - 1) How long has the child had the fever?
 - 2) Is the fever every day, or does it come and go?
 - 3) Is the child coughing? If so, see RESPIRATORY INFECTIONS.
 - 4) Sore throat or ear pain? Pain anywhere else?
 - 5) Is the child eating?
 - 6) Have there been any seizures?
 - 7) Frequent urination? Pain passing urine?
 - 8) Abdominal pain? Vomiting or diarrhea?
- Examine the child; pay particular attention to danger signs.
- Order appropriate labs (if available).
- Stabilize (give initial treatment), then refer any child who is looking very ill to the hospital.

TREATMENT: Match the symptoms and observations with the groups on the following page, and treat as directed. (If the cause is doubtful, also do a WBC and rapid malaria test if possible.)

Symptoms/Observations Children with Fevers Over 37.5°C, with:	Assessment	Plan of Treatment
Fevers of Less than 1 Week		Meds. below are 15 kg Child's Doses
1. Sore throat and mild fever but no swollen tender neck nodes	Likely a viral pharyngitis	Give paracetamol and try salt-water gargles
2. Fever, red sore throat and swollen tender neck nodes	Streptococcal pharyngitis?	Penicillin tabs or amoxicillin 250 mg TID x 10 days or pen 1 cc IM x 7 days
3. Fever, headache, stiff neck not able to think clearly or unconscious (and sometimes a seizure)	Meningitis See pg. 91—also treat malaria if RDT positive	1)Ampicillin 50 mg/kg IV (15 kg child gets 750 mg), and 2)Chloramphenicol 25 mg/kg IV stat 3)Send stat to the hospital
4. Cough, breathing fast, rales, fever but no difficulty breathing	Pneumonia (measure O ₂ saturation if available)	1)Ampicillin 750 mg IV/IM BID x 7 d. or 2)Amoxicillin 250 mg QID PO x 10 d. or 3)Erythromycin 250 mg TID or QID 10 d.
5. Cough, breathing fast, rales and having difficulty breathing	Severe pneumonia	Ampicillin 750 mg IV/IM stat and send straight to the hospital
6. Cough, definite fever, but no rales and normal breathing (RDT negative)	Influenza? Or perhaps early pneumonia?	1)If not too ill, try paracetamol and observe. 2)Otherwise amoxicillin 250 mg QID, or erythromycin 250 TID x 7 days
7. Fever, back pain with much tenderness over kidney	Pyelonephritis (check U/A if possible)	Cotrimoxazole 400/80 tab—½ tab TID x 14 days (or ampicillin and gentamycin as for sepsis) To doctor if not better in 4 days
8. Warm painful red swelling anywhere on limbs or body	Cellulitis or abscess	See CELLULITIS pg. 73 - 74 Use anti-staph. antibiotic
9. Fever and abdominal pain with rebound tenderness	Peritonitis	Send stat to hospital (with IV Ringer's if dry or dehydrated)
10. Fever, headache, and chills (none of these other symptoms)	Probable malaria (ck. RDT if available)	Antimalarial--amodiaquine + artesunate—see pg. 46 - 48.
11. Only fever—not looking too ill and none of the above signs (and negative RDT)	Probably a viral illness	Give paracetamol for fever and watch closely for other symptoms.
Fevers of more than 1 week and:		
1. Cough more than 3 weeks (sometimes with blood), weight loss, night sweats See other symptoms pg. 122 - 124.	Probable TB	Sputum if able, or to doctor to diagnose and start treatment See protocols pg. 129 - 132.
2. Diarrhea and fever 1–4 weeks	Enteric Fever	May try chloramphenicol if available 250 mg QID (be quite sure actual Enteric Fever before treating) To hospital if not improving
3. Fever, headache, muscle pain, sore throat and gastroenteritis	Possible Lassa Fever	Refer to the hospital (with IV Ringer's if dry or dehydrated)

Send any patient who is not improving quickly with treatment to the doctor at the hospital immediately!!

Malaria

Malaria is included under the fevers on the previous table but deserves special mention because it can be complicated and show up in ways different from just fever and chills. It can cause the following dangerous conditions in small children. Whenever you see such a condition, check for malaria. Your clinic should be able to test for malaria, but if the tests are finished, the child will need to be treated for all possible dangerous conditions without the labs.

The DANGER SIGNS are:

- **FEVER AND SEIZURES**, with unconsciousness or confusion—is this **cerebral malaria** or **meningitis**, or **both**? Do the RDT or malaria smear. If the child is positive for malaria, but no way to check the spinal fluid and blood sugar, the child must also be treated for meningitis and hypoglycemia. Therefore, give an initial dose of artemether or quinine IM, plus ampicillin 50 mg/kg and chloramphenicol 25 mg/kg IV or IM for possible meningitis. Stop the seizures with diazepam (10 mg in 2 mL vial). Give 0.3 mg/kg very slowly IV, or 0.5 mg/kg rectally (with a 1-mL syringe without the needle)—a 10 kg child would receive 0.6 mL diazepam IV or 1 mL diazepam rectally. Then give 50% glucose 1 mL/kg diluted with an equal amount of normal saline very slowly IV (for possible low blood glucose) and send the child immediately to the hospital.
- The child has **FEVER AND IS COMATOSE** (but no convulsions), malaria test is positive, and no way to check spinal fluid or blood glucose—Also needs to be hospitalized and treated for cerebral malaria, possible meningitis, and possible hypoglycemia, with feedings through an NG tube. Give the same medicines as above, except no diazepam, and refer stat to the hospital.
- The **VERY PALE CHILD WITH A FEVER** (Hgb less than 5 gm/dL), and a positive malaria test—May have respiratory distress from the low Hgb. Give the first dose of treatment for malaria (and ampicillin if respiratory distress) and send immediately to the hospital for a blood transfusion (with donors). **NOTE FOR HOSPITAL PERSONNEL: Should be transfused with sedimented or packed red blood cells (RBC) very slowly** to avoid circulatory overload and CHF. Do not give the plasma. See the protocol in the Training Manual for Management of Malaria.
- **FEVER, RESPIRATORY DISTRESS, CRACKLES IN LUNGS**—With a positive malaria test will need treatment both for malaria and antibiotics for probable pneumonia. (May need O₂ also.) Usual antibiotics: ampicillin IV, or amoxicillin or erythromycin orally. With resp. distress give initial doses and send to the hospital.
- **PROSTRATION**--Either inability to nurse or drink (less than 1 yr.), or if older—inability to sit without support--again needs a malaria test and lumbar puncture. Also treat this child the same as **FEVER AND SEIZURES** above, except no diazepam because no seizure. Refer to the hospital.
- The child with **MALARIA AND IN SHOCK** (either from dehydration or without dehydration)—requires Ringer's lactate to reverse the shock and dehydration, malaria treatment, and antibiotics for sepsis: Ampicillin 50 mg/kg IV Q 6 H and gentamycin 7.5 mg/kg IV first dose, then 3 to 3.5 mg/kg IV Q 12 H. Best to stabilize the patient and refer this child to the hospital.
- **PREVENT MALARIA** by having children sleep under LLITNs (Long-Lasting Insecticide-Treated Nets). See pg. 46 - 48 for malaria.

Measles

Any child 6 months old with fever and cough of 4 days or less needs to be checked for possible developing measles. The child developing measles starts with fever and cough on day 1, and the cough and fever become worse each day for the next 3 days. The eyes become reddened with a mattery discharge. By day 4, the measles rash starts in the mouth as Koplik's spots on the buccal mucosa. The typical rash breaks out on the skin on day 5. Therefore, with fever and cough for less than 5 days:

- Ask whether the child has ever had measles (no one gets measles twice), and if the child has ever received measles vaccine (best to see a record of the vaccination).
- Listen to the chest, look for reddened mattery eyes, and check for Koplik's spots in the mouth.

TREATMENT:

- 1) Give vitamin A 200,000 IU if none has been given recently to prevent corneal damage and mouth ulcers (100,000 IU if 6 to 11 mo. old).
- 2) Give paracetamol for fever.
- 3) Do not give an antibiotic right away—Measles is a viral illness, not a bacterial pneumonia. However, some children do develop pneumonia following measles. If the fever is not going down and the cough not decreasing after 4–5 days of rash, start amoxicillin 250 mg TID x 10 days (dosage for a 10–20 kg child).
- 4) Children do develop diarrhea with measles (especially if somewhat malnourished). In a child with poor nutrition, diarrhea may last for weeks. Prevent dehydration with ORS, and use IV fluids if necessary.
- 5) Advise the mother to continue breastfeeding, and continue feeding the child.
- 6) Kwashiorkor and TB often follow measles. Try to prevent these by encouraging good nutrition, but watch for the possibilities.
- 7) As the rash is fading, if the conjunctivitis is not clearing, treat it with Tetracycline eye ointment QID. Treat mouth sores with Gentian Violet BID

PREVENT measles by seriously vaccinating all children in your area.

Other

KWASHIORKOR/SEVERE MALNUTRITION

Children with poor nutrition (especially with inadequate protein as well as calories) often develop Kwashiorkor after measles or other severe illnesses. Weights plotted on the Road-to-Health Card and the Shakir Strips are very helpful in identifying poor nutrition before development of Kwashiorkor.

Identify Kwashiorkor as follows:

ANY CHILD with: 1) POOR LIGHT SKIN + 2) THIN LIGHT HAIR + 3) A POOR NUTRITION HISTORY + 4) USUALLY EDEMA & DIARRHEA = **KWASHIORKOR**

For full information on Kwashiorkor and its treatment, see pg. 100-104 and 201-203. For Nutrition for children, see pg. 210-214.

MARASMUS

This is severe malnutrition in which the main deficiency is lack of sufficient calories. (Protein has not been as deficient as in Kwashiorkor.) The child is small and very thin, but does not have the skin and hair changes or the edema of Kwashiorkor. The child should be referred to a feeding center.

EAR, NOSE AND THROAT (ENT) INFECTIONS

Ear infections do develop particularly after viral respiratory infections, and after pharyngitis (especially streptococcal sore throats), but they may develop without any respiratory infections. Check for ear infections in sick children, as well as for pharyngitis.

- Ask the parent if the child is complaining of any throat or ear pain, or not wanting to eat food, or pulling at an ear.
- Check the ears to see if any pus is draining. With your finger press the pinna over the opening of the ear canal to see if it causes pain. Hopefully you have an otoscope to look at the tympanic membranes—are they normal and translucent, or opaque and red or yellow?
- Now press on the mastoid process (the bone projecting downward just behind each ear). Is it tender? With tenderness and fever the ear infection has gotten into the bone of the mastoid process—this is a serious infection. If untreated it can break through the bone into the brain and cause death from meningitis or from a brain abscess.
- Now check the throat with a flashlight and tongue blade. Is it normal, mildly red, or very red? Is there any exudate? Are the Anterior Cervical Nodes (ACNs) in the neck swollen and tender?

- Now using the history and findings, treat according to the table below:

Symptoms/Observations Ear Nose Throat Complaints:	Assessment	Plan of Treatment (15 kg child doses)
1. Fresh cold (runny nose), no ear pain, throat normal or mildly red, and little or no fever	Rhinitis (viral)	Paracetamol or mild decongestants or nose drops if available (but no treatment actually needed)
2. Runny nose, watery eyes, and much sneezing (usually occurs at the same time every year)	Allergic rhinitis	Antihistamine tablets or syrup
3. Sore throat, mildly red, but no fever, and no swollen tender neck nodes	Viral pharyngitis	Paracetamol or salt-water gargle (penicillin will not help)
4. Sore throat and fever with yellow papules in throat	Viral (echo?) Pharyngitis	Paracetamol or salt-water gargle (penicillin is useless here)
5. Sore very red throat, maybe some exudates Fever, and swollen tender neck nodes	Likely strep pharyngitis	Penicillin tabs or amoxicillin syrup 250 mg TID for 10 days
6. Sore throat, fever, tender neck nodes and large swollen tonsils	Tonsillitis	Penicillin tabs or amoxicillin syrup 250 mg TID or QID x 10 days
7. Pain—cheeks and upper teeth Colored nasal discharge, sometimes with blood in it	Sinusitis-less common in children	Amoxicillin or cephalexin 250 mg TID x 10–14 days
8. Sore throat, fever, headache, muscle pain, vomiting and diarrhea for more than 1 week	Possible Lassa Fever	Refer to hospital for correct diagnosis and treatment. See pg. 332-333.
9. Ear pain for a few days, no drainage, mastoid not tender, but tender to pressure over ear canal	Otitis media or otitis externa	Amoxicillin syrup 250 mg. TID for 10 days
10. Ear pain but less now, and ear draining pus for just a few days, no mastoid tenderness	Otitis media with rupture tympanic membrane	Amoxicillin syrup 250 mg. TID for 10 days
11. Not much pain now, but ear draining pus for a few weeks or longer, no mastoid tenderness	Chronic otitis with ruptured TM	Might try cotrimoxazole 400/80—½ tab TID x 10–14 days, probably needs ENT referral
12. Hx. of ear pain, maybe still drainage, but now fever, and the mastoid process is painful and tender	Mastoiditis* infection is in mastoid bone	First give ampicillin 50 mg/kg and chloramphenicol 25 mg/kg IV. Then refer stat to ENT. May need surgery to remove infected bone.

***NOTE:** An infection in the mastoid process can eat through the bone and cause a brain abscess, meningitis and death. Ampicillin 50 mg/kg and Chloramphenicol 25 mg/kg IV q. 6 h. for 2–3 weeks may cure it, or it may be necessary to remove infected bone to prevent meningitis and death. Send these patients to ENT quickly.

Now Check the Child’s Vaccination Status, and Whether the Child Has been De-Wormed and Received Vitamin A

- If the child is 1 year or older and has not received a **de-worming drug** in the last 6 months, give **mebendazole**—5 tablets of 100 mg.
- **Vitamin A supplementation status:** If child is 6 months or older and has not received a dose of **vitamin A** in the previous 6 months, give:
 - 6–11 mo.—100,000 IU vitamin A orally
 - 12–59 mo.—200,000 IU vitamin A orally
- Now check the **child’s immunization status**. If the child has missed any of the doses of vaccines listed below, give the appropriate doses to help him catch up.

Vaccines for Children		
Birth	BCG	OPV-0
6 weeks	DPT—Hib-HBs-1 (Pentavalent)	OPV-1
10 weeks	DPT—Hib-HBs-2 (Pentavalent)	OPV-2
14 weeks	DPT—Hib-HBs-3 (Pentavalent)	OPV-3
9–11 months	Measles	Yellow Fever



**REMEMBER: IN THE CHILDREN’S CLINIC
ALL CLINIC WORKERS MUST HELP TO FIND SICK CHILDREN--
SICK CHILDREN MUST BE TREATED FIRST**

MATERNAL AND NEWBORN HEALTH

Rosalind Wesley and Jeanette Isaacson, 2nd Edition, and
Marion Subah, RBHS, and James Sorsor, TNIMA, present Edition

According to the Basic Package of Health Services (BPHS), Maternal and Newborn Health (MNH) includes:

1. Family Planning—pg. 263–272
2. Antenatal Care—pg. 272-294
3. Labor and Delivery—pg. 295-303
4. Emergency Obstetrical Care—pg. 304-310
5. Postpartum Care—pg. 311-312
6. Newborn Care—pg. 313-314

IMPORTANCE OF MATERNAL AND NEWBORN HEALTH

This section of Chapter 5 includes care for women of reproductive age, and care for babies during the first month of life to prevent morbidity and mortality. High-quality maternal and newborn care requires that each woman receives evidence-based care for planning her family as well as evidence-based care during a normal (uncomplicated) pregnancy, labor and birth, and the postpartum period, and each newborn receives appropriate evidence-based care during the critical neonatal period. Adequate and appropriate care, early detection and management of complications, with an effective referral system, are essential for reducing maternal and newborn mortality.

PERI-NEONATAL APPROACH—The MOHSW declared that:

1. “All care to women and children will be integrated and must be provided by skilled attendants.”
2. “Mother-friendly care will be provided to increase utilization of health services. The health workers attitude is essential in the provision of MNH services.”

FAMILY PLANNING/BIRTH SPACING

THE FOLLOWING ARE IMPORTANT FOR FAMILY PLANNING:

- 1) Using good general counseling techniques
 - 2) Using effective interpersonal communication
 - 3) Ruling out pregnancy
 - 4) Assessing postpartum contraception needs
 - 5) Providing appropriate methods of contraception
- All of these are essential for birth spacing**

Recommended Counseling Techniques

- Show the mother respect, and help her feel at ease.
- Encourage the woman to explain needs, express concerns, and ask questions.
- Let the woman's wishes and needs guide the discussion, and include her husband or important family members (with her permission).
- Ensure that there is adequate privacy during the counseling session.
- Address any related needs such as protection from STIs, including HIV, and support for condom use.
- Listen carefully to her questions, wishes, and concerns.
- Provide only key information and instructions, and use words she knows.
- Respect and support the woman's informed decisions.
- Bring up issues of side effects and take the woman's concerns seriously.
- Check her understanding of the contraceptive methods.
- Invite the woman to come back any time for any reason.
- Provide information on return visits.

First Time (New) Clients Desiring Family Planning

- **Take measures to ensure privacy** for family planning (FP) activities--including:
 - Keep the door closed.
 - Do not allow other people to come in and out of the room
 - Allow her privacy to dress and undress.
- **Confirm that the client is not pregnant and explain the importance to her.** Ask her when she had her last menstrual period. If currently menstruating, she is not pregnant. **If not currently having her period, rule out pregnancy by confirming at least one of the following:**
 - She is in abstinence since last menses
 - Is using a reliable contraceptive method correctly and consistently
 - Is within 4 weeks postpartum
 - Is within 7 days post-abortion
 - Is less than 6 months postpartum, and is exclusively breastfeeding fully and has not had any menses
 - Is more than 6 months postpartum, and has not had any menses but has no clinical signs or symptoms of pregnancy, or has a negative pregnancy test

- Check that the woman (and family member if present) accurately understand the FP method(s).
- Support the woman's choice of method, if she is medically eligible.
- Discuss how to use her method of choice and how to cope with any side effects.
- For the client that does not have a preference, review the various methods.
- Explore the woman's knowledge about birth spacing/FP.
- Correct any misinformation.
- Provide information on the benefits of birth spacing and potential health consequences of high-fertility.

Benefits of Birth Spacing for the Client

- **Compared with children born less than 2 years after a previous birth, children born 3 to 4 years after a previous birth are:**
 - 1.9 times more likely to survive the first week of life
 - 2.2 times more likely to survive the first 28 days of life
 - 2.3 times more likely to survive the first year of life
 - 2.4 times more likely to survive to age five
- **Compared with women who give birth at 9 - to 14-month intervals, women who have their babies at 27- to 32-month birth intervals are:**
 - 1.3 times more likely to avoid anemia
 - 1.7 times more likely to avoid third-trimester bleeding
 - 2.5 times more likely to survive childbirth

Dangers with Multiple Pregnancies

The following dangers all become more likely:

- **Maternal death**
- **Vesicovaginal fistula**
- **Infections (puerperal sepsis)**
- **Miscarriages**
- **Anemia**
- **Bleeding (postpartum hemorrhage)**

Method-Specific Counseling for Method Choice

Give information about each of the following five methods to the client and help her choose one of the five methods below.

1. Condoms

- Show the woman a condom.
- Evaluate the woman's (and husband's if present) knowledge about condoms.
- Explain that the condom:
 - Is very effective if used correctly in every sexual intercourse.
 - Can be used as backup for other methods.
 - Is the only FP method that provides protection from STIs and HIV.
 - Requires readily available supplies before intercourse begins.
 - Requires willingness by the husband to apply it.
- Give the following information to the client and husband:
 - Check expiration date on condom package to ensure it is not out of date.
 - Check the condition of the package, and discard it if the package is broken or the condom appears damaged or brittle.
 - Use a new condom every time you have intercourse.
 - Dispose of used condoms by placing them in a waste container, in a latrine or by burying them.
 - Always have a backup supply of condoms available.
 - Store condoms away from warm places or they will deteriorate.

2. Combined Oral Contraceptive (COC) Pills

- Are highly effective, 92% to 99.9% when taken daily and correctly.
- There are different brands of COCs with slightly different doses of hormones (use available visual aid to show different types correctly).
- The pill prevents pregnancy by suppressing ovulation and thickening the cervical mucus (as well as other changes in the genital tract).
- The pill must be taken daily; 1 pill each day, preferably at the same time every day.
- The woman must not use COC pills if she has any of the following conditions:
 - Bleeding disorders
 - Undiagnosed vaginal bleeding
 - Breastfeeding (baby less than 6 months old)
 - Less than 21 days postpartum in non-breastfeeding women
 - History of blood clots in legs, lungs, or eyes (thrombophlebitis or thromboembolic disease)
 - Active liver disease (hepatitis or tumors)
 - Known or suspected breast cancer

- Severe headaches (or recurrent vascular migraines with focal neurological symptoms)
- Diabetes
- High BP (= or >140/90 mm Hg)
- History of heart attack, stroke or heart disease
- Taking rifampicin for TB
- Taking anticonvulsant medications for a seizure disorder

Characteristics of COCs

■ **Advantages**

- Fertility returns immediately after stopping the pill.
- COCs decrease menstrual flow and menstrual cramps.
- COCs help protect against ovarian and endometrial cancer.
- COCs are controlled by the client rather than her husband; and do not affect her husband.

■ **Disadvantages**

- Require daily use.
- Do not protect against STIs, including HIV/AIDS.
- Some women may experience nausea initially.
- Cannot be used by postpartum breastfeeding women until 6 months.
- Allow for limited active involvement in FP by the client's husband.

■ **Side effects**

- Breast tenderness
- Headaches, nausea
- Usually less menstrual bleeding—may have some irregular bleeding initially

■ **Types**

There are different brands with slightly different doses of hormones. It is important to show the women samples of the types.

■ **Warning signs of complications**

- Abdominal pain
- Chest pain
- Severe headaches
- Eyes-blurred vision
- Severe leg pain
- Yellow-colored skin

3. Progesterone-Only Pills (POP)

Progesterone-only pills (POPs) are highly effective (92% to 99.9%) when taken daily and correctly.

Characteristics of POPs

- **Advantages** (same as COCs)
 - Fertility returns immediately after stopping the pill.
 - Decreased menstrual flow and menstrual cramps.
 - Protect against ovarian and endometrial cancer.
 - Are controlled by the client rather than her husband; and do not affect her husband.
- **Disadvantages**
 - Require daily use and must be taken at the same time.
 - Do not protect against STIs, including HIV/AIDS.
 - Bleeding pattern changes are common, but not harmful.
 - Allow for limited active involvement in FP by the client's husband.
- **Side effects**
 - Changes in menstrual bleeding patterns: irregular bleeding/spotting between periods, or amenorrhea
 - Headaches while taking the pill
- **Warning signs of complications**
 - Abdominal pain
 - Delayed period after several months of regular cycles
 - Repeated, very severe headaches
- **Conditions that render POPs an unsuitable contraceptive option**
 - Breastfeeding (baby less than 6 weeks old)
 - Active liver disease (hepatitis or tumors)
 - Known or suspected breast cancer
 - Migraines (recurrent vascular migraine with focal neurological symptoms)
 - Current stroke or active cardiovascular disease
 - Taking rifampicin for TB
 - Taking anticonvulsant medications for a seizure disorder

4. Progestin-Only Injection (Depo-Medroxy Progesterone Acetate or DMPA)

DMPA is highly effective (99%) and effective immediately.

Characteristics of DMPA

■ Advantages

- Decreases menstrual flow and menstrual cramps.
- Protects against ovarian and endometrial cancer, and pelvic inflammatory disease (PID).
- Affects the client and has little or no impact on her husband.

■ Disadvantages

- Does not protect against STIs, including HIV/AIDS.
- Irregular bleeding that is normal with this method—especially spotting and bleeding between periods.
- May also miss menses, and may have amenorrhea or irregular periods.
- Allows for limited active involvement in FP by the client's husband.

■ Side effects

- Bleeding changes are common, but not harmful
- Gradual weight gain is common
- Headaches, dizziness, mood changes may occur

■ How to use the injection

- A DMPA injection must be given every 3 months.
- The first injection is given between the first and seventh day of the menstrual period.
- If starting after day 7, use a back-up method or abstain from sexual intercourse for 1 week.
- Return to the clinic for the injection every 3 months for DMPA.
- If the client has forgotten and is late for her next injection, as soon as she remembers she should either start a back-up method (condom) or abstain from sex for 7 days, and then return to the clinic/health center for her next injection.

■ Conditions that render DMPA an unsuitable contraceptive option

- Breastfeeding (baby less than 6 weeks old)
- Active liver disease (hepatitis or tumors)
- Known or suspected breast cancer
- Migraines (recurrent vascular migraine with focal neurological symptoms)
- Current stroke or active cardiovascular disease
- High BP (= or >140/90 mm Hg)
- Diabetes of greater than 20 years duration or with nephropathy, retinopathy, or neuropathy

■ **Procedure for administration of DMPA**

- Roll (do not shake) DMPA vial thoroughly but gently.
- Draw DMPA into the syringe while maintaining sterile technique.
- Force any air bubbles out before injection.
- Wash the injection site with soap and water, only if visibly soiled.
- Inject DMPA deep into the muscle (deltoid in arm or upper, outer quadrant of gluteus area).
- Pull back on plunger.
- If no blood seen, inject DMPA slowly, then remove and discard needle.
- Apply pressure to injection site with cotton without rubbing site.

5. Intrauterine Contraceptive Device (IUCD or IUD)

It is very effective and can last for up to 12 years.

- **CHARACTERISTICS OF IUCD**—The IUCD prevents pregnancy by causing a chemical change that damages the sperm BEFORE the sperm and egg meet.
- **HOW THE IUCD IS INSERTED**—Inserted into the uterus, usually during menstruation but can be inserted any time client is not pregnant, including postpartum (within 10 minutes after the placenta is out or after 6–8 weeks), or immediately post abortion if there is no infection.
- **Advantages**
 - Begins working immediately.
 - No client action required.
 - Can be removed anytime client desires.
 - Affects the client and has little or no impact on her husband.
 - Immediate return of fertility upon removal.
 - Does not affect breastfeeding.
 - Prevents pregnancy for up to 12 years.
- **Disadvantages**
 - Heavier and more painful menses, especially first few cycles.
 - Periods can become more irregular or stop completely.
 - Does not protect against STIs, including HIV/AIDS.
 - Allows for limited active involvement in FP by client's husband.
- **Warning signs of complications**—Pay attention==do not ignore these warning signs:
 - Persistent cramps
 - Irregular/unusual vaginal discharge
 - Lower abdominal pain, especially if accompanied by not feeling well, fever or chills, especially the first 20 days after insertion
 - She thinks she is pregnant.

- **Conditions that render IUCD an unsuitable contraceptive option:**
 - Abnormal uterine anatomy
 - Recent endometritis or PID
 - Abnormal uterine bleeding
 - Cervical or vaginal infection
 - Presence of an STI
 - Presence (or suspicion of) cervical or uterine cancer
 - Possibility of a pregnancy
- **Proper procedure for IUCD insertion**
 - Put new examination gloves or sterile gloves on both hands.
 - Insert speculum.
 - Apply antiseptic solution twice to cervix (especially os), and to vagina.
 - Gently grasp cervix with tenacula at 10 and 2 o'clock positions.
 - Sound the uterus using “non-touch” technique.
 - Set depth gauge to measured uterine depth with IUCD still in sterile package; then completely open the package.
 - Insert the IUCD (Copper T 380A) using the “withdraw” technique.
 - Cut strings to 3–4 cm in length.
- **Removal of the IUCD**
 - Prepare needed equipment.
 - Perform hand hygiene.
 - Follow the proper procedure for IUCD removal.
 - Immerse IUCD and instruments in 0.5% chlorine solution for 10 minutes for decontamination.
 - Dispose of gloves and waste appropriately.
 - Perform hand hygiene.
 - Record IUCD removal, any procedural problems, and any abnormal findings in client's chart.
 - Provide counseling; if the client wants to use another method, counsel her accordingly.
 - Encourage client and husband to return for follow-up visit.
- After giving information on each method, discuss the client's specific situation, plans, and what is important to her about a method.
- Then help the client consider methods that might suit her. If needed, help her reach a decision and support the client's choice, giving her specific instructions on use of the chosen method, and discuss how to cope with any side effects.
- With her permission, involve her husband in the counseling session.

Specific Postpartum Family Planning Counseling

Provide specific postpartum family planning (PPFP) counseling for all mothers who are going home after every delivery or abortion, including the promotion of exclusive breastfeeding, and information to the women of other contraceptive methods that are compatible with breastfeeding.

Follow-Up Visit

Make sure to inform the client as to when to return to the facility for a follow-up visit. Upon return, provide her with more supplies or do routine follow-up, and ask a friendly question about how the client is doing with the method. If she is experiencing problems or side effects, evaluate the problem and help her to resolve it—whether the problem is a side effect, trouble using the method, an uncooperative husband or another problem.

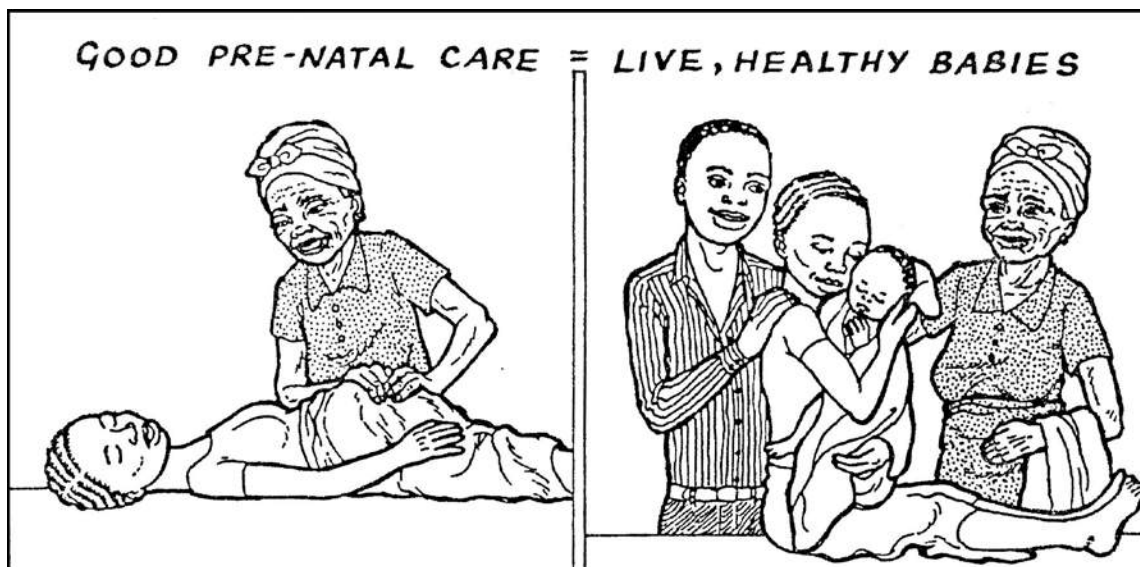
ANTENATAL CARE (ANC)

Focused Antenatal Care (FANC)

Health Worker's Attitude

The health worker's attitude toward FANC is very important. Not all women will react to pregnancy in the same way because of their moods, intelligence, educational background, health, age, and home situations. Therefore, it is the responsibility of the health worker to understand and accept each mother as she is, and to help meet her needs and fulfill the purposes of prenatal care. These purposes are:

- Promote and maintain the physical, mental, and social health of women during pregnancy.
- Detect pre-existing conditions early and treat those conditions that may affect the pregnancy outcome.
- Initiate early detection and management of potential complications during pregnancy.
- Provide access to adequate high quality evidence-based FANC interventions to all pregnant women, and provide high quality monitoring of the fetal growth and development.
- Ensure prompt referral at all levels.
- Prepare the mothers for:
 - Delivery
 - Postpartum
 - Breastfeeding
 - Care of her future baby
 - FP/birth spacing



FANC Interventions

<p>The person who receives the pregnant woman must conduct a rapid initial evaluation at the first contact.</p>	<p>In the health facility, during ANC clinic:</p> <ol style="list-style-type: none"> 1) Walk around the room to identify pregnant women who need immediate care: <ul style="list-style-type: none"> • Very weak clients • Vomiting • Severe edema • High fever, chills • Pallor (anemia) • Facial expression (pain, distress) • Difficulty breathing 2) Ask every pregnant woman upon her arrival in the health facility whether she has any of the following danger signs: <ul style="list-style-type: none"> • Vaginal bleeding • Respiratory difficulty • Fever • Severe headache/blurred vision • Severe abdominal pain • Convulsions/loss of consciousness <p>Give immediate care if any of the above signs are present.</p>
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Initial Contact with the Prenatal Patient

In the prenatal clinic, receive and treat the pregnant woman and her husband or companion cordially and respectfully:

- Greet the woman and her husband or companion (if present) in a cordial manner.
- Introduce yourself.
- Speak using easy-to-understand language for the client.
- Encourage the woman to ask her husband or companion to remain at her side, as appropriate.
- Do not allow individuals other than the necessary health care workers to go in or out during the provision of care without the woman's permission.
- Explain to the woman and her companion what you are going to do and encourage her to ask questions.

Next, Take an Obstetrical History

- **Points to remember while recording the history of the patient:**
 - Be patient and polite.
 - Speak kindly.
 - Use whatever words the patient may understand.
- The following information should be recorded at registration (may be taken by an aide):
 - 1) Name
 - 2) Age and Sex
 - 3) Town
 - 4) Quarter
 - 5) Date of first visit
 - 6) Name of father
 - 7) Name of husband
 - 8) Name of Clinic

History to Be Taken by the Health Worker

Choose a place that is private and quiet where both the mother and health worker can take time. Look at the picture of the Prenatal Record on page 276. All of the information it requires which was not filled in by an aide at registration should be obtained by the health worker.

**GOOD PRENATAL
CARE RESULTS IN
HEALTHY MOTHERS
AND BABIES AND
AVOIDS
COMPLICATIONS AND
DEATHS.**

OBSTETRICAL HISTORY must start with a **GENERAL MEDICAL HISTORY**

- Ask about and record any **general health problems** (e.g., headache, fever, joint pain, chronic diarrhea, weight loss, vaginal discharge, genital ulcers, etc.)
- **Review card**—if the information below is not present, ask about it and record:
 - Full or partial Tetanus Toxoid immunization series
 - Allergies (medical or other)
 - Current medications and/or herbal treatments
 - Any history of diabetes, TB, hypertension, heart diseases, urinary tract infections/STIs, malaria, or others
 - Any history of surgical interventions (specify which interventions)
 - Current use of tobacco, alcohol or other harmful substances
 - ABO and RH factor test results (if known)
 - VDRL test results (if done)
 - Testing for HIV (if done)
 - Use of LLITN (sleeping under a long-lasting insecticide-treated net)

OBSTETRICAL HISTORY—To give good prenatal care it is necessary to obtain a good obstetrical history; this includes:

- LMP—date or month of the last menstrual period
- EDC—expected date of confinement (date you expect she will deliver).

GUIDELINES FOR CALCULATING EDC

The following methods may be used:

- 1) Gestational age calendar, such as the pregnancy wheel
- 2) Calendar method, based on the following formula:
The date of the first day of the LMP + 7 days - 3 months = EDC
For example: 9 May + 7 days - 3 months = 16 February of the next year
- 3) Moon method (if her periods are usually 1 month, or 4 weeks, apart): If a woman's last period starts on a full moon, her baby is due 10 full moons later. If her last period starts on a new moon, her baby is due 10 new moons later.
- 4) Some prefer adding 9 months plus 7 days to the first day of the woman's last menstrual period:
Example: LMP—December 23, 2006
Adding 7 days and 9 months gives an EDC of September 30, 2007, or,
If the mother can only recall the **month** (not the date) of her last menstrual period, simply add 9 months.

Signs of pregnancy: Breast changes (4–8 weeks); Nausea (4–6 weeks); Awareness of baby's movement (16–18 weeks for multigravida and 18–20 weeks for primigravida); baby's heartbeat heard (20 weeks by stethoscope, 11–12 weeks by doptone, 22–24 weeks by pinard).

-
- **GRAVIDA**—This means the total number of times the woman has been pregnant, including abortions (miscarriages or pregnancies that “spoiled”) and including the present pregnancy.

- HISTORY OF HER PREVIOUS PREGNANCIES—Ask the woman about each of her pregnancies, one-by-one, starting with her first child. For each pregnancy, this includes:
 - Sex of the child
 - Age presently (or age at death if not living)
 - Length of labor (get the mother to estimate—½ day? 2 days? etc.)
 - Type of delivery—was this a Vertex? Breech? Forceps Delivery? Vacuum Extraction? (She probably won't know a face presentation or occiput posterior.)
 - Symphysiotomy? or C-Section?
 - Complications—retained placenta, postpartum hemorrhage, fever, or discharge with a bad odor requiring hospital treatment, etc.
- PARA—This is recorded as 4 numbers, such as 4-0-1-2.
 - The 1st number is the number of full-term deliveries she has had previously.
 - The 2nd number is the number of premature deliveries.
 - The 3rd is the number of pregnancies that that were miscarriages/abortions.
 - The 4th is the number of children who are alive now.
 - Therefore: 4-0-1-2 represents 4 full-term deliveries, no premature deliveries, 1 miscarriage/abortion, and 2 children still living.
- The Prenatal and Obstetrical Record Card—Front Side for History and Physical Examination (Back of card is on pg. 288)

OBSTETRICAL OUTPATIENT RECORD										Clinic No. _____	
Name _____		Age _____		Father _____		Town _____		Quarter _____		Date first visit _____	
Husband _____		Clinic _____		LMP _____		LUC _____		Gravida _____		Para _____	
History Prev. Pregs.										P. Y. P. A. LN	
No.	Sex	Age	Length Labor	Type Deliv.	Complications	No.	Sex	Age	Length Labor	Type Deliv.	Complications
1						6					
2						7					
3						8					
4						9					
5						10					

Using family planning? Yes () No () Pill () IUD () Other _____

<p>Initial Physical Exam: (Also see back of card)</p> <p>Color () ()</p> <p>Breasts () ()</p> <p>Nipples () ()</p> <p>Colostrum () ()</p> <p>Heart () ()</p> <p>Lungs () ()</p> <p>Abdomen () ()</p> <p>Extremities () ()</p> <p>Other _____</p> <p>Height _____ (if under 5 ft., deliver in hospital.)</p>	<p>Pelvic: _____</p> <p>Hem. _____</p> <p>Stool _____</p> <p>Urine Ath. _____</p> <p>Sugar _____</p> <p>Serum _____</p> <p>Problems with present pregnancy _____</p> <p>Routine Drugs (Check those to be given this patient).</p> <p>1) () Paracetamol (Phenacetin) 1 stat. A 1 weekly (25mg tab) or _____</p> <p>() Chloroquine (250 mg tabs) 2 weekly</p> <p>2) () FeSO₄ 1 tab. daily () b.i.d. () t.i.d. ()</p> <p>3) () Folic Acid 1 tab. daily</p> <p>4) () Multivit. 1 tab. daily</p> <p>5) () Calcium 1 tab. daily</p> <p>6) () T.T. 0.5 cc SC monthly x 3 months</p> <p>Dates given: 1) _____ 2) _____</p> <p>3) _____ Booster _____</p> <p>Previously immunized with T.T.? Yes () No ()</p> <p>If previously immunized with T.T., give only 1 booster dose during this pregnancy instead of 3 doses.)</p>
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REMEMBER:

History-taking is the most important thing in the prenatal clinic.
Yet many workers fail to take a good prenatal history.
Take time to record a good prenatal history and avoid complications.

Simple Initial Physical Examination

(The Next Step after Obstetrical History)

■ **Important points to remember for the physical exam:**

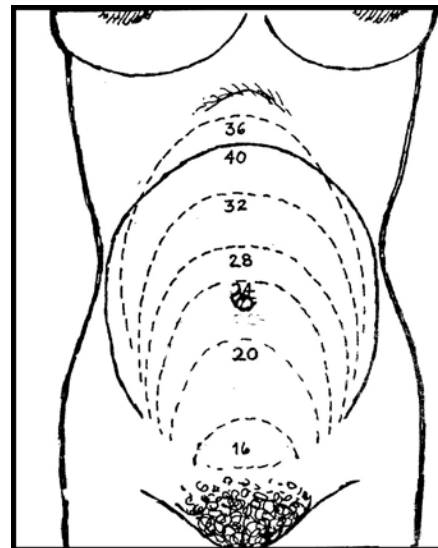
- Explain each stage of the exam to the woman using easy-to-understand language.
- Wash hands with soap and water, and dry them before and after the exam.
- Ensure privacy by preventing others from entering the exam room.
- Allow the patient privacy to undress before the exam and to dress after the exam.
- Ask the woman to empty her bladder and save the urine for testing.
- Help the woman climb onto the examining table, and put a pillow under her head.
- Ensure that she remains covered during the examination.
- After the examination, help her to get down from the examining table.
- Record all relevant findings in the woman's home-based and clinic cards.
- Inform the woman of key findings.

- **Next, Complete a General Physical Exam—examine the following:**
 - The color of the conjunctiva, lips, tongue, and gums. If she is pale check the Hgb and treat the anemia (see pg. 79-81). If cyanotic, send her to a doctor.
 - Breasts—Feel for lumps, and if any real masses are felt, send her to the doctor.
 - Nipples—Are they normal, inverted, or flat? If they are flat or inverted, see the instructions on pg. 281 and 294.
 - Colostrum—Normal is a few drops of clear, yellowish, sticky fluid. (Sometimes if the pregnancy spoils, she will be secreting real milk instead of a few drops of colostrum.)
 - Heart—Note the rate and rhythm. There should be no murmur.
 - Lungs—Breath sounds should be normal with no rales.
 - Extremities—Note if edema or varicose veins are present. If so, see pg. 287 for edema and pg. 284 for varicose veins.

GOOD PRENATAL CARE RESULTS IN HEALTHY MOTHERS AND BABIES
AND AVOIDS COMPLICATIONS AND DEATHS.

- **Now, Examine the Abdomen Carefully**
Inspect the abdomen. You should note:

- The **size of the uterus**—an unusually large uterus may cause you to suspect Twins, or much less likely, Hydramnios (from a molar pregnancy—which can occur in the first trimester with severe nausea).
- The **shape of the uterus**—does it look like a transverse lie?
- **Stretch marks** on the abdominal wall
- Any **abdominal scars**—did she have a previous cesarean section?
- **Fetal movement**
- **Pigmentation**



Fundal height by weeks of pregnancy

- **Palpate (feel) the uterus and pelvis abdominally:**

- Estimate the fundal height in weeks (see the fundal height diagram).
- Palpate the fundus—feel for the head and/or fetal parts.

AFTER 36 WEEKS, PALPATE CAREFULLY TO
DETERMINE PRESENTATION!

- Palpate the uterus laterally—if after 36 weeks, determine fetal lie and presentation, with fundal, lateral and abdominal palpation.
- Palpate the abdominal pelvis—where is the head?
- Measure fundal height in cm.
- Listen to the fetal heart's rate and rhythm if after 20 weeks—rate should be 120–160 and rhythm regular.
- Do a pelvic examination (only as appropriate and if you are trained to do so).
- Take BP and pulse initially and at each visit.
- Also take the temperature if the woman complains of fever.
- Record the weight at each visit—It is important to record the weight early in pregnancy because normal gain should average about a pound a week (sometimes less in the first trimester) (25 to 40 lb gain is normal during pregnancy).
- **Do simple and routine laboratory tests** (when possible):
 - Hgb estimation—Average for prenatal patients is about 10 grams (most pregnant women are anemic). Normal (non-pregnant) is about 13 grams.
 - Urine—Test for sugar, albumin, and schistosomiasis
 - Stool—Look for worms and other intestinal parasites
 - Syphilis screening (VDRL)
 - Blood grouping and Rh factor
 - HIV (only after counseling and consent of the woman)
 - (Also Hepatitis B Virus [HBV] testing whenever it finally becomes available)

Lastly, Provide Routine Prenatal Management

- Ferrous sulfate + folic acid (60 mg iron and 400 mcg folic acid)—1 tab daily x 1 month (or you may give in sufficient amounts to last until patient's next visit)
 - If Hgb is less than 7 gm %, double the dose of iron.
 - Explain side effects of taking ferrous sulfate.
 - Be sure patient understands necessity of keeping meds out-of-reach of children (swallowing a number of iron tablets can cause a child to die from iron toxicity).
 - Counsel about eating food rich in iron and vitamin C and avoiding tea, coffee, and colas when taking iron.
- Give mebendazole as a single dose of five 100 mg tablets once after the first trimester.

- **Provide Tetanus Toxoid immunizations** (only 1 dose needed if previous series)
 - First visit—TT 1 (or based on previous TT record--previous TT's count)
 - After 4 weeks, give TT-2.
 - After 6 months (or 2 weeks before delivery), give TT-3.
 - Booster after 1 year.
- **Give Intermittent Preventive Therapy for malaria (IPT)**—(Fansidar, 3 tablets).
 - IPT 1 in second trimester (one dose of 3 tablets—observe her swallow them)
 - IPT 2 in third trimester (one dose of 3 tablets—observe her swallow them)

Note: There should be 4 weeks interval between doses and IPT should not be given within 2 weeks of delivery.

Health Education

Health education of the obstetrical patient should start with the initial visit and continue at each visit. Information should include advice on diet, personal hygiene, breastfeeding, care of the breasts, rest, intercourse, and other topics.

1. **DIET**—See NUTRITION DURING PREGNANCY section, pg. 215.
2. **PERSONAL HYGIENE**—Advise her to bathe and wear clean clothes.
3. **BREASTFEEDING AND CARE OF THE BREAST**—Some mothers for many different reasons may not want to breastfeed their babies. Explain to such a mother the many advantages of breastfeeding. Encourage her to make the decision to breastfeed while she is still pregnant. She should discuss that decision with the father of the baby, and find someone who knows about breastfeeding who will help her after she delivers. See pg. 187-195 and 211-212.

Some mothers believe their breast milk is not good. Explain that **breast milk is best** and **always good** for the baby (unless the mother has HIV). Breast-fed babies do not get sick as often and are more likely not to die.

4. Advantages of Breastfeeding

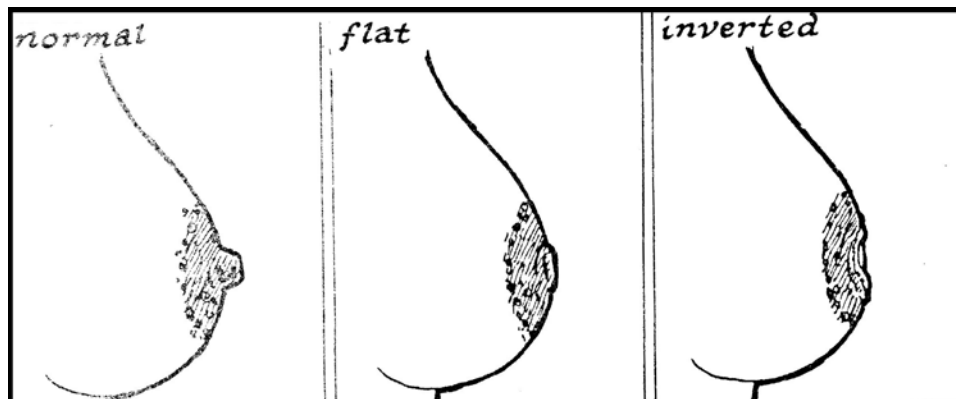
- Breast milk is right for the baby's needs and digestion.
- Breast milk contains protective antibodies and vitamins for the baby.
- Breastfed babies get more love and attention and fewer illnesses in their first year of life.
- Breastfeeding causes less work: There is no cleaning of pans or bottles or boiling of formula.
- Breast milk is ready any time the baby wants it.
- Breastfeeding reduces the chance of becoming pregnant.

5. Preparation and Care of the Breast

From the 5th month, every day the mother should:

- Pull the nipples out and massage and roll the nipples between the finger and the thumb. If the nipples are **flat** or **inverted** she should also do Hoffman's exercises-see p. 294; if **inverted nipples** also see p. 194.
- Wear a brassier to support the breast.

Types of Nipples:



6. Rest

The mother should rest at least one hour during the day with her feet up.

7. Sexual Intercourse

If she has had a bad history of spontaneous abortions (miscarriages), she should avoid intercourse during the first 4 months of pregnancy.

8. HIV Status

Provide Provider-Initiated Testing and Counseling (PICT) if her HIV status is unknown.

9. Family Planning

- Explain about the various types/methods.
- Assist the client in making an informed choice.
- Counsel on actions, contraindications, and side effects.
- Counsel on correct use of condoms.
- Explain about the myths.
- If the woman chooses sterilization (bilateral tubal ligation or BTL) it should be done during the immediate postpartum period.

Planning for Labor and Delivery

- Explain the benefits of giving birth with a skilled provider who knows how to treat complications.
- Develop a birth plan with the woman, including all preparations for normal birth and a plan in case of an emergency.
- Tell her the signs and symptoms of labor, and when she has to go to the hospital.
- Also ask the patient to identify a family member(s) as a blood donor.
- Advise the woman and her family to keep a small amount of money for emergencies.
- List the items she will need for a clean and safe birth.
- She should designate a decision-making person in case a complication occurs at home.
- She must know the **danger signs** and symptoms and know she is to **come to clinic immediately if danger signs occur**. They are:
 - Vaginal bleeding
 - Respiratory difficulty
 - Fever
 - Severe headache/blurred vision
 - Severe abdominal pain/epigastric pain
 - Convulsions/loss of consciousness
 - Decrease or absence of fetal movement since she started feeling the baby moving (after 20 weeks)
- **What to bring:**
 - Home-based card
 - Clean cloths (3 lappas: 1 for wrapping baby, 2 for mother).
 - Sanitary pads—at least one pack maxi pads
 - Food for the woman and her support person
 - Money as planned
- Ask questions—have the woman repeat the most important points of the information and fill in any important information she leaves out.
- Be sure to respond to any question that the woman and/or her husband may ask.
- Set a date for the next visit—minimum should be 4 ANC visits before labor.
- Provide specific advice and counseling to the woman and her husband as needed (i.e., common discomfort, rest, safe sex, nutrition, hygiene, and breastfeeding)
- Finally, thank the woman for coming and go over the date to return to clinic.

Caring for Minor Prenatal Disorders

Minor disorders do not endanger life, but they must not be ignored. Try to either cure them or make the mother feel better.

- **MORNING SICKNESS** with nausea and vomiting (*emesis gravidarum*)—Advise her to:
 - Eat a light, sweet meal before sleeping.
 - Eat a little food during the night—dry bread, biscuit, cassava, peanuts, or any food that can be kept overnight by the bedside.
 - Advise her not to eat foods that do not digest easily.
 - Eat a little at a time a number of times during the day—not 1 or 2 big meals.
 - Suck on a piece of ginger root—it reduces nausea.
- **HEARTBURN** is a burning feeling in the lower chest due to irritation of gastric juice going into the esophagus. Advise her:
 - Not to eat too much pepper or oil.
 - To use an extra pillow when sleeping.
 - To eat small amounts frequently and a little before sleeping.
 - If all else fails, give an antacid—such as magnesium trisilicate.
- **CONSTIPATION**—Advise the mother to:
 - Eat plenty of fruits like oranges, paw-paw, banana, watermelon, and pineapple.
 - Drink plenty of water.
 - Eat brown (unpolished) rice or partly-polished rice (not white rice).
- **BACKACHE** may be due to poor posture or an early sign of labor. When it is from poor posture advise the mother to:
 - Get sufficient rest.
 - Maintain good posture when standing.
 - Wear low-heeled shoes.
 - Sleep on a firm bed—it may be necessary to put planks under the mattress.
 - Show her how to lift using her legs instead of her back.
 - She must avoid lifting heavy loads.
 - If the backache is severe, refer her to a doctor.

- **VARICOSE VEINS** are due to lack of muscle tone in the walls of the veins of the legs, and in pregnancy the pressure in the leg veins increases because the uterus is pressing on the inferior vena cava. Advise the mother:
 - Not to stand up for too long a time.
 - To put her feet up on something when she sits down.
 - To wrap her legs in an elastic bandage (if available) (but not too tightly) before she gets out of bed.
 - When making market or sitting by the fire, she should extend her legs.
 - If the condition is severe, bed rest is important.
- **VARICOSE VEINS in the VULVA**—She should use a firm perineal pad and rest with her hips raised.
- **HEMORRHOIDS** are varicose veins in the anus. Advise her to:
 - Avoid constipation—more water, fruit, and brown rice will help.
 - Apply hemorrhoidal suppositories or ointment if available.
 - Apply cold compresses if painful.
 - Apply Vaseline and gently try to replace hemorrhoids that have come out.
- **ITCHING OF THE SKIN** of the abdomen or breast—Advise her to:
 - Rub calamine lotion, oil, or cream on the itching skin.
 - Drink plenty of water.
- **ITCHING OF THE VULVA (PRURITUS VULVAE)**
 - If there is a discharge or lack of cleanliness, advise her to bathe more frequently.
 - If there is a curdy, cheesy discharge suggesting vaginal thrush (moniliasis), apply nystatin suppositories or ointment if you have them, or apply aqueous gentian violet (GV) 1% to the vagina and vulva once a week for 2 weeks.
- **FAINTING**—This could be caused by a problem with the heart or severe anemia and be serious, but often in prenatal patients it is from minor causes, such as:
 - Sitting up suddenly (causing the BP to fall)—advise getting up more slowly
 - Standing for too long
 - Excitement
 - Too tight a corset/garter
 - **CHECK FOR ANEMIA** and treat if present.

If you suspect a more serious condition, send her to the doctor.

Identify and Manage Prenatal Illnesses and Problems

Malaria in Pregnancy (MIP)

If a pregnant woman has Malaria—with a positive RDT—manage her as follows:

Uncomplicated malaria

- First trimester—**Quinine**
 - Quinine 600 mg PO BID x 7 days for clients 40 kg and above
 - Quinine PO 15 mg/kg BID X 7 days for clients less than 40 kg
- In second and third trimester, **Artesunate** 4 mg/kg plus **Amodiaquine** 10 mg/kg) both PO daily x 3 days is recommended instead of quinine.

Severe or complicated malaria—especially first trimester

- Quinine IV 20 mg/kg (loading dose) in 500 mL of D5W (or Ringer's if diabetic plus 20 mL dextrose 50%), over a period of 4 hours, rest for 4 hours, followed by the maintenance doses of 10 mg/kg every 8 hours.

- If the client improves after the first maintenance dose, D/C quinine IV and continue with quinine 600 mg PO BID x 6 more days
- Or if able to take oral meds, after the 2nd maintenance dose of quinine IV, D/C IV fluid and continue with quinine 600 mg PO BID x 6 more days.

- Or for **severe malaria in second or third trimester**: Artemether 3.2 mg/kg IM stat (loading dose); then 1.6 mg/kg (maintenance dose) on days two and three; thereafter ACT (Artesunate 4 mg/kg PO plus amodiaquine 10 mg/kg) PO daily x 3 additional days (or may be given as 2 mg/kg artesunate and 5 mg/kg amodiaquine BID x 3 days).

Preventive Measures

- Intermittent Preventive Therapy (IPT)—**Fansidar**
 - First dose: 3 tablets stat in the second trimester (watch the patient swallow tabs)
 - Second dose: 3 tablets stat in the third trimester (watch the patient swallow tabs)
 - Do not give IPT along with folic acid (withhold folic acid for 7 days before giving IPT) and do not administer IPT if taking cotrimoxazole (cotrimoxazole is similar to Fansidar, and also prevents malaria).

Note: Do not administer IPT within 2 weeks of delivery.

THE IPT DOSE SHOULD BE SWALLOWED IN THE HEALTH FACILITY IN THE PRESENCE OF THE HEALTH CARE PROVIDER.

- **Long lasting insecticide-treated nets (LLITNs)** should be given to all pregnant women.

ANTENATAL CARE OF HIV SERO-POSITIVE PREGNANT WOMEN

All HIV sero-positive pregnant women should follow the same schedule of ante-natal care as HIV sero-negative women. The integration of: 1) ANC, 2) medical care for HIV-related conditions, and 3) social and psychological support is crucial. Therefore for the HIV-positive pregnant woman:

- Conduct a comprehensive history and physical exam, look and ask particularly for:
 - Risky sexual behavior
 - Current symptoms and HIV conditions
 - Assess eligibility for antiretroviral treatment (ART)
 - Check any current medications for potential interactions with cotrimoxazole or antiretroviral medicines
 - Check financial circumstances, family emotional and social support
- Her HIV requires correct staging (by trained personnel).
- Offer additional laboratory tests:
 - Complete blood count (CBC)
 - CD4 cell count (if appropriate & available)
- Provide information on positive living.
 - Safer-sex practices (constant and consistent use of condoms) to avoid re-infection with other STIs or different strains of HIV.
 - Proper dietary habit and weight monitoring.
 - Give information on potential interactions and side effects of ARVs to the pregnant woman.
 - The need for adequate personal hygiene and optimal rest
 - The importance of avoiding any alcohol, smoking, or use of illicit drugs
 - Importance of partner testing and involvement in her care
 - The importance of seeking care promptly particularly for any new signs and symptoms. These might be caused by either medicines or new infections.
- Prophylaxis to prevent fetal transmission for an HIV-positive pregnant woman:

All HIV-positive women should be staged appropriately according to WHO clinical staging

BEFORE STARTING AZT, MAKE SURE THE Hgb IS MORE THAN 7.5 gm.

- At 28 weeks' gestation, until labor begins: give AZT 300 mg BID
- During first stage of labor give:
 - AZT (zidovudine) 300 mg every 3 hours
 - NVP (nevirapine) 200 mg single dose
 - Lamivudine 150 mg BID
- When fully dilated, give:
 - AZT (zidovudine) 600 mg stat,
 - Lamivudine 150 mg stat, and
 - NVP (nevirapine) 200 mg single dose

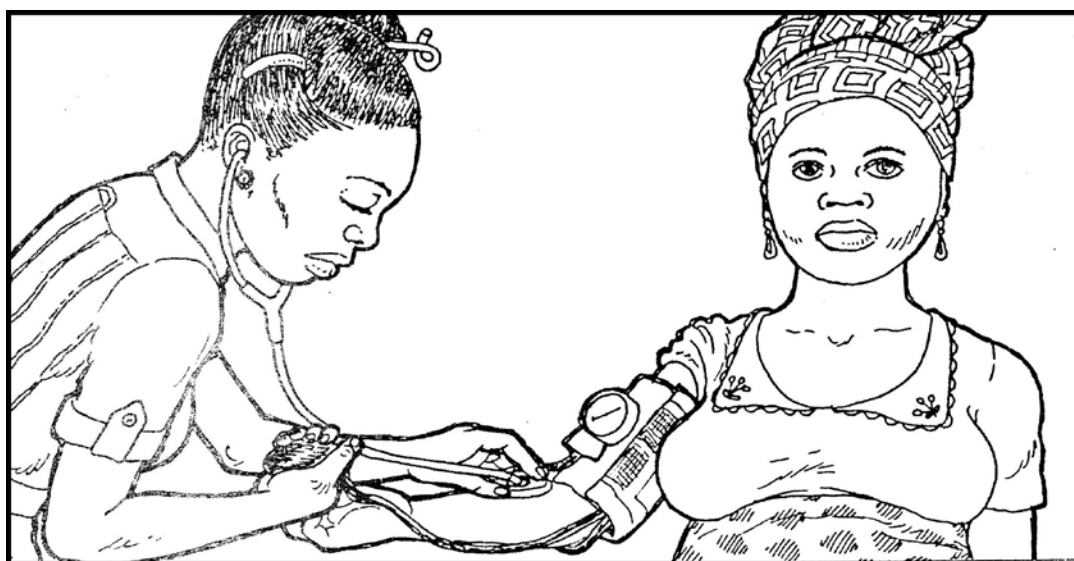
MONTHLY PRENATAL VISITS

The prenatal form is designed for recording the monthly visits.

Check and record the following:

- COLOR of the conjunctiva and lips—record if they are normal or pale in color.
- WEIGHT
 - If she does not gain weight, look for a cause, such as failure of the pregnancy to grow, or TB.
 - If she gains too much weight in the third trimester, think of pre-eclampsia; check for other signs (albumin in the urine, significant edema and elevated BP).
- BLOOD PRESSURE—If the BP increases 20 points or more above the recording on the first visit, suspect pre-eclampsia.
- EDEMA—Check the fingers as well as the legs and the ankles. Some ankle edema is not abnormal in the third trimester, and is helped by elevating the feet and additional bed rest, BUT:

FINGER EDEMA (or any severe edema)	+	ELEVATED BLOOD PRESSURE	+	ALBUMIN IN THE URINE	=	PRE-ECLAMPSIA See treatment on page 291
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- FUNDAL HEIGHT—Estimate this in weeks.
- Note the PRESENTATION (breech, transverse, or vertex).
- Check the URINE for ALBUMIN if edema is present or the BP is elevated.
- Check HEMOGLOBIN at 32 and 36 weeks, and anytime mother is pale.
- Check the GENERAL CONDITION of the patient, and listen to her complaints.
- Give ROUTINE PRENATAL MEDICATIONS, such as iron with folic acid; and in the second and third trimesters, also give malaria medication according to the National Malaria Control Program (NMCP) MIP guidelines.

COMPLICATIONS DURING PREGNANCY—P. Mertens, M.D.

POSSIBLE COMPLICATIONS IN EARLY PREGNANCY

- **THREATENED ABORTION (MISCARRIAGE)**
 - The SIGNS are: Slight bleeding for 3–4 days, but the uterus is normal and the cervix is closed on vaginal examination.
 - MANAGEMENT—Advise the mother to rest in bed. If she does not seem able to rest, give her valium 5 mg TID for 3 days (but no longer). If bleeding continues past 4 days, refer her.
- **INCOMPLETE ABORTION (MISCARRIAGE)**
 - Symptoms:
 - Missed 2 to 4 periods and now heavy or prolonged vaginal bleeding.
 - Having cramping low abdominal pain and/or cramping running to the low back.
 - On vaginal exam the cervix is open. Sometimes the early fetus is felt partly expelled through the cervix.
 - Management—Take and record the vital signs. Treat shock if present. Generally, refer these women to the hospital for a manual vacuum aspiration or curettage. However, if the fetus is still in the cervix (partly expelled), remove it with a gloved finger and give ergometrine. Then, unless the bleeding stops immediately, send the woman to the hospital. If signs of infection are present (fever, tender uterus, foul-smelling vaginal discharge) also give antibiotics.
- **ECTOPIC PREGNANCY**—This is usually suspected only after it has ruptured! This is very serious. Failure to diagnose it may cause the woman to die. A general rule is:

ANY WOMAN OF CHILD-BEARING AGE + LOWER ABDOMINAL PAIN + IS ALSO LOOKING PALE = RUPTURED ECTOPIC PREGNANCY (unless proven otherwise)

- Occasionally it is possible to suspect ectopic pregnancy before it ruptures. Signs are:
 - Missed 1 or 2 periods
 - Low abdominal pain on one side that keeps recurring
 - Pain may be worse when passing stool or lifting
 - Sometimes the patient is nauseated or is vomiting
 - Sometimes a little vaginal bleeding occurs (often dark brown)
- In addition to looking pale and having lower abdominal pain the woman with ruptured ectopic pregnancy feels weak and is often in shock.
- Send suspected (unruptured) ectopic pregnancies to the doctor for diagnosis.
- Send ruptured ectopic pregnancies immediately to the hospital lying down in the vehicle (pg. 33-34). Keep BP at 80–90 systolic with IV saline. (Go with the patient.)

- **HYPEREMESIS GRAVIDARUM**—This is a very severe form of “morning sickness” and rather uncommon; the woman’s nausea and vomiting are so severe that she is losing weight, not absorbing needed vitamins and minerals, and may become dehydrated. Occasionally this is caused by a molar pregnancy (think of this possibility). For management:
 - Check hydration—if dehydrated, rehydrate her with IV fluids.
 - She must eat frequent small amounts of food whenever she is less nauseated.
 - Try pyridoxine 25 to 50 mg BID—this may help nausea.
 - Send her to the hospital if not improving—the doctor may check HCG (Human Chorionic Gonadotropin) and do an ultrasound to rule out a molar pregnancy, and may wish to try medicine for nausea, such as Promethazine 12.5 mg TID (not advised if pregnant, but sometimes needed).

- **MOLAR PREGNANCY**—This complication is caused by an abnormal growth of placental tissue and usually becomes evident in the first trimester, but sometimes the early second trimester. About 80% are benign hydatidiform moles, a few are invasive, growing deep into uterine tissue, and some are malignant choriocarcinomas.
 - Symptoms include extreme nausea and vomiting, sometimes some vaginal bleeding, elevated blood pressure, and ankle edema. In 65% of cases the uterus is larger than expected for the weeks of pregnancy. Therefore with extreme nausea and vomiting that is not improving, especially if other symptoms are present, send the patient to the hospital to see if she has a molar pregnancy.
 - The diagnosis is made by the symptoms, a definitely enlarged uterus with tissue but no fetus on ultrasound, and very high serum HCG (Human Chorionic Gonadotropin).
 - Treatment is usually by suction curettage in the hospital (with tissue sent to pathology to rule out choriocarcinoma, which requires chemotherapy).
 - Follow-up at the hospital is necessary, with periodic serum quantitative HCG, to be sure no molar tissue remains (or if choriocarcinoma, that it has been cured).

COMPLICATIONS IN LATER PREGNANCY

PRE-ECLAMPSIA (Pregnancy + High BP + Edema + Albuminuria = Pre-Eclampsia)

Mild Pre-eclampsia

■ Signs

- BP increased about 20 points
- Slight edema (fingers and ankles)
- No albumin in the urine

■ Management

- The woman should rest frequently—lying on her left side—for 20 minutes 4 times a day
- Diet: No added salt or soda, no chicken or Maggi cubes, no kola nuts
- Drink extra water
- Eat more body-building (protein) foods

Moderate Pre-Eclampsia

■ Signs

- BP increased 20–30 points
- Edema of ankles, legs, face, and fingers
- Albumin in the urine is present

■ Management

- The safest management is to send the patient to the hospital because she may develop seizures.

Severe Pre-Eclampsia

■ Signs and Symptoms

- Systolic BP generally 30–40 points above normal, diastolic may be above 110
- Edema is increased
- Albumin in urine is increased (3–4+)
- Frontal headache, and often blurred vision
- Urine output is low
- May have nausea or vomiting
- Restlessness and twitching muscles of the face indicate a seizure may soon occur

- ##### ■ Management
- Find transportation. Magnesium sulfate is the correct medication, Start it if available (next page). Otherwise give 120 mg phenobarbital, or 10 mg valium orally (if available) and then send her to the hospital immediately lying down in the vehicle.

ECLAMPSIA

This is pre-eclampsia (as above) with seizures.

- This is an **obstetrical emergency!** The woman is in danger of dying. Send her immediately to the hospital (lying down in the vehicle) and go along with her.
- In the clinic give the following medications before leaving (if available):
 - Magnesium sulfate 20% soln—20 ml slowly IV over 5 min. (a hospital medication—see note on action of magnesium lower on this page)
 - Magnesium sulfate 50%—10 mL with 2 mL Lidocaine IM in each buttock
 - If no Magnesium Sulfate Phenobarbital 200 mg, or valium 10 mg IM may be used to stop seizures but are less effective. Use magnesium sulfate if available

Note: Her condition usually improves if she can be delivered soon.

In the Hospital:

- Give the initial doses of magnesium sulfate if not already given.
- Give maintenance doses of magnesium sulfate 10 ml 50% soln + 1ml 2% lidocaine IM every 4 hrs and monitor for toxicity (document all that is given):
 - Before administration of each maintenance dose, records must show:
 - Respiration must be more than 16/minute
 - Patellar reflexes must be present
 - Urine output must be more than 30 mL/hour
 - If respirations are less than 16/minute, patellar reflexes absent, or urinary output is less than 30 mL/hour, suspend or postpone the use of magnesium sulfate and document it—she is developing magnesium toxicity.
 - If urine output is less than 30 mL/hour, withhold magnesium sulfate and give patient 1 L of IV fluid over 8 hours, with monitoring for pulmonary edema.
 - If pulmonary edema develops, give a single dose of furosemide 40 mg IV and document it.
 - In the event of respiratory arrest, perform, and document appropriate resuscitatory procedures.
 - **If respirations, patellar reflexes, and urine output are all normal continue magnesium sulfate—administer 5 gm of 50% magnesium sulfate solution (10 mL) with 1 mL of 2% Lidocaine IM alternately in each buttock every 4 hours.** Remember to check respirations, patellar reflexes and urine output before each dose.
 - Continue with magnesium sulfate for 24 hours following birth or the most recent convulsion.

*Note on the actions of Magnesium—Why we give it and why you must Monitor:

High levels of Magnesium improve eclampsia:

- 1) Decrease brain cell irritability—stopping seizures
- 2) Decrease nerve conduction—decreasing reflexes
- 3) Decrease blood pressure—lowering hypertension
- 4) Decrease conduction in heart—slowing pulse

But toxic (very high) levels will:

- 1) Suppress the brain's breathing center
(Absent reflexes are a warning sign)
- 2) Cause too low B.P.-Shock can develop
- 3) Slow conduction greatly—stopping heart

- Monitor hourly to detect magnesium toxicity and document the monitoring:

Hourly monitoring for magnesium sulfate toxicity should include the following:

- | | |
|---|---|
| <input type="checkbox"/> BP—should be 100–140 systolic | <input type="checkbox"/> Urinary output at least 40 cc/hr (better 50–60) |
| <input type="checkbox"/> Pulse—60–88/min | <input type="checkbox"/> Patellar reflexes must be present but not brisk |
| <input type="checkbox"/> Temp normal— not low or high | <input type="checkbox"/> Signs and symptoms of pulmonary edema—
rales, tachypnea, or decreased O ₂ sats
should be absent |
| <input type="checkbox"/> Respirations—preferably 20–24/min | |
| <input type="checkbox"/> Fetal heart rate preferably 140 to 156 | |

- Simultaneously in the hospital, there must also be a record of:
 - Bladder catheterization
 - Intake and output monitoring on every shift
 - Performance and evaluation of clotting tests, if available
- DOCUMENT BIRTH—If there were seizures, birth should take place at least within 12 hours following the convulsion (or, for severe pre-eclampsia in the absence of seizures, birth within 24 hours). The sooner the birth the better—after delivery the eclampsia usually starts resolving.
- GIVE AND DOCUMENT ANTIHYPERTENSIVE TREATMENT (if diastolic BP is 110 mm or more):
 - Plan 1: Hydralazine 5 mg IV slowly every 5 minutes or 12.5 mg IM every 2 hours, until diastolic BP stabilizes between 90 and 100 mm Hg,
OR
 - Plan 2: Nifedipine 5 mg sublingually, repeating the dose if the diastolic BP is still more than 110 after 10 minutes
 - Record BP until the patient improves, and repeat nifedipine as needed.

FLUID LEAKING FROM THE VAGINA

Fluid leaking from the vagina—with labor this is normal, but without labor this is **premature rupture of the membranes**. Unless labor starts the same day, refer her to the hospital because bacteria may move in through the broken membranes and cause an infection. Do NOT do a vaginal examination.

ANEMIA

May develop at any time during pregnancy, but it usually develops slowly. See pg. 79 - 81 for the treatment.

ANTEPARTUM HEMORRHAGE

Bleeding in the last 3 months of pregnancy is usually **placenta previa**. In this condition the placenta is where it should not be—right over the opening of the cervix. Sometimes it starts to bleed before time for delivery. The bleeding is painless. Never do a vaginal examination with bleeding in late pregnancy—it may loosen the placenta and cause the woman to bleed to death. Send all cases of bleeding from the vagina late in pregnancy to the hospital immediately, even if the bleeding has stopped. If bleeding starts again, a blood transfusion or a cesarean section may be needed quickly to deliver the baby alive, and to stop the bleeding by removing the placenta.

usually **placenta previa**. In this

CAUTION !

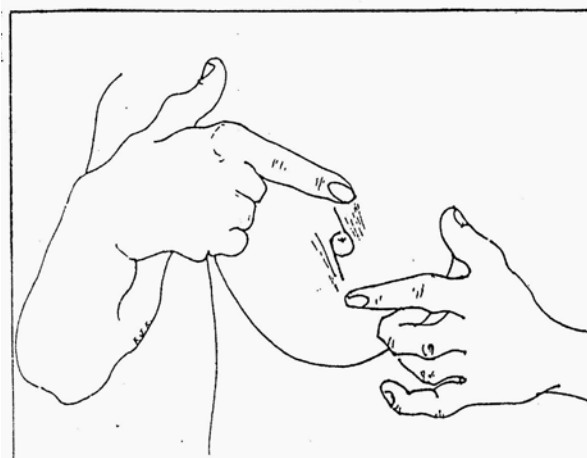
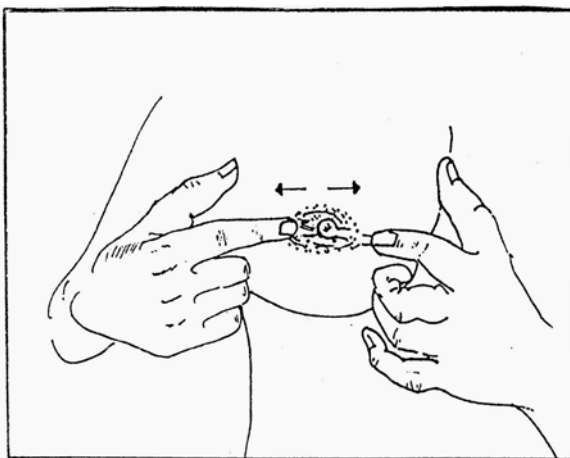
*Painless vaginal
bleeding in the
third trimester
means
PLACENTA PREVIA*

Do not do a
vaginal exam.
Send the patient
to the hospital.

To Correct INVERTED NIPPLES Before Delivery Do Hoffman's Exercises

Inverted nipples are not a significant complication, but can cause difficulty with nursing if inversion is not corrected before delivery. Therefore to correct inversion, complete this exercise every day:

1. Put a finger on each side of the inverted nipple. Pull the fingers away from the nipple, stretching the skin. This will help to bring out the nipple. Repeat this movement many times.
2. Then repeat the exercise with the fingers above and below the nipple.



Source: "Prepare For Breastfeeding" Brochure, The Breastfeeding Advocacy Group, Monrovia.

LABOR AND DELIVERY—

THE NEXT PAGES CONTAIN THE COMPLETE STEP-BY-STEP LIBERIAN “CLINICAL STANDARDS” GUIDELINES FOR LABOR AND DELIVERY

Labor Is Divided into Four Stages

- First Stage—the onset of true labor until full dilation of the cervix
- Second Stage—full dilation of the cervix to delivery of the baby
- Third Stage—delivery of the baby to delivery of the placenta
- Fourth Stage—delivery of the placenta to end of immediate postpartum

Immediately Upon Arrival of the Woman in Labor

- Perform a rapid initial assessment of the pregnant woman in labor to identify complications and prioritize admissions.
- Remember that recordkeeping of all labor and delivery information on woman's home-based card and clinical record is very important.

Steps to Take during Labor and Delivery

1. The health worker must establish a cordial relationship with the woman in labor and any significant others accompanying her by:
 - Greeting the woman and her husband or companion in a cordial manner
 - Introducing her/himself
 - Explaining care before any examination or procedures
 - Encouraging the woman to ask her husband or companion to remain at her side
 - Responding to questions using easy-to-understand language
 - Responding to her immediate needs (thirst, hunger, cold/hot, need to urinate, walk, etc.)
2. Check for **danger symptoms** and for **signs of labor**, including:
 - Vaginal bleeding (more than “bloody show”)—placenta previa? Uterine rupture? Do not do a vaginal exam—send to the doctor for diagnosis.
 - Rupture of membranes—prematurely? Or since the start of labor?
 - Convulsions—known seizure disorder? Eclampsia? **Eclampsia is an emergency!**
 - Severe headache and blurred vision—significant pre-eclampsia—**may seize**
 - Severe abdominal pain—pre-eclampsia? Abdominal emergency? Ruptured uterus? Abruptio placenta? **Find the cause!**
 - Respiratory difficulty—severe anemia? Shock? CHF? Pneumonia? Pulmonary embolism? **Again this is an emergency—find and treat cause!**
 - Fever—malaria? Sepsis? Other? **Identify and treat.**
3. Bring the woman's clinical history up-to-date, asking questions in a confidential and private environment.

4. Privacy measures
 - Woman remains covered with a sheet
 - Area is separated with curtains, sheets, or screens, as appropriate
 - The minimum number of individuals are present during birth (the provider attending the birth and a family member—the individual chosen by the woman)
5. Review the home-based card, and if the card is not available, obtain information that is usually documented on the card:
 - Previous birth(s) by cesarean section, forceps, or vacuum
 - General medical problems
 - Use of medications or herbs
 - Background of the woman and her partner with regard to STIs, HIV, and TB
 - Gestational age, last menstrual period (LMP), and estimated date of childbirth (EDC) for current pregnancy
 - HIV status
6. Avoid asking questions during contractions. Ask questions when she is not in pain.
7. Ask the woman about her labor:
 - When did the painful regular contractions begin?
 - How frequently are they occurring?
 - If her “bag of waters” broke: when, what color, and what smell did it have?
 - Is she feeling the baby’s movements?
 - Does she have any doubts or concerns about her labor? (Respond using easy-to-understand language).
8. Explain to the woman and her husband/companion what you are going to do and encourage her to ask questions.
9. Ask the woman to urinate (send urine to lab for albumin, sugar, microscopy).
10. Now wash your hands and examine the woman.
11. Explain each step of the exam to the woman using easy-to-understand language.
12. Take or delegate taking the vital signs to assistant: temp., pulse, BP, and weight.
13. Check the conjunctiva and palms of hands for anemia.
14. Conduct the physical examination between contractions. If time allows, send blood for Hgb test if suspicious of anemia, and for HIV testing according to protocols.
15. Observe the shape and size of the abdomen and check for the presence of scars.

16. Avoid examining the woman during a contraction.
17. Now **determine the fetal lie and presentation**—**Transverse lie** is an emergency after labor starts—see p. 305. **Occiput posterior** and **brow** may deliver but usually take a long time, and some brow presentations will not deliver vaginally and some occiput posteriors require C-section—often better to deliver in the hospital.
18. Identify the degree of engagement by abdominal palpation (from five to zero fingers above the pubis).
19. Evaluate uterine contractions (frequency and duration over a 10-minute period).
20. Auscultate the fetal heart rate (FHR).
21. Record the results of the obstetric examination on the clinical history and partograph if cervical dilation is 4 cm or more.
22. Conduct the obstetric examination between contractions if time allows:
 - Explain what you are going to do.
 - Perform hand hygiene.
 - Put on new clean examination gloves, sterile gloves or high-level disinfected (HLD) gloves on both hands.
 - Examine the vulva (blood, liquid, secretion).
 - Assess the cervical dilatation, molding, and station of the presenting part.
 - Properly dispose of gloves if disposable, or properly sterilize gloves if reusable.
 - Perform hand hygiene after removing gloves.
23. Explain the findings to the woman and her husband in easy-to-understand language.
24. Properly conduct further vaginal examinations when needed during the course of labor to determine dilatation and station, and explain to the woman your findings and what they mean.
25. If good contractions and fully dilated but head is making no progress in descending over 3 to 4 hours, send her to the hospital for **obstructed labor**.
26. Offer the woman rapid HIV testing and counseling and discuss mother to child transmission of HIV, the meaning of negative and positive test results, and the advantages and disadvantages of HIV testing.
27. Provide counseling and testing for a woman in labor with unknown HIV status. Tell the woman that if her test results are positive she will get medicines right away to reduce the risk of transmitting infection to her baby and that the baby will also receive medication; if she gives her consent, perform the testing and give her the results.
28. Arrange testing for her partner, follow-up counseling, and follow-up care for the baby as needed.

29. For HIV-positive women:

- Ask if she received nevirapine during the antenatal visit at 32 weeks gestation and if she had taken nevirapine before coming to the facility.
- If she is in true labor and did not receive nevirapine, give her nevirapine (200 mg--one tablet). Make sure the woman has taken nevirapine after the onset of labor, if not, give an additional dose of nevirapine (200 mg one tablet orally) to prevent mother-to-child transmission (MTCT).

DO NOT GIVE NEVIRAPINE TO THE WOMAN IF DELIVERY IS IMMINENT (LESS THAN 2 HOURS AWAY).

- Remind the woman that the baby should receive a dose of nevirapine syrup within 72 hours after birth.
- Inform or reinforce information about infant feeding options that is AFASS (Acceptable, Feasible, Affordable, Sustainable, Safe).
-

30. For women with no HIV infection, and those with unknown status:

- Avoid prelacteal feeds.
- Initiate breastfeeding within 1 hour of delivery, ensuring colostrum intake.
- Discuss:
 - The importance of exclusive breastfeeding for the first 6 months and continued breastfeeding for 12 months and beyond.
 - The importance of avoiding bottle feeding (see pg. 211).
 - How to establish good breastfeeding skills, practicing frequent and on-demand feeding and where to go during breast problems.

31. Implement the birth plan, instructing the woman about the importance of:

- Going to the bathroom often to empty her bladder.
- Taking liquids and light foods whenever she wants.
- Walking and changing position according to desire and comfort.

32. Record on the woman's clinical record:

- Partograph information every half hour
- Temperature every two hours
- BP every four hours
- Every vaginal examination
- The amount of urine output
- Time of the above observations

33. Use the partograph to monitor labor and make appropriate adjustments.

PARTOGRAPH DETAILS

Record the following patient information:

- Name, date and time of admission
- Gravida, para, time of ruptured membranes
- Hospital number

Document the following after every vaginal examination:

- Record the condition of the membranes and characteristics of the amniotic fluid
- Graph the degree of molding of the head
- Graph cervical dilation
- Graph the descent of the head or buttocks

34. Explain to the woman how to help herself and manage the bearing down process (when and how). Encourage and speak kindly to the woman during labor and encourage the woman to ask questions, and respond in easy-to-understand language.

35. Make sure the woman's bladder is empty.

36. Assist the woman to have a safe and clean birth:

- Monitor and record FHR every five minutes during second stage.
- Put on apron, eye protection, and gloves.
- Wash hands with soap and water and dry them, or apply alcohol gel and rub your hands until dry.
- Put sterile gloves on both hands.
- Clean the perineum with water or a nonalcoholic antiseptic solution
- Allow the woman to bear down when she feels the desire. (Do not force her to bear down).
- Avoid artificial rupture of membranes--especially important for women living with HIV, to reduce MTCT (Maternal-to-Child-Transmission).
- Perform an episiotomy only if necessary (necessary with breech, shoulder dystocia, forceps, vacuum, poorly healed 3rd or 4th degree tear, or fetal distress).
- Allow the head to spontaneously crown while guarding the perineum.
- After the emergence of the head, ask the woman to briefly refrain from bearing down (open mouth breathing).
- Clean the baby's mouth and nose using a sterile gauze if meconium is present.

37. Now Deliver The Baby—Steps during the Second Stage

- Quickly palpate to determine a nuchal cord; if it is loose, slide it over the baby's head; if it is very tight, clamp it in two places and cut it before unraveling it from around the baby's neck.
- Allow spontaneous external rotation without manipulation if it happens quickly.
- Carefully take the baby's head in both hands and apply downward traction until the anterior shoulder has emerged (no neck holding).
- Then guide the baby's head and chest upward until the posterior shoulder has emerged.
- Hold the baby by the trunk and place it on a sterile towel on the mother's abdomen.
- Assess the baby's breathing, resuscitate if not breathing or breathing poorly (pg. 301).
- Dry baby vigorously with towel, change wet towel for clean one, place cap on baby's head.
- Clamp the cord in two places near the umbilicus and cut the cord.

Enthusiastically inform mother of the sex of her child.

38. Contents of Prepared Birth Kit and Other Essential Materials

- Sterile tray
- Two hemostats (clamps)
- One scissors
- One cord clamp or sterile tape or sterile tie
- Four sterile towels (two for baby and two for mother)
- Sterile gauze to clean baby's mouth and nose
- One syringe with 10 IU of oxytocin
- Two pairs of sterile or HLD gloves
- Episiotomy kit
- One plastic container with 0.5% chlorine solution for decontamination
- One plastic container with soap water
- One plastic container with clean water
- One plastic container with a plastic liner to dispose of the placenta
- One plastic container with a plastic liner for medical waste (gauze, etc.)
- One sharps container at point of use to dispose of needle and syringe
- One leak-proof container to dispose of soiled linen
- Clean plastic or rubber apron and face shields (or mask and goggles)
- Closed-toe shoes and plastic shoe cover

39. Conduct a rapid initial assessment and provide immediate newborn resuscitation if needed following birth (see #41 below—next page).

40. If newborn is breathing well, pass the wrapped baby to mother for skin-to-skin contact on the breast and to initiate breastfeeding.

41. If baby does not begin breathing (apneic), or if gasping or having respirations less than 20/min, ask for assistance, rapidly cut and tie the cord, and initiate resuscitation.

Inform the husband/parents/relatives of the baby's condition and if her medical condition allows, inform the mother.

42. THE BABY IS NOT BREATHING, or gasping or breathing at less than 20 breaths per minute—Call for assistance. Then immediately do these things very quickly (explain to the mother and relatives what is happening as you work):

- Clear the nose and pharynx quickly with a soft rubber ear syringe (or clear the pharynx with your finger if nothing else is available) and wipe off the nose and mouth. (Do not suck **deep** into the pharynx with the ear syringe.) Put the head in slight extension with a rolled-up cloth under the shoulders.
- Quickly listen with a stethoscope for a heartbeat. If **no heartbeat or a heart rate < 60**, have someone else do **external cardiac massage**, pressing with his thumbs right over the center of the mid-to-low chest about 70–80 times per minute, while you are breathing for the baby—try for at least 20 minutes.
- Immediately begin Ambu bag, tube and mask, or mouth-to-nose/mouth resuscitation. With bag or tube and mask, the mask must cover the baby's nose, mouth and chin, and form a good seal. If mouth-to-nose/mouth resuscitation, place a clean cloth or gauze over the baby's nose and mouth, and place your mouth over the baby's nose and mouth. Remember to use **small** breaths so as not to over-expand and injure the baby's lungs or fill his stomach with air. (Puffing with only the air in your mouth is the right amount.) Give the baby 2 or 3 breaths and confirm that the chest is rising with your breaths (if not, the mask may not be fitting or sealing properly).
- After the 2 or 3 breaths of air, quickly **wipe the baby dry and wrap and cover it to keep it warm** (except for the face and upper chest). **Then quickly resume breathing for the baby (and continue external cardiac massage if no heartbeat). Ventilate at 40 breaths per minute.** Be sure the chest continues to rise with each breath.
- After 1 minute, pause and see if baby is breathing spontaneously at 20 or more breaths per minute, and with no respiratory difficulty (no intercostal retractions, gasping or grunting). If breathing normally, place the baby in skin-to-skin contact with the mother. If still not breathing or having respiratory difficulty, continue ventilating (and continue cardiac massage if needed) for at least 20 minutes, pausing briefly every 5 minutes to see if the baby has started breathing normally. Administer oxygen through the Ambu bag if available.
- If after 20 minutes the baby is not breathing spontaneously at all and there is no heartbeat, stop the resuscitation, give emotional support to the mother and family, and record the time of death. (If after 30 minutes there is only slight spontaneous gasping, also discontinue resuscitation.)

43. Record the date and time of delivery on the clinical record.

44. Touch the mother's abdomen to rule out the presence of a second baby (without stimulating contractions).

45. Tell the woman and administer 10 IU of oxytocin IM to firm up the uterus and help expel the placenta.

46. Now perform controlled cord traction to help the placenta to deliver:

PROCEDURE FOR CONTROLLED CORD TRACTION

- Re-clamp the cord near the perineum.
- Hold the cord and the clamp with one hand.
- Place the other hand on the woman's symphysis pubis (over the sterile towel) and gently push upward in the direction of her abdomen.
- Maintain firm traction on the cord and wait for the uterus to contract.
- Upon contraction, apply firm and sustained downward traction on the cord with counter force above the pubis to guard the uterus, until the placenta is expelled. (But do not pull too hard and break the cord.)
- If this maneuver does not provide immediate results, cease to apply traction, and hold the cord and clamp until the next contraction.
- Repeat controlled cord traction while simultaneously applying counter pressure above the pubis to guard the uterus. Also have the woman bear down with each contraction.
- With both hands, assist in the expulsion of the placenta, by turning it over in the hands, without applying traction, "teasing out" the membranes.

47. If the placenta is not separating after 10 minutes, give Oxytocin 10 IU IM (not ergometrine) and try with controlled cord traction for perhaps another 8–10 minutes. If still not separating, perform a manual extraction of the placenta (pg. 306). If the placenta will not loosen with a manual extraction, it is likely placenta accreta—transport the patient stat to the hospital for a probable hysterectomy.
48. If a manual extraction was needed, give a single dose of 2 gm amoxicillin orally or 5 million u crystalline penicillin IV and 500 mg metronidazole IV (or 750 mg metronidazole orally if IV is not available).
49. Inform the woman and massage the uterus with one hand on a sterile cloth over the abdomen, until the uterus contracts firmly.
50. Adequately perform active management of the remainder of the third stage of labor.
 - Examine the placenta and membranes to see if complete.
 - Inform the woman and then carefully examine the vagina and perineum for tears.
 - Gently cleanse the vulva and perineum with clean water or a nonalcoholic antiseptic solution.
 - Suture any tears, if necessary.
 - Cover the perineum with a clean sanitary pad.
 - Make sure that the woman is comfortable (clean, hydrated and warmly covered).

51. Ensure that the baby is well-covered, is with the mother and has begun to suckle within an hour of birth.
52. Adequately perform immediate postpartum care, and be sure mother is not bleeding.
53. Record in the clinical record.
54. With gloves still on, dispose of used instruments and medical waste.
 - Discard the placenta in a leak-proof container with a plastic liner.
 - Dispose of medical waste (gauze, etc.) in a plastic container with a plastic liner.
 - Put the soiled linen in a leak-proof container.
 - Open (un-hinge) all instruments and immerse them in a 0.5% chlorine solution for 10 minutes.
 - Dispose of the needle and syringe in a puncture-resistant container, without removing, recapping, or breaking the needle.
 - Wipe down all surfaces with 0.5% chlorine solution.
 - After removing gloves perform hand hygiene.
55. Keep the woman in a place within the labor and delivery ward to be monitored for at least two hours after the birth.

POSTPARTUM MONITORING	
<i>Check mother every 15 minutes in first hour for:</i>	<i>Monitor mother every 30 minutes in second hour for:</i>
<input type="checkbox"/> Uterine tone	<input type="checkbox"/> Uterine tone
<input type="checkbox"/> Vaginal bleeding	<input type="checkbox"/> Vaginal bleeding
<input type="checkbox"/> BP	<input type="checkbox"/> Bladder distention
<input type="checkbox"/> Pulse	<input type="checkbox"/> Blood pressure
	<input type="checkbox"/> Pulse

56. Ask the woman if she has urinated, and encourage her to do so whenever she wishes.

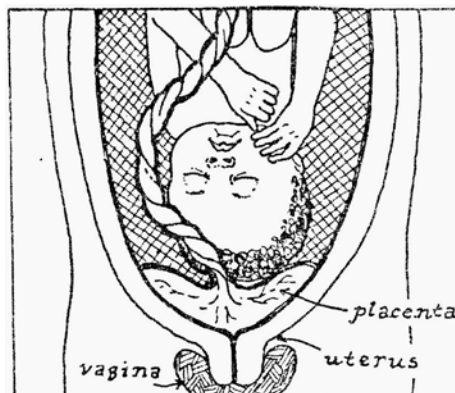
EMERGENCIES THAT MAY OCCUR DURING LABOR

ECLAMPSIA Could Develop from **Pre-Eclampsia** during Labor and Delivery

See the description and treatment on pg. 291–293. Usually the eclampsia starts to improve as soon as the baby is delivered, but may occur following delivery also. Eclampsia is the 3rd most common cause of maternal mortality.

VAGINAL BLEEDING

Vaginal bleeding that is painless and occurs anytime in early labor (or in the third trimester), but not just a little “bloody show”—This is **PLACENTA PREVIA**. (The placenta is over the opening of the cervix.) **Do not do a pelvic exam**—it may loosen part of the placenta and cause severe hemorrhage. **Send the woman directly to the hospital.**



Placenta Previa--In this picture the whole placenta is over the cervix and as the cervix dilates the placenta will loosen and hemorrhage—a C-section is needed to save mother and baby.

IN THE HOSPITAL get a hemoglobin and type and cross-match for blood. Let the doctor gently and carefully determine whether just the edge of the placenta is over the edge of the opening of the cervix or if the whole placenta is over the opening. If bleeding is heavy, or more than a very small edge of the placenta is over the opening of the cervix, an immediate C-section is necessary.

ABRUPTIO PLACENTA

In this situation the placenta is not over the cervix, but part of it loosens from the uterine wall, and **bleeding occurs into the uterus**. The uterus becomes very firm and painful and will not relax. The patient may have some vaginal bleeding or may not. Send such a patient quickly to the hospital. Immediate C-section might save the baby and prevent the development of further bleeding, which may occur if the fibrinogen in the patient’s circulatory system becomes used up from clotting the blood in the uterus.

UTERINE RUPTURE--Labor Suddenly Stops with Severe Low Abdominal Pain

If	REAL ACTIVE LABOR	STOPS VERY SUDDENLY	with the	SUDDEN ONSET OF ABDOMINAL PAIN	the patient has a	RUPTURED UTERUS!
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Sometimes she will bleed vaginally. Often her BP will be low. If not operated upon quickly she will die.

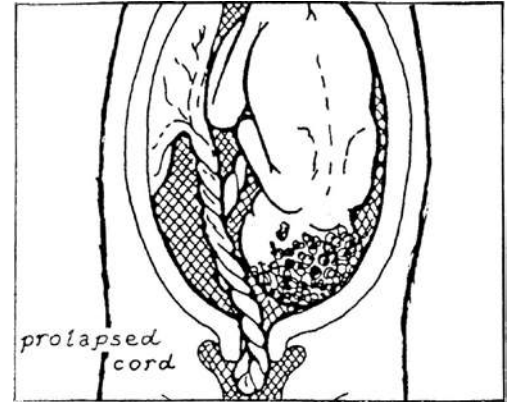
Carry her immediately to the hospital lying down in the vehicle with IV Saline running. Do not let pressure fall below 80, but raising it above 90 may cause more bleeding.

PROLAPSED CORD

The umbilical cord is coming out of the cervix into the vagina; this is called a prolapsed cord. It is a **serious emergency for the baby**, because during labor the cord will be pinched tightly between the head and the pelvis, cutting off the circulation of blood between the baby and placenta, and the baby will die.

- Have the mother lie down.
- Gently feel the cord. Does it have a pulse?
- If no pulse (and no fetal heartbeat) the baby is dead. Let her deliver in the clinic.
- If the pulse is present, the baby is still alive. Carry her to the hospital kneeling down in a knee-chest position if possible, on the back seat of the vehicle.

A C-section done quickly can save the baby.



PROBLEMS OF POSITION OF THE BABY IN THE UTERUS OR OF THE PRESENTING PART

BREECH

This is not necessarily an emergency. Many breeches deliver successfully. But the trouble is that you cannot just give a breech a trial of labor, because the head, which is the largest part, comes last. If the head gets stuck in the pelvis, the baby will die. Therefore:

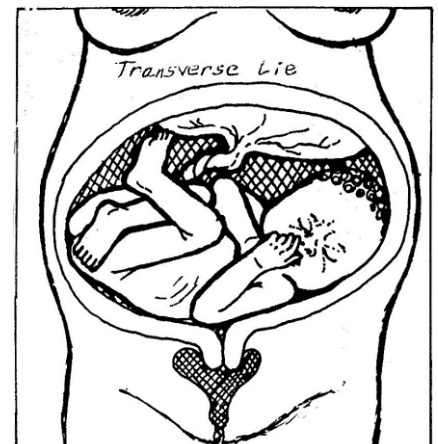
- If the mother has had a previous difficult delivery, or
- If this is her first baby, or
- If the baby seems unusually big—send her to the hospital to deliver.

If a woman is already delivering a breech baby:

- Do not handle the baby until it is out to its armpits.
- Do not turn the baby's back toward the floor during the delivery.

TRANSVERSE LIE

This is not an emergency before labor starts, because the baby may turn from lying sideways in the uterus to vertex or breech. But after labor has started it will not turn, and there is no way the baby can deliver sideways. Finally the baby will die, and the uterus will rupture, causing the mother to die. Send any transverse lie who is in labor immediately to the hospital for a C-section.



PROLAPSED HAND

This also is a **transverse lie** in which **the hand has come out through the cervix** and vagina. Send this mother immediately to the hospital.

FACE PRESENTATION

This is hard to diagnose without a vaginal examination. On vaginal exam the eyes, nose, and mouth can be felt instead of the top of the head. Most face presentations finally deliver after a long labor if in the mentum anterior position, but will not deliver if the mentum is posterior. To be safe it is best to take the mother to the hospital for delivery.

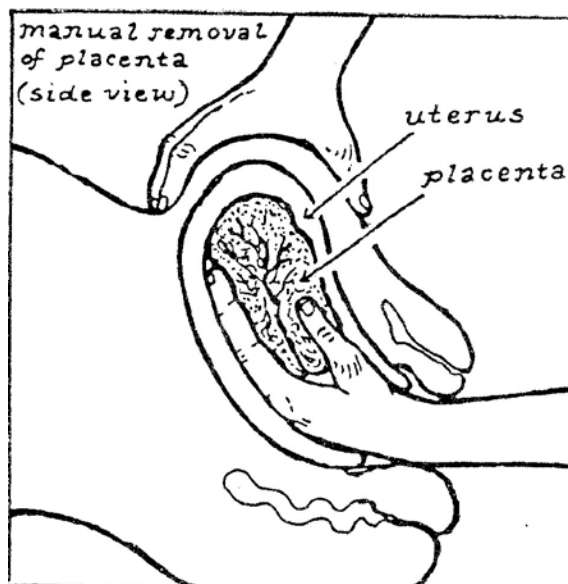
BROW and OCCIPUT POSTERIOR—see note # 17, page 297—again better to deliver in the hospital.

EMERGENCIES WHICH OCCUR AFTER THE BABY HAS DELIVERED

THE PLACENTA WILL NOT COME OUT-- (RETAINED PLACENTA)

Give it a little time—not every placenta delivers immediately, but if it is past 20 minutes it is getting to be too long. You do not have to wait 20 minutes. Soon after the delivery try rubbing the uterus a little to stimulate it to contract to loosen the placenta. See pg. 302 for getting the placenta to deliver. If it does not come it needs to be removed manually. It is best to have someone do this who has had experience doing manual removals, because if a piece of the placenta is left behind, the woman may bleed. The steps in manual removal are:

1. Put on a sterile glove.
2. With fingers extended and held together, slip your gloved hand through the cervix into the uterus.
3. Feel for the edge of the placenta and work your fingers under it.
4. Still keeping your fingers almost straight, work your hand in between the placenta and uterus until all is loosened.
5. When you have loosened the whole placenta, cup your fingers around it and bring your hand with the placenta out of the uterus. Examine the placenta for any missing segments.
6. Now give ergometrine 0.5–1.0 cc IV if the uterus is not contracted well (this is best, but omit it if given previously in the last hour), or oxytocin 10 IU IV, or 1 ergometrine 0.5 mg tablet. (slower action).



POSTPARTUM HEMORRHAGE (PPH)—the greatest cause of maternal deaths

The woman is bleeding—if the bleeding is significant, this is postpartum hemorrhage (PPH). First, you need to know the cause to give the most effective treatment. The cause usually is:

- **A poorly-contracted uterus**, often after a long, hard labor (uterine atony)
- **A tear in the vagina or cervix**
- **A piece of placenta still remaining in the uterus** (retained placental fragment)

Do not waste time giving vitamin K—this almost never helps. Instead, try to find the cause and treat it.

IMMEDIATE PPH—bleeding more than 500 ml just after delivery or in first 24 hours:

- If the bleeding is severe or the woman may be in shock, call someone to assist—one assesses the cause of bleeding and works to stop it, while the other takes and monitors vital signs, starts 2 IVs (saline or Ringer’s), orders labs (Hgb, type and cross-match, and coagulation (if available) and catheterizes the patient. See SHOCK, pg. 22–24, and **directions for giving fluids** under Delayed PPH on page 309.
- If signs of shock are present, give 2 L saline rapidly, elevate feet, and give oxygen if available.
- Use the cell phone to arrange for transportation to the hospital if the bleeding isn’t stopping quickly.

Signs of Shock:

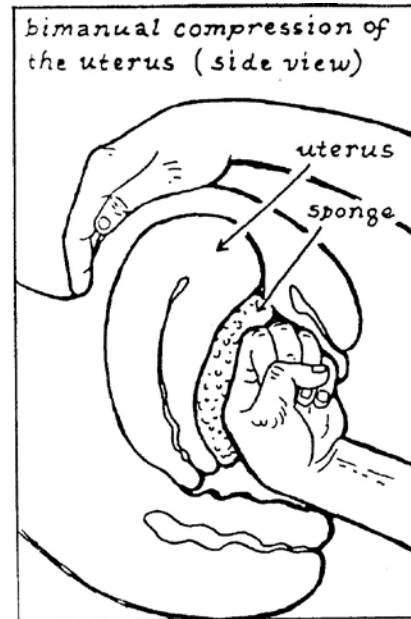
- 1) Systolic BP <90
- 2) Pulse > 110
- 3) Pallor
- 4) Rapid breathing
- 5) Restless, confused, semiconscious
- 6) Skin Diaphoretic

- **First, check whether the uterus is firm or relaxed—if relaxed:**
 - Vigorously **rub the uterus** to get it to contract.
 - Put the baby to the breast.
 - **Give ergometrine** 0.2 mg IV or IM Q 4 H x 3 (best, if available-may raise BP if hypertensive) and/or **oxytocin** 20 u IV in 1 Liter Normal Saline at 60 drops/min. (limit 3 L—at 40 drops/min. after first Liter), or one ergometrine 0.5 mg tablet orally.
- Bleeding that is only from a relaxed uterus will now usually stop. If not, **check if there is a tear in the cervix or vagina**. To see a tear you will need a vaginal retractor or large speculum (sometimes the gloved fingers of an assistant make a fair retractor), and some sponges to wipe away the blood so you can see. A vaginal tear is usually easy to suture. A cervical tear may require two ring forceps to bring the edges forward toward you so you can sew the edges together. If no tear, proceed to examining the placenta.

- **Examine the placenta**—is a piece of placenta missing? If it seems to be, give ergometrine and take the woman to the hospital to curette the uterus to remove the piece. Go with the patient with IV running and keep uterus firm during ride.
- **When all else fails, try a bimanual compression, and do not wait until the woman starts to drop into shock to try it.**

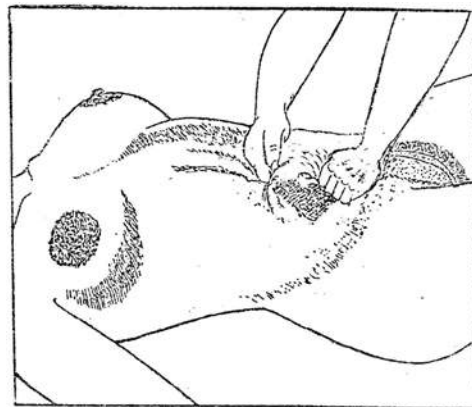
The **VAGINAL BIMANUAL COMPRESSION** is done as follows: (See the picture)

- Moisten a large laparotomy sponge with boiled water or normal saline. With your gloved hand place it in the vagina.
- Now push it tightly against the cervix with your fist and hold it there.
- Put your other hand on the abdomen and bring your fingers behind the top of the uterus. Force the uterus down firmly against the sponge and your fist in the vagina.
- Compress the uterus between your hand and your fist as long as necessary to stop the bleeding--it may take 30 minutes or even 2 or 3 hours. When your hand on the abdomen gets tired, have an assistant press the uterus against the sponge and your fist in the vagina.



An **ABDOMINAL BIMANUAL COMPRESSION** can also stop bleeding and is done as follows: (Usually not quite as effective as vaginal bimanual compression.)

- With one hand make a fist and place it between the symphysis pubis and the uterus.
- With your other hand push down into the abdomen to get it under the top of the uterus so you can pull the uterus tightly against your other hand with the fist.
- Hold the uterus tightly like this for at least 10 minutes after all the bleeding has stopped and the uterus is firm.
- Now release your hands and watch to be sure the bleeding does not start again.



**KNOWING HOW TO DO A BIMANUAL COMPRESSION MAY
SAVE A LIFE.**

DELAYED Post Partum Hemorrhage

This is bleeding starting 24 hours or more after delivery. It has a **greater chance of being a retained piece of placenta** and requiring a curettage in the hospital.

Call for someone to help you. While one works to stop bleeding the other should check BP, and start IV fluids if significant blood loss or shock has occurred.

Below is the procedure for fluid replacement for shock from significant blood loss which is continuing:

1. Initiate IV infusion with **normal saline** or **Ringer's lactate**—start 2 IV lines.
2. Infuse 1 Liter in each line over a 15–20 minute period (wide open rate).
3. Administer 10 IU of oxytocin IM—See oxytocin and ergometrine--page 307.
4. If the bleeding hasn't stopped quickly, call for transportation to the hospital. Administer at least 2 additional liters of solution during the first hour if still bleeding.
5. Monitor fluid intake and output every 30 minutes—**if still bleeding the patient should now be in the hospital—Hospital personnel:** obtain Hgb and type and cross-match for 2 units of blood on standby or for immediate use.
6. Continue to replace volume of blood loss with IV saline or Ringers in the hospital until blood is available, but use blood instead as soon as available.
7. **Transfuse if necessary** (if still bleeding after all the IV fluid, then **transfusion is necessary**--do not wait to transfuse until the hemoglobin is too low).
8. Monitor uterine contractions, vital signs, and bleeding every 15 minutes during the first 2 hours. **Consider whether curettage is needed.**
9. Perform uterine massage and extraction of clots.
10. Measure intake and output hourly.
11. Perform clotting test if the hemorrhage persists (hospital lab).
12. Manage coagulopathy as appropriate (fresh whole blood usually helps).
13. Measure hematocrit or Hgb 24 hours after hemorrhage has been controlled.
14. If hematocrit is less than 20 % or Hgb less than 7 g/dL, prescribe 120 mg of iron sulfate and 400 mcg of folic acid orally for a period of 3 months.

DEVELOPMENT OF COAGULOPATHY

This occurs when a patient has used up most of one or more clotting factors when trying to stop bleeding, or from diffuse intravascular clotting with sepsis, or if for some reason the patient cannot produce enough of a clotting factor.

Symptoms of acute postpartum coagulopathy are:

- Bleeding—Bruising of the skin, nose bleed, bleeding gums, bloody urine or stool, bleeding at the IV insertion site
- Neurologic—Visual disturbance, delirium, or coma

Management of Coagulopathy—Quickly transfer her to a hospital for emergency medical assistance, preferably under the direction of a physician experienced in treating coagulopathy. In the hospital the doctor should:

- Obtain and interpret appropriate diagnostic tests (do those that are available):
 - Platelet count—low and progressively decreasing in coagulopathy
 - Fibrinogen—low <200
 - PT and PTT—clotting time may be prolonged, normal or short depending on the state of the syndrome
 - Peripheral blood smear—look for microscopic presence of schistocytes or helmet cells
- Quickly do type and cross-match to obtain fresh whole blood, or use fresh O negative without cross-match. One unit fresh whole blood stops bleeding twice as well as 1 unit stored packed cells.
- In the hospital give factor VIII and fibrinogen (if available)—fibrinogen 1 gm IV stat and repeat in 30 min. if still bleeding. If none, try the fresh whole blood.
- Also in hospital consider possible heparin therapy, depending on the cause of the coagulopathy.

BAD-SMELLING DISCHARGE and PUERPERAL SEPSIS

If the woman has a bad-smelling discharge a few days (or weeks) after delivery—**this is at least endometritis**, an endometrial infection. But It may go more deeply. Is the uterus not getting smaller properly? Is the low pelvic area tender? Does she have fever? She will require antibiotics. **If she is actually looking ill or very tender in the pelvic area with fever this is likely puerperal sepsis—the 2nd most frequent cause of maternal death. Send her stat to the hospital after giving ampicillin + metronidazole + gentamycin instead of treating her yourself in clinic--See below.**

Otherwise, for treatment give:

- **Amoxicillin** tabs. 250 mg—2 QID x 10 days, (or if very ill, **ampicillin 1 gm. IV Q 6 hours**), and **metronidazole 200 or 250 mg tablets—2 TID x 10 days. If very ill, add gentamycin 2.5 mg/kg IV Q 12 hours daily.** (Remember, it is usually best to give initial antibiotics and send the patient to the hospital if very ill.)
OR GIVE
- **Doxycycline** 100 mg BID x 10 days (or longer if necessary) if illness is not too severe.

If she is not improving quickly, send her to the hospital.

PERSISTENT RED LOCHIA

For Persistent Red Lochia more than 4 days after delivery, give:

- **Ergometrine** 0.5 mg tablets 1 TID for 1 day only, and
- **Amoxicillin** tablets 250 mg 2 QID for 7 days.

Refer if red lochia doesn't stop.

POSTPARTUM CARE —FOLLOWING DELIVERY AND BEFORE DISCHARGE

For the Mother

This is care given to a mother after a delivery. It includes checks in the first few hours after the delivery and every 12–24 hours for the first 24–72 hours after the delivery and follow-up in the clinic/health center or outpatient department at 6 weeks. Do the following:

- Ask the woman if she is having any of the problems below and check her for the following danger signs:

Postpartum Danger Sign	Problem	Exam, Labs, and Treatment
Heavy vaginal bleeding	PPH, see causes	Find cause, treat accordingly
Respiratory difficulty	Might be from shock, anemia, pneumonia, CHF or pulmonary embolism	Check BP, temp., Hgb, heart and lungs, and calves—assess the cause and treat accordingly—in hospital
Fever	Puerperal sepsis, malaria	RDT, WBC, check abdomen, and treat
Headache, usually HTN and blurred vision	Pre-eclampsia	Check VS--Less common postpartum (but possible postpartum day 1 or 2)
Severe abdominal pain	Might be from Endometritis or PID	Check abdomen, temp. and lochia Give antibiotics
Seizures, unconscious	Eclampsia (but less common postpartum)-R/O other cause	MgSO ₄ —see pg. 292

Quickly start appropriate treatment if the mother has any of the above signs.

- Then take a history and obtain the following (if not already on her record):
 - Personal information and social history
 - Medical history (Thromboembolic disease, UTIs, etc.)
 - Obstetrical history, including details of each birth and immediate postnatal period.
- Measure patient’s vital signs—temp, pulse, heart rate, and BP.
- Check conjunctiva for pallor and sclera for jaundice.
- Examine breasts for establishment of lactation, engorgement and tenderness and cracked/inverted nipples.
- Examine abdomen for involution of the uterus, tenderness and distension, and C-section incision site for any drainage, redness, tenderness, and status of sutures (if still present).
- Ask about and check bladder and bowel function.
- Check lower legs for edema, tenderness.
- With woman’s permission: look at her perineum for inflammation and the status of episiotomy/tears.
- Check the pad and lochia for color, amount, consistency, and odor.
- Conduct a routine postpartum physical exam.
- Ask the woman about any anxiety, depression, or preoccupations she may have. Postpartum depression usually occurs later—a few days or weeks after delivery. There is more information on PPD on p. 313 and a screen on p. 326.

- **Before discharge, give health education, birth control counseling, and counseling on activities—cover the topics below:**
 - Nutrition
 - Animal proteins, legumes, green vegetables, fats, carbohydrates, fruits and vitamins
 - Importance of taking regular meals containing mixed foods.
 - Taking enough fluids—advise 2–3 L of water daily
 - Personal and environmental hygiene—perineal care (bathing, changing pads/cloths)
 - Adequate rest and sleep
 - She should have help with daily chores
 - Family Planning including birth spacing and LAM
 - Importance of early initiation and exclusive breastfeeding, including the advantages of breastfeeding, proper positioning of baby, and attachment to nipple
 - Discuss the need for other postnatal checks during the first 6 days after delivery and again at 6 weeks
 - Resumption of sexual activity after 6 weeks or when she sees fit, including counseling the client on discussing this topic with her husband
 - The need to come to the health facility quickly when any of the following danger signs are observed: **(Actually, come quickly if sick or just not feeling good.)**
 - Excessive vaginal bleeding
 - Dizziness
 - Severe headache
 - Convulsions
 - Severe abdominal pains
 - Foul-smelling vaginal discharge
 - Fever
 - Blurred vision
 - Heart palpitations/excessive tiredness
 - Severe cough or respiratory difficulty
- Give the following to the mother with an explanation of each:
 - Analgesia if required (paracetamol or ibuprofen, with precautions on dosage)
 - Vitamin A, and ferrous sulfate with folic acid as per MOHSW guidelines
 - Anti-malarial tablets based on NMCP policy
 - Mebendazole (based on need)
 - Arrange the next appointment if required.

●
■ **RECORD ALL INFORMATION YOU HAVE OBTAINED IN THE MOTHER'S CHART.**

Late Maternal Complications

Vesicovaginal Fistula (VVF)—This can be a rare complication of pelvic surgery, but is **most often caused by very prolonged labor** from the head of the unborn child tightly pressing the vesicovaginal wall against the pelvis for a long time, cutting off the blood flow to that part of the wall and causing the tissue to die. The dead wall tissue may take some days before it breaks down, leaving a hole, through which urine continually leaks into and out from the vagina. This often has a serious effect on the woman's emotional and social well-being. Send such women to a gynecological specialist who is good at doing a VVF repair. **Avoid ever letting this occur by sending women developing really prolonged labor to the hospital promptly for C-Section if needed.**

Post-partum Depression (PPD)--This is a type of depression which **can affect women sometime after childbirth**. Studies say from 5% to 25% of U.S. postpartum women develop some degree of this. Symptoms include sadness, fatigue, changes in sleeping and eating patterns, reduced libido, crying episodes, anxiety, and irritability. Some women may even become suicidal. The causes of PPD are not well understood. Many women finally recover on their own, but some really need help, and all usually do better with treatment. Counseling and “talk therapy” may be sufficient, but others need medication. **Send such a woman to a mental health clinician.** The Edinburgh Postnatal Depression Scale helps to identify such a patient when there is some doubt--page 326.

NEWBORN CARE

For The Newborn (Some Time After The Initial Care Right After Birth)

1. Wash hands with soap and water and dry them with a clean towel or use an alcohol-based solution.
2. Greet and introduce yourself to the mother (if not already done).
3. Note the date and time of delivery.
4. Weigh the baby.
5. Keep the baby warm (proper wrapping).
6. Assess the neonate from head to toe as follows:
 - General condition/appearance of the baby
 - Axillary temperature
 - Respiratory rate (count for 1 minute while the baby is quiet)
 - Head, face, neck, and eyes (Be sure to note color and jaundice if present)
 - Oral cavity
 - Hands and fingers
 - Chest, abdomen, and umbilical cord
 - External genitalia including anal opening
 - Back and spine
 - Legs and toes
 - Reflexes

7. Wash hands with soap and water and dry them with a clean towel or use an alcohol-based solution, then assist the mother to breastfeed properly.
8. Give immunizations according to MOHSW policy (BCG, polio)
9. Counsel the mother and father on the following topics:
 - Positioning and attachment of the baby to the breast
 - Importance of keeping the baby warm
 - Completion of immunizations for baby's present age
 - Attending to the baby at all times
 - Protecting the baby from infection through handwashing and personal hygiene
 - Proper positioning of the baby to avoid suffocating
 - Keeping the baby in a safe environment
 - Care of the umbilical cord
 - Bathing the baby
 - Bonding between baby and mother as well as father
 - Recommending another visit for the mother and baby within a week of delivery
10. **DANGER SIGNS**—Tell mother that if any of the danger signs below are present for the baby, she needs to bring the baby to the health care facility immediately:
 - Breathing difficulties: (rapid breathing, retractions, and grunting)
 - Cyanosis
 - Convulsions/spasm and jitteriness
 - Fever or hypothermia
 - Poor suckling/feeding
 - Vomiting/diarrhea
 - Redness/swelling/purulent eye or cord discharge
 - Yellow discoloration of eyes, skin, or mucous membranes

In summary, tell her if the baby looks sick, or something doesn't look correct, to bring the baby quickly to the hospital or clinic.

See NEONATAL CARE on pg. 244 - 251, and use space below for additional notes.

MENTAL HEALTH

In this section we will discuss the symptoms, assessment, diagnosis, and treatment of the following mental health disorders:

A. Post Traumatic Stress Disorder (PTSD)	—	315 - 317
B. Anxiety reactions		317 - 319
C. Open Mold-		319
D. Depression		320 - 324
E. Psychosis		324
F. Addictions		325

A. POST TRAUMATIC STRESS DISORDER (PTSD)

By **David Franklin, TNIMA & Marion Subah, RBHS**

PTSD is a major, life-altering disorder that strikes many people who survive traumatic experiences, like the war in Liberia. Some authorities describe PTSD as an invisible epidemic, because it affects millions of people from all walks of life; many of whom suffer alone and in silence, and their suffering can last many years. PTSD results from Trauma.

Trauma is described as the unusual, shocking, painful, overwhelming and unimaginable experiences that people encounter in life.

Examples of traumatic situations:

- 1) War & other disasters
- 2) Massive and or multiple losses of human life
- 3) Gross and fatal violence

PTSD is the Result of Acts that cause severe separation, deprivation, displacement or handicap or deformity:

When trauma happens, it often takes us off guard and the memories are encoded in our human system in such an unusual manner that the only way we express it is usually through unusual and abnormal behaviors. **Post Traumatic Stress Disorder (PTSD)** is the disorder that we develop after we have experienced and survive traumatic experiences. PTSD can change our body chemistry; make life rough, and can disrupt our careers and our relationships.

What are some of the behaviors that people show when they are suffering from PTSD? (Not everyone has all of these disorders—very few have all fifteen.)

1. They have no show of motivation
2. They cannot concentrate
3. They experience hopelessness – no hope for the future
4. They show lack of interest in activities and other people
5. They become chronically irritable and easily become angry and violent
6. They become pre-occupied with the traumatic experience

7. They procrastinate
8. They have difficulty making decisions
9. They become Rebellious - and do the obviously wrong things
10. Even a little sound can excite or make them afraid
11. They may be unable to sleep
12. They may try to avoid people or places associated with the trauma
13. Students do not do well in school
14. They develop psychosomatic illnesses (such as headache, stomach or other body aches), high blood pressure, or may complain of open mole
15. They easily become tired

For anyone who has had a traumatic experience and now has many of these symptoms, take a very good history to help determine if the client actually has PTSD, and administer the trauma screening tool (TSQ) on the next page. If a diagnosis of PTSD is quite certain CONSIDER REFERRING TO A MENTAL HEALTH CLINICIAN or other mental health professional. If a referral is not possible, do the following:

1. Try to **establish a cordial relationship** with the patient as much as possible.
2. **Observe good listening techniques—listening, showing interest, and being empathetic is very important.**

3.

PROVIDE PSYCHOLOGICAL FIRST AID (PFA) FOR ALL WHO HAVE EXPERIENCED ANY TRAUMA

- ❖ **Listen as they would like you to**
- ❖ **Provide privacy for talking with the person**
- ❖ **Encourage individuals to identify small steps toward recovery (such steps as seem appropriate for each person) & to take those steps as much as they can**

4. Assess the client's level of understanding of Post Traumatic Stress Disorder—teach about the disorder.
5. Explore with the client what situations give the most unfavorable feelings.
6. Explore what they enjoy doing with less stress.
7. Consider using **anti-depressants** to treat significant symptoms of **anxiety** and/or **depression**--such as **Fluoxetine 20 mg. daily.**
8. See the patient again every 2 – 4 weeks to listen and give further encouragement, and to monitor symptoms and effectiveness of treatment.
9. May give **diazepam 5 mg. t.i.d.** for **short periods** of time (no longer than 3 to 5 days to avoid addiction) when symptoms of anxiety are the most severe.

Trauma Screening Questionnaire (TSQ) for helping identify PTSD

Ask the following 10 questions. A “yes” response to 6 or more indicates a very strong possibility of the client having PTSD. Count the Yes’ responses.

(It is best to wait at least 3 weeks after the event before administering the TSQ.)

In the last 2 weeks, have you had (or have you been):	YES, at least twice in the past week	NO
1. Upsetting thoughts or memories about the event that have come into your mind against your will?		
2. Upsetting dreams about the event?		
3. Acting or feeling as if the event were happening again?		
4. Feeling upset by things that remind you of the event?		
5. Body reactions (such as fast heartbeat, stomach churning, sweating or feeling dizzy) when reminded of the event?		
6. Difficulty falling asleep or staying asleep?		
7. Irritability, or outbursts of anger?		
8. Difficulty concentrating?		
9. Feeling much more aware of possible dangers to yourself and others?		
10. Being jumpy or startled at something unexpected?		

Original Source: Brewin, C.R., et.al. (2002) Brief Screening Instrument for post-traumatic stress disorder. *British Journal of Psychiatry, 181*, p. 158-162.

B. ANXIETY (often chronic and generalized)

Anxiety lasting for weeks or months is often chronic. Chronic anxiety is not a complaint but rather a CONDITION (i. e., people do not complain "I have chronic anxiety"). NOTE: Some illnesses often cause anxiety. Be sure that some other illness is NOT causing the patient’s anxiety.

S--1. The patient feels nervous, says his heart is beating fast and he cannot sleep well. Sometimes he also has headache, heartburn, epigastric pain, or belching.

2. Ask: 1) When did the symptoms begin? 2) How severe are they?
 3) Have you had previous treatment? 4) Do you have pain?
 5) Any headache, heartburn, epigastric pain or belching?
 6) Any recent very stressful situation? 7) Any history of significant trauma?

O--Take the blood pressure, pulse, temperature and weight. Look for other possible illnesses causing the symptoms:

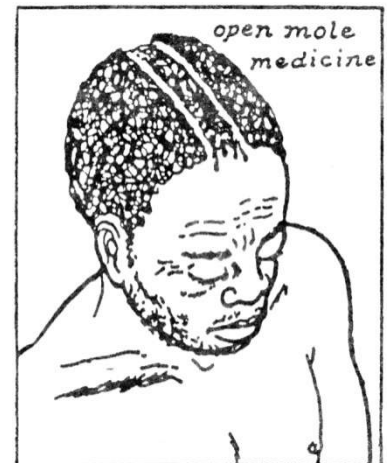
- 1) Is the patient pale? (anemia causing the symptoms)
 2) Does the patient have distended neck veins, large liver, shortness-of-breath, and ankle edema? (congestive heart failure causing anxiety)

P--Treatment of CHRONIC ANXIETY:

1. Many patients will improve after some weeks or months without special treatment. Counseling (including identifying triggers which may have caused the patient's anxiety, and helping the patient identify steps to take to solve anxiety-causing problems) usually helps.
2. Minor tranquilizing drugs, such as diazepam 5 mg. t.i.d. given for 3-to-5 days only, are helpful when anxiety is most severe. Avoid if possible. (Always avoid long-term use which may cause addiction.)
3. **But really consider referring the patient to a Mental Health Clinician—they have been trained to appropriately treat problems such as this.**
4. With the "Open Mole" (anxiety) syndrome, traditional medicine also often succeeds in getting the patient to improve.

C. TRADITIONAL MEDICINE -- the ADULT "OPEN MOLD" SYNDROME (Pronounced "Open Mole")

"Open Mole" in adults refers to what Western doctors would call a severe form of chronic anxiety. Tribal healers recognize this group of symptoms as a specific illness and believe it is caused by the anterior or the posterior fontanel of the skull opening again in adults. This is believed to be very serious if untreated, but well within the capabilities of tribal medicine to cure. The traditional healer examines the patient's scalp, and if he finds an indentation in the appropriate position in the skull of such a patient, he makes the "diagnosis". In the Lofa Co. area a 1-1/2-inch-wide strip of hair is shaved over the sagittal suture, and a sticky black "medicine" with leaves is applied to this strip of shaved scalp. The patient feels immediate relief because someone has finally "discovered the cause" of his illness and because the tribal healers have a good reputation for curing it. With time, reassurance, faith in the healer, and further applications of the sticky black "medicine" the patient usually slowly improves. X-rays will show that no opening of the sutures of the skull or the fontanel has actually taken place. Usually the person who believes he has an Open Mole will refuse medical treatment and insist on traditional medicine.



D. DEPRESSION

Note that **depression and anxiety often occur together**—when **diagnosing one, also check for the other.**

S—The person with depression will be feeling down and will often complain of some of the eleven symptoms listed in this summary of the WHO document, *mhGAP Intervention Guide V 1*. Edited by Philip Jenkins. He describes and identifies depression as follows:

- Almost everyone feels down at times—but **symptoms of depression must have been present for at least 2 weeks for a patient to be diagnosed as having clinical depression.**
- Check for **Bereavement** or **Significant loss**--These cause depressive symptoms which are **normal grief reactions** and not true depression, and usually resolve without treatment. Below is the **WHO (Gap-7) screen for depression:**
- **To DIAGNOSE Moderate or Severe Depression, the patient must have the following:** (For depression, symptoms must be present at least two weeks.)
 - A. At least 2 of the following 3 symptoms:**
 - 1) **Depressed mood** (and/or irritability in a child) most of the day, almost every day
 - 2) **Loss of interest or pleasure** in activities normally pleasurable
 - 3) **Decreased energy/becoming fatigued easily/always feeling fatigued**
 - B. And at least 3 of the following symptoms in the past 2 weeks:**
 - 1) Decreased concentration & attention
 - 2) Decreased self-esteem & confidence
 - 3) Feeling of guilt & worthlessness
 - 4) Bleak & pessimistic view of the future
 - 5) Not sleeping well (disturbed sleep)
 - 6) Decreased appetite (eating too little), or eating too much
 - 7) Thoughts of self-harm or suicide
 - C. And Difficulty carrying out usual activities at work, school, home & social situations**
- If the answer is “Yes” to all 3—A, B, & C—the person probably has **Moderate or Severe Depression.**
- If the answer is “Yes” to only 1 or 2 of the three—the person may still be depressed, but not as severely. This patient may not need medication, but should have education about depression, help with understanding and dealing with psychosocial stressors, and regular follow-up every few weeks.

With patients you suspect are depressed, also do this **PHQ-9 Screen for helping to identify Depression (modified to Liberian English by Tiyatien Health)** to see if the screen agrees with your initial thoughts. Please note that the **PHQ-9** is a **screen**—not an absolute diagnostic tool. It can also be used instead of the WHO screen.

Explain to the patient, **“We are going to ask you some questions that will help us know how we can help you. When you answer, we would like you to think about ONLY the past TWO weeks, even if your problems have lasted for much longer.”**

Then ask the following questions: Since the past 2 weeks:	Never	Few times	Plenty times	Nearly every day
1) Have you been feeling not happy when you are doing things? or Have you been feeling your heart can't be there to do anything?	0	1	2	3
2) Have you been feeling down-hearted, overloaded, or like you are having no hopes?	0	1	2	3
3) Have you had trouble falling asleep, staying asleep, or sleeping over-plus?	0	1	2	3
4) Have you been feeling weak or tired, or like you have little strength when working?	0	1	2	3
5) Do you sometimes feel like you can't eat? Or do you sometimes eat over-plus?	0	1	2	3
6) Do you ever feel bad about yourself, or ashamed of your problems? or Do you feel that nothing good will come out of you?	0	1	2	3
7) Do you sometimes only complete your work half-way because you are thinking plenty? or Do you feel like your mind can't be there when doing your housework?	0	1	2	3
8) Have people noticed that you are moving and talking very slowly? [GIVE TIME TO ANSWER] Have they noticed the opposite-that you are too active, so that you are moving around without doing anything?	0	1	2	3
9) Do you sometimes think it is better that you die, or think of doing harm to yourself?	0	1	2	3
Add the scores from each question for Total Score: _____	=__	+__	+__	+__

Original source of PHQ-9—Spitzer R, Kroenke K, Williams J, et.al. with an educational grant from Pfizer, in PRIME MD TODAY, 1999. Copyright Pfizer, Inc. Tiyatien Health contributors to Liberian version—Danielle Alkov, Matt Burkey, Othello Davis, Moses Gramoe, Bent Grant, Katie Kentoffio, Patrick Lee, Tina Mouwan, Amisha Raja, Hemali Thakkar, & Kalisa Yesero.

Score interpretation: (Range: 0 – 27)

0 – 4 = No depression

5 – 14 = Possible depression requiring support and education—Treat if you have had some training, or refer to a Mental Health Clinician

15+ = Very likely severe depression requiring medication, support, and education—it is best to refer this patient immediately to a Mental Health Clinician.

Any patient diagnosed as depressed must also be screened for Bipolar Depression.

Also check how well the depressed patient can function with this next short screen.

FUNCTIONAL IMPAIRMENT:

Now ask: How hard have you found it to do some of your work, to do your housework, to take care of your children, or to go around your friends and family because of these problems?	Not Hard	Hard Small	Very Hard
Probable Functional Impairment?:	No	Small	Yes

If the total PHQ-9 score ≥ 17 , & functional impairment also seems certainly present, definitely refer this patient to a mental health clinician for treatment.

BIPOLAR DISORDER

If the patient has depression, check for the possibility of **Bipolar Disorder (depression with mood swings to manic episodes and back to depression)**. Consider the patient to have Bipolar Disorder if **previously diagnosed** as such, or **with a history of 3 or more of the following situations for more than 3 weeks:**

- 1) Extremely elevated mood
- 2) Extremely talkative, with a flight of ideas (changes rapidly and frequently from one idea to another)
- 3) Extremely decreased need for sleep
- 4) Feeling that he is great (grandiose ideation)
- 5) Easily distracted
- 6) Reckless behavior

Bipolar Disorder has to be treated differently. Mood elevators used for ordinary depression such as Fluoxetine and Amitriptyline if given for bipolar depression may cause the patient to swing from feeling depressed to being very manic. Such patients should be on **mood stabilizers such as Lithium Carbonate** instead of mood elevators like Fluoxetine. If **Bipolar Disorder is probable, send the patient to a mental health clinician or hospital for treatment.**

COMORBIDITIES-- Now look for physical illnesses which occur frequently with depression (in some cases physical illnesses even **cause** depression). Take a good history and do a physical examination. Some **common co-morbid illnesses are:**

- 1) Hypothyroidism (also a **cause** of depression)
- 2) Anemia
- 3) Cancer
- 4) Stroke
- 5) Hypertension (sometimes with headache)
- 6) Diabetes
- 7) HIV
- 8) Alcoholism

In addition to treating depression, also treat any co-morbid illnesses. Note some drugs such as steroids may also cause depression.

TREATMENT: Although it is best to send patients to a Mental Health Clinician, who has been trained to care for depression and has training in the proper use of medications and medication side-effects, it is not always possible. If you have not been trained as a Mental Health Clinician and must treat the patient in your clinic, do the following:

1. **Educate** the patient and caretakers about the causes, symptoms, effects, treatment, and usual course of depression.
2. **Assure and reassure the patient that depression can be treated and usually improves.**
3. **Look for stressful situations** (psychosocial stressors) which may have brought on the depression. Discuss them & help the patient to choose possible ways to resolve them.
4. **Encourage physical activity**—physical activity decreases depression.
5. **Encourage the patient to become socially active again**—with members of his own household and with others with whom he previously liked to spent time.
6. For moderate or severe depression, or mildly depressed patients not improving in 6–8 weeks, a clinician may **prescribe an antidepressant** such as one of these below:
 - 1) **FLUOXETINE** 20 mg. caps—Start with 1 daily; if no improvement within 4 weeks, may increase to 40 mg. This is an SSRI (Selective Serotonin Reuptake Inhibitor)—SSRI's generally have milder side-effects than the tricyclic anti-depressants. A few patients may experience headache, nausea, diarrhea, or nervousness. **This is the anti-depressant of choice**—if the patient takes a few too many he usually will not die.
 - 2) **AMITRIPTYLINE** 25 mg. tablets (tricyclic anti-depressant)—Start with 50 to 75 mg. h.s., or 25 mg. t.i.d. If not improving may increase gradually to 150 mg. total per day. Tricyclics cause a very dry mouth and increased heart rate, and may cause CNS stimulation, heart arrhythmias, nausea and hypertension. A patient can die with an overdose. Amitriptyline may cause a drier mouth than imipramine and often causes drowsiness—therefore it is best given h.s.
 - 3) **IMIPRAMINE** 25 mg. tablets (tricyclic anti-depressant)—Start with 25 mg. t.i.d. (or 75 mg. h.s.). If not improving may increase gradually to 50 mg. t.i.d. (150 mg./day total). Imipramine has the same adverse effects as amitriptyline although drowsiness may not be quite as severe.
7. **CAUTION:** All tricyclics and SSRI's must **never** be given within 2–4 weeks of an **MAO inhibitor** such as phenelzine (Nardil) or tranylcypromine (Parnate)—death may occur.
8. It may take up to 1 month for the depressed patient to start improving with antidepressants. Sometimes the dose has to be increased. Treatment usually should continue for at least 6 months after the patient starts to improve to prevent a relapse. See the patient every week for the first month. **A depressed patient can become suicidal.**
9. **Be sure the patient is not planning suicide**—Talk with the patient to find out. **As lethargy decreases in depressed patients on anti-depressants during the first month of treatment, a patient feeling life isn't worth living may find he has gained sufficient energy to commit suicide.** If so, he should be **hospitalized**

(preferably at Grant). Suicides are more frequent in the first 4-6 weeks of treatment. **Therefore watch all depressed patients carefully especially during the first 4 – 6 weeks to prevent this.** If the patient is suicidal and hospitalization is not possible, both the clinician and the relatives should closely watch him and he should be placed on Fluoxetine and be seen by the clinician at least weekly.

E. PSYCHOSIS—ABNORMAL ACTIONS, THOUGHTS, & SPEECH = PSYCHOSIS

Psychotic patients do not correctly perceive reality--they may hear voices, see things that are not there, or believe they are someone great. Traditionally in the rural villages such a patient, particularly if he seemed aggressive, usually had his ankle shackled to a chain attached to a 30 lb. section of a log, both to prevent him from running off into the forest and causing harm to himself, and to keep him from causing serious trouble in town and harming others. This is known as “putting his foot in a stick.” It often is a necessary first measure in the isolated rural village. It is actually a wise and compassionate thing to do—the patient can pick up the log by its rope handle and move about, although not rapidly. It seems he usually becomes calm and non-aggressive. He sleeps in his own bed and his relatives feed him and care for him. Traditionally his foot was left “in the stick” until his psychotic condition seemed to improve. Now there is a better way than leaving him limited by the log and shackle.



Psychotic patient in a village
with his foot in a stick
(He would do better at Grant)

When you see or hear about such a patient, or the relatives ask for medical help, send the patient to the doctor or Grant Hospital. The medications he will receive may cause his mental condition to become normal or at least improve—this is much better than keeping his foot in a stick. For psychoses such as SCHIZOPHRENIA the physician may prescribe **Chlorpromazine**, starting perhaps with 25 mg. b.i.d. and increasing gradually until the psychosis is controlled, with a maintenance level of 100 mg. b.i.d. or even greater; or he may use another anti-psychotic medication. Note: the drugs for psychoses are not supplied to the clinics or health centers, but only to the hospitals for physicians to use, because of the real possibility of developing very **serious reactions**, such as **tardive dyskinesia**, **jaundice**, and the **neuroleptic malignant syndrome** with such medicines. **Chlorpromazine** (or a similar medication such as **haloperidol** or **fluphenazine**) may need to be continued for months or years after the patient improves to prevent the patient from becoming ill again. In chronic cases of schizophrenia it may need to be continued for the patient's lifetime. When under good control, the physician may send the patient to his home town with instructions for preferably a Mental Health Clinician to follow him, and with medications for the clinician to dispense to him.

ALCOHOLISM and ADDICTION to DRUGS

Addictions are major problems which cause morbidity, mortality and social disruption. The short screen below can help to identify these dependencies. (Note a positive screen is suggestive but does not make a diagnosis.)

The CAGE Questionnaire Adapted to Include Drugs (CAGE-AID)

CAGE Screen to help identify problem with alcohol or drugs	NO	YES
1. Have you felt you should cut down on your drinking or drug use?	0	1
2. Have people made you vex by criticizing you or lecturing you about your drinking or drug use?	0	1
3. Have you felt bad or sorry or guilty about your drinking or drug use?	0	1
4. Have you ever had a drink or used drugs first thing in the morning to calm your nerves or get over a headache or hangover?	0	1

Source: Modified with use of Liberian English from : J A Ewing “Detecting Alcoholism: The CAGE Questionnaire” JAMA 252: 1905-1907, 1984

Score: ___/4 (2/4 or greater = positive CAGE, further evaluation is indicated)

Addictions are difficult to successfully treat. The more successful programs, such as Alcoholics Anonymous, depend upon God to help them, have weekly group meetings, and also have another person for the individual to turn to if he has an urge to drink. There are accounts of individuals with a conversion experience who rapidly overcame their addiction. A Mental Health Clinician would be a good person for referral to find an appropriate treatment program.

POSTPARTUM DEPRESSION (Also known as the “Baby Blues” in the U.S.)

Depression may occur in 5 to 25% of women some days or weeks after delivering a baby. See page 313 for a description. The Edinburgh Scale helps identify it. The original form is a self-administered scale. The scale below for the clinician to use by questioning the patient has been adapted for use in Liberia and not extensively tested. Preferably a mental health clinician should treat this problem—refer the patient.

EDINBURGH Postnatal Depression Scale--As you are pregnant or have recently had a baby, we would like to know how you are feeling. Please choose the answer that comes closest to how you have been feeling just now **IN THE PAST 7 DAYS**.

In the past 7 days (not just how you feel today):	No points	One point each	Two points each	Three points
1. Have you been able to laugh and see the good part of things?	Most always	Yes, often	Not often	Hardly ever
2. Are you looking forward with enjoyment to things?	Most always	Yes, often	Not often	Hardly ever
3. Have you blamed yourself for no good reason when things did not go good?	No, never	Not often	Sometimes	Most often
4. Have you been anxious or worried for no good reason?	No, never	Not often	Sometimes	Most often
5. Have you felt scared or panicky for no very good reason?	No, never	Not often	Sometimes	Most often
6. Have you been feeling unable to do your work?	No, never	Not often	Sometimes	Most often
7. Have you been so unhappy that you had difficulty sleeping?	No, never	Not often	Sometimes	Most often
8. Have you been feeling very sad or miserable?	No, never	Not often	Sometimes	Most often
9. Have you been so unhappy that you have been crying?	No, never	Not often	Sometimes	Most often
10. Have you been thinking, even small, of harming yourself?	No, never	Not often	Sometimes	Very often
Add the points in each column & write the total here—Total: _____ = _____ + _____ + _____				

Maximum score: 30: Grade as Possible Depression if 10 or greater (More certain if 13 or more) Always look at item 10 (suicidal thoughts)--refer urgently if has such thoughts (prevent suicides)

¹ Source: Cox, J.L., Holden, J.M., and Sagovsky, R. 1987. Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry* 150:782-786 .

² Source: K. L. Wisner, B. L. Parry, C. M. Piontek, Postpartum Depression N Engl J Med vol. 347, No 3, July 18, 2002, 194-199

Always check the woman for co-morbidities (other illnesses which may also be present).

Various successful types of treatment to be used by the mental health clinician include:

- **Cognitive behavioral therapy** (a form of psychotherapy—the MHC will know)
- Medication—**Fluoxetine** may be needed
- Support groups—not too likely to be available in Liberia
- **Home visits/Home visitors** with education about the condition and encouragement
- A **healthy diet** seems to help
- Consistent/healthy sleep patterns also are helpful
- Correction of anemia or other co-morbid conditions (if present) is important

MOBILE TEAMS

P. Mertens, M.D.

The purpose of a mobile team is to bring certain types of health care services from a base or institution to people in the villages.

DISADVANTAGES

- High cost of vehicles
- High and constantly-rising cost of gasoline and diesel
- Cost and difficulty of maintaining and repairing vehicles
- Difficulty of correctly supervising the use of vehicles
- The team is only present in a village for a short time—once each month means that it cannot supply care for most acute illnesses. Although the team members can supply some types of medical care, they are **not a substitute** for a village health volunteer or a clinic.

ADVANTAGES

Because of the costs and difficulties of maintenance and supervision and the number of staff required, it is not reasonable to expect every clinic to have a mobile team—very few clinics will. **Mobile teams are usually limited to hospitals and health centers.** In times of economic difficulty, it may not be possible to fund most mobile teams. However, there are also some real advantages to a mobile team:



- The mobile team takes care of people where they live, saving them many trips to the clinic.
- Covers all the towns with roads within a reasonable distance from the hospital or health center.
- Is ideal for certain types of supervision, for preventive care, and for treatment of chronic conditions that require once-a-month visits.

Certain types of care and supervisory visits work very well with the mobile team approach. These include:

- Under-fives clinics
- Prenatal clinics
- TB and leprosy control visits
- Treatment of chronic patients with heart failure, hypertension, and epilepsy, etc. needing monthly care
- Vaccinating
- Visits of health inspectors to the villages combined with vaccinating
- Supervisory visits to clinics when the supervisor's transportation is combined with another function, such as vaccinating or under-fives and prenatal clinics.

We have not mentioned **health education** in the list above—it **should be a part of all the activities above** and usually is not a separate function.

Much greater advantage is gained considering the cost of transportation if two or more types of care are combined in one mobile team trip. For example, the mobile team vehicle may be carrying an under-fives clinic team to one town and a Health Inspector to visit the same town, plus a Supervisor to visit a clinic in a town nearby, and a Leprosy Control Worker for another town in the same direction. To save on this kind of transportation takes very careful scheduling and coordination, often by the director of the community health department.

The personnel needed for a mobile team will depend upon what kind of a mobile team is being planned. An under-fives team, for example, usually requires at least three persons:

- A clerk (it is helpful if the driver can read and also can act as clerk)
- A health worker trained in child care, such as a certified midwife, physician assistant, or nurse
- An aide or assistant who can help to give medications and vaccinations, etc.

For leprosy or TB control, usually only one person is needed. If this is the only mobile care being offered on one trip, a four-wheel vehicle is usually not needed; a motorcycle is sufficient, and costs less to operate.

Sometimes we hear mobile teams complain that the people do not seem to want to come and do not appreciate them, while other mobile teams are so busy they must work late into the afternoon. What makes a mobile team successful?

COMPONENTS OF A SUCCESSFUL MOBILE TEAM

- CONTACT WITH THE TOWN—Before the visits begin, **were the chief and elders contacted?** Did they talk it over with the people in a town meeting to decide if they wanted mobile visits?
- TIME OF ARRIVAL—Most people want to go to their farms early in the morning. If the team does not arrive until 10 or 11 a.m., the people will likely not be there. It is **best for the team to arrive before 8 a.m.**
- FREQUENCY OF VISITS—i.e., **coming very regularly**, such as every four weeks on a predetermined day—**If you miss a visit, the people who waited for you will get discouraged** and may not wait for you the next time.
- STAFF ATTITUDE—**If staff members have a pleasant attitude and seem really concerned** about helping the people and **do not scold them or make them feel ashamed**, the **people will be happy and enjoy the mobile visit.**
- A VILLAGE HEALTH VOLUNTEER—If there is a village health volunteer in the town who is reminding the people and helping to organize the mobile team visit, many more people usually attend.

Although mobile teams are expensive, they are very good for supervision, vaccinating, MCH, and preventive care. They can be a very valuable part of the health care with careful scheduling and attention to the things that make them successful.

Chapter Five—Community Health and Preventive Medicine

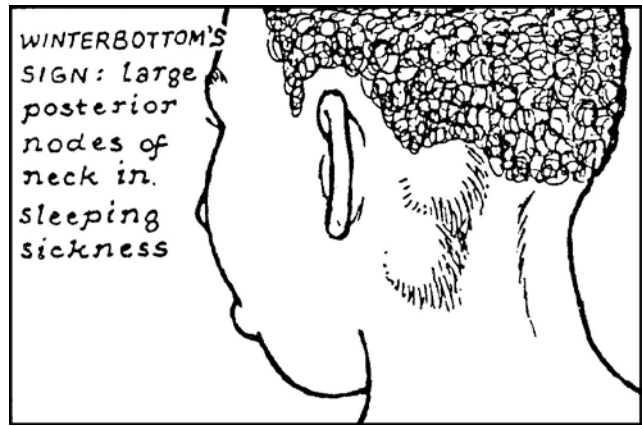
Use this page for additional notes on Mental Health, Mobile Teams, and Disease Surveillance.

DISEASE SURVEILLANCE

By M. Swamy, M.D. and P. Mertens, M.D.

It is the duty of the health worker to always be looking for an outbreak of certain serious illnesses or the development of a number of cases of certain more common illnesses. When these occur, they must be reported immediately to the county health officer and statistician for forwarding to Preventive Medical Services so that measures can be taken to protect the public and stop the spread of disease. **We call watching for such illnesses disease surveillance.** Conditions that should be reported immediately are:

- MEASLES—When cases start to occur (not every individual case in the middle of an epidemic)
- CHOLERA
- MENINGITIS
- MONKEY POX
- LASSA FEVER
- Actual YELLOW FEVER (Not common “yellow jaundice” from infectious hepatitis which everyone calls “yellow fever”)
- RABIES
- SLEEPING SICKNESS



Remember, we do not mean that other illnesses should not be reported—all conditions seen should be reported in the monthly statistics—but these conditions should be reported immediately. Add any others to this list which MOHSW designates.

How do we diagnose these important illnesses? A number of these conditions are not easy to correctly identify in the clinic or health center, or even in the county hospital. Just the same, there are certain things you should know about and always remember which will help you to suspect some of these conditions and not miss them.

MEASLES

This is an easy condition to recognize and no health worker should miss it. However, before the rash breaks out some health workers who forget to look in the mouth for Koplik's spots do confuse it with developing pneumonia. If you are doing your part in the Expanded Program of Immunizations (EPI), measles should not occur often in your area. With correct storage and handling of vaccine and giving it to any child not previously vaccinated between the ages of 9 months and 3 years measles can be prevented. To do this you must vaccinate in each town in your area every 3 to 4 months. If a few cases do start in your area, immediate vaccination of those children not yet vaccinated may prevent an actual epidemic.

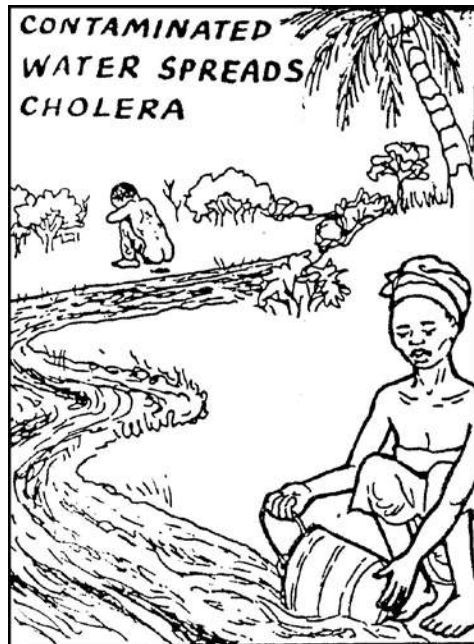
CHOLERA

Many different kinds of diarrhea can cause dehydration, and some can cause dehydration very rapidly. But cholera makes a habit of rapidly causing dehydration. Therefore, you should suspect cholera and immediately notify the County Medical Director whenever a patient has:

DEHYDRATION THAT OCCURRED IN LESS THAN 1 DAY, WHICH WAS CAUSED BY SEVERE WATERY DIARRHEA-- TREAT as CHOLERA

The final diagnosis is for a hospital laboratory to make. Start IV rehydration **immediately** and send the patient to a health center or hospital where he can have 24-hour care and as much IV fluid as he may require. See page 11–19 and page 58. Seeing two or more such cases in the same week in a village makes the chance greater that the cause is actually cholera.

Cholera is usually spread by contaminated water. Advise boiling of all drinking water to prevent further spread. If cholera is actually discovered by the laboratory, the personnel investigating the outbreak may collect water samples for laboratory studies, and may attempt to destroy bacteria in wells with sodium hypochlorite.



MENINGITIS

All cases of meningitis are medical emergencies (see page 91) and must be sent to the hospital immediately after initial treatment. This, of course, will notify the doctor, but he should also be notified of any suspected cases that die in town. Although most meningitis is not spread from person to person, those cases caused by the meningococcus are contagious and can cause epidemics.

MONKEY POX

This is an unusual illness resembling smallpox that hunters occasionally get from sick monkeys they have killed. It is known to occur in Liberia. If a hunter or his family develops a pox that seems too severe for chicken pox and has more lesions on the face and arms than on the body, notify the County Health Officer immediately of the possibility of a case of monkey pox. Isolate the patient while waiting for medical investigation.

LASSA FEVER

This illness is usually caught from a certain kind of rat known as *mastomys natalensis*. Sometimes it may be caught from a sick person, although most cases fortunately are not highly contagious. It is usually not recognized, but most often wrongly diagnosed as: 1) Resistant malaria when the fever does not go down with antimalarials, 2)

Influenza, 3) Typhoid, or even 4) Yellow Fever. There are different degrees of illness—a few cases are very mild, while others are moderate or severe. The illness usually begins with mild chills and some fever and gradually becomes worse over 3–4 days with the development of other symptoms. The cases that are not so severe may not show all of the classical symptoms and may be sick for only a week or a little longer. The more severe cases usually have fever for about 2 weeks and develop most of the classical symptoms. These symptoms in moderate or severe cases are listed in the box below.

Symptoms of Lassa Fever	
<p>The six common symptoms in moderate-to-severe cases (in <u>addition</u> to fever)</p> <ol style="list-style-type: none"> 1) Headache 2) Sore throat (may be red and have exudate) 3) Muscle pains 4) Nausea (and vomiting) 5) Diarrhea 6) Ringing of the ears 	<p>Less common symptoms in severe cases</p> <ol style="list-style-type: none"> 1) Cough 2) Critical cases may begin to bleed from the stomach, rectum & injection sites (a very bad sign) 3) Chest pain 4) Mild edema of the face and neck 5) A few develop loss of hearing in one or both ears 6) Mild skin rash (maybe in 2 of 10 patients) lasting a few days

WHENEVER A PATIENT HAS FEVER LASTING MORE THAN 1 WEEK, WITH ANY OF THE OTHER SYMPTOMS LISTED ABOVE, WHICH DOES NOT RESPOND TO CAMOQUINE + ARTESUNATE, QUININE, OR AMOXICILLIN, AND IF THE THROAT IS ALSO SORE, SUSPECT THE POSSIBILITY OF LASSA FEVER—SEND THE PATIENT TO THE HOSPITAL.

NOTES FOR HOSPITAL OR HEALTH CENTER STAFF:

- 1) Laboratory diagnosis of Lassa Fever using **antibody titers** is now possible in Liberia through the Liberian Institute of Biological Research (LIBR). A tube of whole blood, packed in ice, can be sent directly to them, or arrangements can be made with MOHSW to receive the blood by plane. A second convalescent sample should be sent 2 weeks later if the first was drawn during the illness.
- 2) Isolate the patient. Staff members do not catch Lassa Fever when good isolation technique with universal precautions is followed.

The room should have screened open windows for ventilation.

Staff should be extremely careful not to stick themselves with needles used for the patient. Disinfect all instruments by autoclaving or soaking in chlorox (sodium hypochlorite).

Handle stool and urine with care, both in emptying bedpans and in examining laboratory samples (always use gloves).

Relatives may bring food to the patient but must not share food or eat with the patient.

Use gloves, or wash hands well after handling the patient.

Sterilize all objects, including dishes and spoons, bedpans, bed linens, etc. by autoclaving or soaking for 20 min. in a chlorox solution (50 cc of chlorox in 1,000 cc of water.)

-
- 3) With good supportive care 80 to 90% of Lassa fever patients survive. Ribavirin is helpful. Convalescent serum (drawn 6 mo. or more after recovery) may be of value if given early (during the first week of illness). It may even be **harmful if given later**.
-

YELLOW FEVER

Real Yellow Fever is a viral illness carried by certain kinds of mosquitoes. Many cases are mild, and after having fever for about a week, improve without becoming jaundiced. Often the moderately-high fever decreases after a few days, but then increases again (“Saddle-back” fever). Cases sick enough to die may develop gastrointestinal bleeding causing black stools and black vomitus. A tube of blood from such a critically ill patient does not want to clot. Both mild and severe cases develop general viral symptoms (headache, backache, nausea, and vomiting). Some patients also become jaundiced.

Of course, whenever you have a patient critically ill with fever, send him to the hospital. It becomes the doctor’s responsibility to make the diagnosis. But if a patient dies from fever in the town with signs of bleeding, such as black stool or black vomitus, think of Yellow Fever. Obtain a blood sample if possible and refrigerate it and notify the doctor immediately. If Yellow Fever is proven the whole area will need to be vaccinated. **Remember to vaccinate routinely for Yellow Fever to prevent outbreaks.**

SLEEPING SICKNESS

Cases have been rare the last few decades in Liberia. Refer all suspected cases immediately to the hospital, and report them to the county health officer. For symptoms and diagnosis see Sleeping Sickness in the chapter on parasites, page 49.

RABIES

This viral illness is transmitted by the bite of a sick animal acting crazy (usually a sick dog who is growling and snapping at people, but sometimes a wild animal or bat). The human incubation period is usually 21 days to 2 months, although a few cases have developed within 2 weeks and others 6 or 7 months after the bite. If a human being develops rabies, he always dies.

Prevention

Since rabies is always fatal if it develops, preventing it from developing is absolutely necessary. There are 2 steps to prevention:

- Whenever a bite occurs, wash the wound immediately and scrub it with soap and water. Then apply alcohol (or better, an iodine-containing antiseptic—tincture of iodine, betadine or povidone). This removes and kills virus.

- Note that not only dogs, but also other animals can develop rabies and spread it by biting.
- Next, decide if the person needs vaccine and what to do about the animal, as shown below on the next page:

Situation—contact with a biting animal or an animal acting crazy	What to Do to the Animal	What to Do for the Person
1. Animal acting rabid (acting crazy). Person handled the animal, but was not bitten or licked on an open scratch or wound.	Kill the animal*	The person is safe! No prevention is needed.
2. Animal acting rabid. The animal licked the person but not on any scratch or wound.	Kill the animal* Wash off the lick	The person is safe! No prevention is needed.
3. Animal acting rabid. The person was not bitten but was licked on an open wound, scratch, or mucous membrane.	Kill the animal*	Start cleansing (preferably with povidone)--obtain and start vaccine immediately.
4. Animal acting rabid (growling and snapping at people). The person has been bitten .	Kill the animal*	Start cleansing--obtain and start vaccine immediately.
5. A bite occurs but the animal runs and cannot be found, and it is not known if the animal is rabid.	Have someone look for the animal	Start cleansing--obtain and start vaccine immediately to be safe!
6. A bite occurs but the animal seems healthy and has reason to bite (such as the bite of a mother dog with puppies, or the bite of a watchdog guarding a home).	Tie up the animal and watch it for 10 days (if still well then, no problem)	Clean the wound but start the vaccine only if the animal starts to become ill or dies within 10 days.

***NOTE:** The **usual recommendation** is to tie up and **observe** all animals that have bitten someone. If the animal does not die in 10 days, it cannot have rabies. **However, in the village it is difficult to catch an animal acting suspicious without someone else being bitten;** also the animals are often not tied properly, resulting in more bites. Killing the animal immediately is **safer**. Usual recommendations are also to send the animal's brain immediately for examination. However, packing the head in ice and sending it to JFK Pathology in Monrovia quickly is often not possible.

The best vaccine is the **human diploid** rabies vaccine. Give it in one of 2 ways:

1. **Four doses of 1 cc** given SC are sufficient—on days 0, 3, 7, and 15 (**recommended**). Follow this recommendation if possible. It is expensive but life-saving! Even if the person has not come immediately after the bite, vaccine should be started as soon as possible as long as the person has not developed signs of rabies.
2. Or give four doses of only 0.1 cc of human diploid vaccine ID (intradermally like PPD) in 4 different sites—both deltoids and both anterior thighs—all on the first day only (no other doses of vaccine later). This also protected patients bitten by rabid dogs in Zorzor (Dr. Monson's report). **Not recommended** but can be used if there is insufficient vaccine for 4 doses of 1 cc.

Symptoms of Human Rabies

The person developing rabies usually has headache, vomiting, fever, and a rather stiff neck and soon becomes very restless and later mentally confused. The muscles for swallowing often go into severe spasms when he tries to drink or even sees water. Later he develops convulsions and dies, usually within 4 to 7 days of onset.

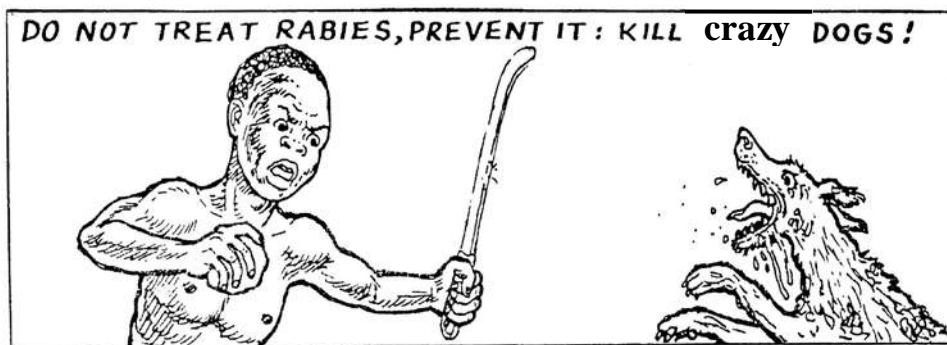
Diagnose rabies in any patient with fever, restlessness, and spasm of the muscles of the throat when trying to swallow water who was bitten by an animal that died or escaped 10 days to 7 months in the past. Send the patient to the hospital, for the doctor to confirm the diagnosis and for care. If he actually has rabies he will not survive.

Rabies Control

- All **dogs acting crazy** should be **killed** (acting abnormally--growling and snapping at people and other animals). Often the rabid dog is a stray dog who no longer knows where he belongs or what he is doing. Bites from such dogs (and bites from pet dogs bitten by them and developing rabies) are the most frequent cause of humans developing rabies in Liberia.
- Ideally all pet dogs should be given canine rabies vaccine to prevent them developing rabies if bitten—2 doses one month apart the first year, and 1 dose yearly thereafter (or as per manufacturer’s recommendation).
- Notify the county medical director of any animals suspected of having rabies and of any bites they have caused, and quickly obtain rabies vaccine for anyone bitten . Note that other animals can also develop rabies.

1. Rabies is the world’s most fatal infection—100% die.
2. It is spread by the bites of infected animals.
3. Immediate good washing of the bite and application of an antiseptic (preferably containing iodine) can prevent many cases.
4. Human diploid vaccine effectively prevents rabies.
5. Before they bite someone, kill dogs acting crazy (behaving abnormally, growling and snapping at people or at other dogs).
6. Be sure to vaccinate your own pets.

Prevent Rabies—it is not treatable!
Kill dogs acting crazy—biting and snapping!



In addition to these illnesses, there are chronic illnesses which the Ministry of Health is working to control, such as TB, leprosy, and schistosomiasis. Report cases to the proper control program, and also include them in your monthly statistics.

GOOD HEALTH—THE WAR ON SICKNESS THROUGH ENVIRONMENTAL SANITATION

By Raphael Kpissay, and Dennis Bella, Director, Environmental Health

Good health means being happy and having a strong body free of sickness.

Sickness can be caused by:

- Contaminated water
- Stool—sometimes from flies first walking on the stool, then on food, or stool getting into water
- Contaminated food
- Garbage and trash
- The cough of a sick person
- Dirty hands
- Mosquitoes
- Dust
- Rats

CAUSES OF SICKNESS

- GERMS—bacteria, viruses, and single-celled parasites
- WORMS in the stomach, or under the skin
- SPOILED FOOD—may cause diarrhea and vomiting
- TOO LITTLE FOOD—the person will become dry and poor. Or TOO MUCH FOOD—obese people can develop diabetes and hypertension
- THE WRONG KINDS OF FOOD—if children do not get enough body-building foods, they also become weak and dry, and in such children their legs may swell. We say they are malnourished.
- INJURIES/ACCIDENTS
- WORRY, ANXIETY—a person can worry until he becomes sick.
- Some part of the body WEARS OUT and no longer works well, such as in heart failure. This often happens in old age.



A protected spring

SOME SICKNESSES ARE EASY TO PREVENT; OTHERS ARE HARD TO PREVENT. SOME SICKNESSES ARE EASY TO TREAT; OTHERS ARE HARD TO TREAT.

- **CANCERS or TUMORS**—something growing within the person’s own body that can spread to other parts and destroy the body’s organs.

Many illnesses caused by the first three causes above—germs, worms, and spoiled food—can be easily prevented! This is the area of concern of environmental health programs. Our environment includes the air, water, soil, man, and other living things with which we come in contact.

**IT IS BETTER TO PREVENT ILLNESSES
THAN TO TREAT THEM.**

WAYS TO IMPROVE HEALTH BY IMPROVING OUR ENVIRONMENT

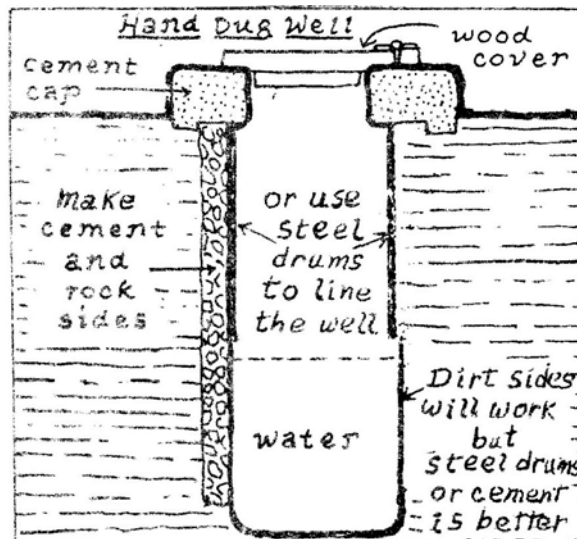
Build Safe, Clean Wells and Protect Springs for Drinking Water

A fence or cement blocks can be put around a spring to keep dirt out. Make a ditch from above the spring outside the fence down both sides to keep water on the ground from running in. **Or build a complete cement box around and over the spring. This is called a spring box.** It is somewhat expensive because of the amount of cement that is needed, but very good for keeping water safe. The health technician can show you how to build a spring box.



Safe, hand-dug wells can be built by the community or by any one person just for his family to use. The health technician for the area can show the town or any person who wants to build a well how this can be done. The well must be at least 60 feet from any toilet (150 feet is better—about half the length of a football field) and must not be dug down a hill from a toilet. It must be protected from water and dirt from the ground getting into it with a steel drum with both ends cut out or a cement cap and a cover. It is better if the sides of the well can be lined with cement and stone or steel drums, but dirt sides are all right.

Water from an open community well can be disinfected by adding chlorine in the form of bleach (Chlorox®) weekly. Ask the local environmental health technician for advice about the amount and method.

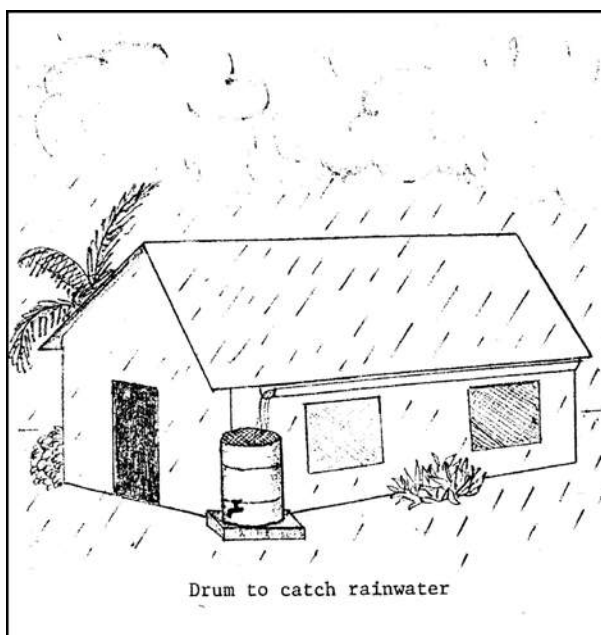


Another way to get clean water is to collect rain water in a steel drum or other container. The drum should have a screen over it to keep out leaves, dirt, and insects.

The tank or drum must be emptied and cleaned regularly especially at the beginning of the rainy season. Draw the water through a tap—a local plumber or environmental health technician can install it. Filtering the rainwater after drawing it further increases its safety. **(Do not drink rain water collected from asbestos-cement roofs [asbestos can cause mesothelioma malignancies], but water from corrugated zinc roofs is fine.)**

Diseases Spread by Dirty Water Include:	
Diarrhea	Polio
Typhoid Fever	Cholera
Yellow Jaundice	Dysentery

Use a clean bucket to dip or draw the water from the good well, spring box, protected spring, or drum for collecting rain water. After getting clean and safe water, keep it in a clean bucket or barrel with a cover to keep out dust and dirt. Use a clean dipper cup to take it out of the bucket—not the cup from which someone is drinking.



Boiling will make water from any source safe for drinking. Experience has shown most people do not want to take time or use firewood to boil their water.

Waste Management

Waste is defined as anything not wanted such as materials thrown away by humans from cooking, weaving, building, etc. Examples of wastes are:

- GARBAGE—wastes from food
- RUBBISH—scrap papers, tin cans, empty bottles, etc.
- STREET WASTE—leaves, dirt, dead animals, etc.

DISPOSAL of waste can be done satisfactorily in different ways:

- **Burying waste** is a very good method. It does require community cooperation to dig a deep hole for the purpose.

Flies can be kept away from the waste by building a wood cover for the hole. When the hole fills up, a new hole will need to be dug.

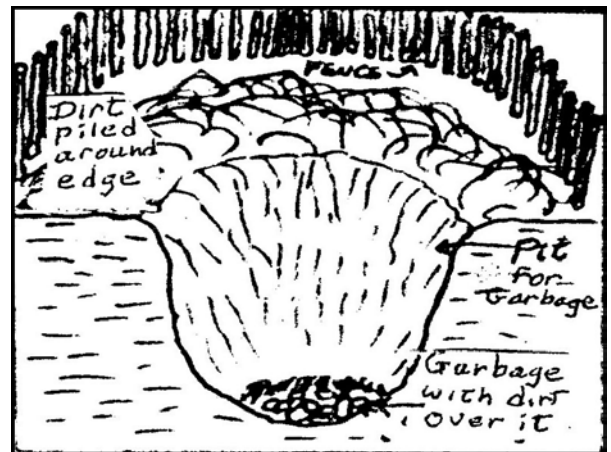


- A second way to bury the waste is to pile the dirt from the hole around the edges, and throw some of the dirt over the waste each time it is dumped in the hole instead of building a wood cover.

- Some waste can also be **burned**, such as paper or leaves.

- **Dumping** (simply throwing waste away in an open place on the ground) is not satisfactory but better than leaving the waste on

the ground in the town if the place selected is away from the town and not near a stream or well. But try to discourage open dumping and encourage the people to bury waste instead.



ENCOURAGE THE COMMUNITY TO KEEP THE TOWN CLEAN OF WASTES.

Control Insects and Rodents

Roaches

Roaches can carry bacteria on their feet from garbage to food, but do not otherwise transmit disease. They feed on garbage or food left out. They can be discouraged by keeping food covered or in a screened box and keeping food areas free of garbage.

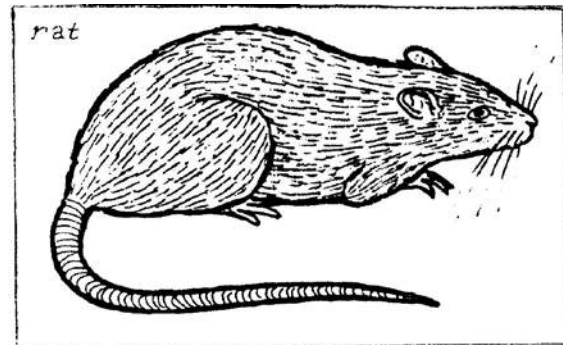


Flies

Flies carry bacteria from stool on their feet to food, especially bacillary dysentery. They breed in stool or rotting garbage. Building latrines and garbage pits with covered holes reduces the number of flies. Screening of doors and windows helps keep them out of the house. Keep them away from food by storing the food in covered containers or in screened boxes.

Rats

Rats carry a number of serious diseases and destroy much food. They can be partially controlled by blocking passageways and by storing food in containers or in rooms protected by heavy screens. Trapping rats helps to reduce their numbers, and a cat will discourage and kill rats and mice.



Mosquitoes

Prevent sickness carried by mosquito bites by draining standing water so mosquitoes do not grow, and **using long-acting-insecticide-treated bed nets and screens**. Mosquitoes lay eggs in water in old tin cans, water puddles, etc. The eggs hatch and grow into more mosquitoes. Digging ditches to drain standing water and emptying water from old tin cans, then throwing them into a trash pit and covering them with dirt, will prevent some mosquitoes from growing. Screen houses to keep out mosquitoes.

SOME SICKNESSES THAT MOSQUITOES CARRY ARE:

- Malaria
- Elephantiasis
- Yellow Fever
- Dengue

When a mosquito bites someone with certain illnesses, it can carry those illnesses to someone it bites later. The main illness that mosquitoes carry is malaria. **Sleeping under a mosquito net treated with a long-lasting insecticide (LLITN) is an excellent way to prevent malaria and other illnesses carried by mosquitoes.**

Build Pit or Trench Latrines (Toilets)

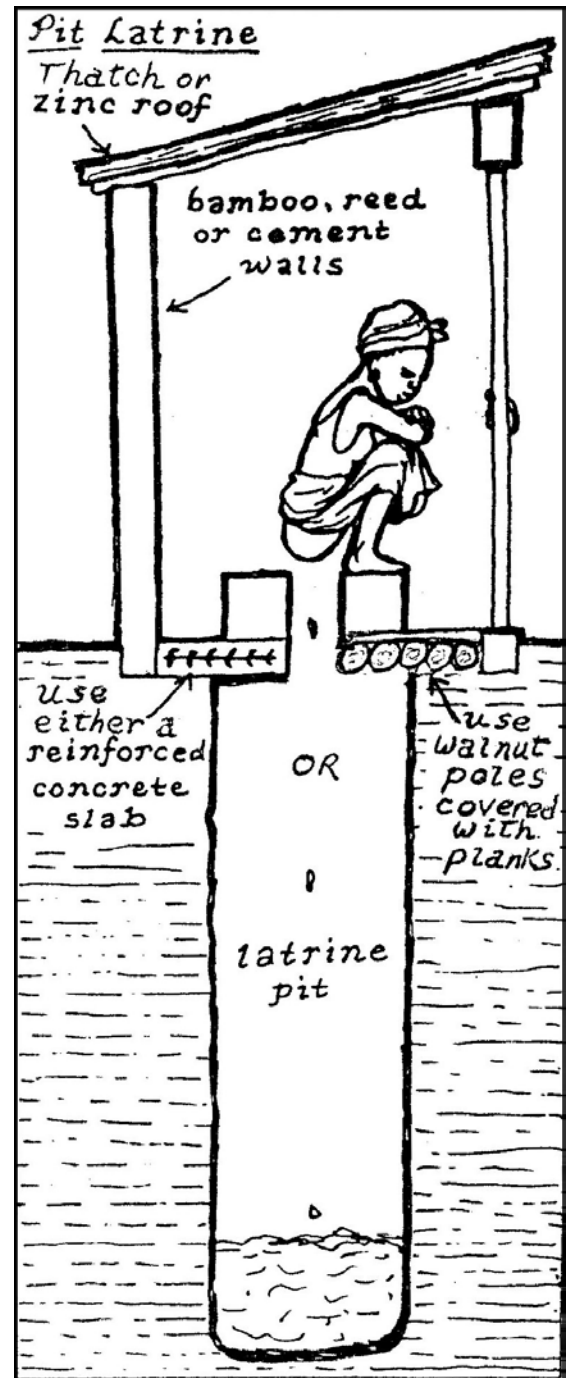
When germs from stool and urine are carried into streams or wells when it rains, people who drink the water can get sick. Worm eggs in the stool on the ground also get spread around in the dust and dirt and may cause other people to get worms. Flies can get on the stool and carry germs to food. To keep stool and urine from getting on the ground and causing sickness, the people in each town need to build and use latrines.

A pit latrine is made by digging a deep hole (at least twice as deep as a person) in the ground and putting a small house over the hole. The hole may be 3–5 feet wide. A trench latrine is made by digging a hole 2–3 feet wide and 6–7 feet long so that 2 separate toilets, side-by-side, (one for male and one for female) can be built over it. It must be far from a well or stream (at least 60–100 feet), and as far away as half a football field (150 feet) if the ground is sandy. It must not be built up a hill from a well.

Materials Needed

- A shovel
- Walnut poles for the cover
- Strong cross-sticks or planks to put over the walnut poles for the cover
- Wood for rafters
- Zinc or thatch for the roof
- Mud blocks or zinc for the walls, or mud-and-stick walls
- Nails

A door and paint can be added if you wish.



Building the Latrine

1. Dig the hole.
2. Make the wood cover to go over the hole. Make it as described below:
 - a. Lay the strong walnut poles over the hole. Be sure they are at least one foot wider on each side than the hole. Remember to leave a 10-12 inch space in the center for the toilet hole.
 - b. Cut your cross-sticks or planks and lay them across the strong walnut poles. Cut a hole in the center for the toilet-hole. Nail the cross-sticks to the walnut poles so the cross-sticks will not move.
 - c. To keep the flies out and reduce the smell, make a cover for the toilet-hole in the center of the planks out of wood and put a handle on it.
3. Build the walls of the latrine with mud-and-stick, mud block, reed, or stick-and-zinc. Adding a door is a good idea so people cannot see in, but a fence in front can also be used.
4. Put up the roof poles and add the zinc or thatch.
5. If the ground is too sandy, it is good to take an old drum, cut out both ends, and put it in the top of the hole for a single latrine to keep the dirt on the sides from falling in.

Taking Care of the Pit Latrine

- Keep the area around your latrine clean and free from weeds.
- Keep the inside of your latrine clean. Wash the floor often.
- Put the tight cover you made over the hole of the latrine when no one is using it to keep flies out and to reduce the odor.
- Teach children and others who do not know latrines how to use it.
- Teach those using the latrine not to throw bottles, tin cans, rocks, or sticks into the latrine. Human waste decays in a few weeks and the fluid escapes into the ground, but bottles and cans only fill the latrine up and make it necessary to dig a new latrine soon.

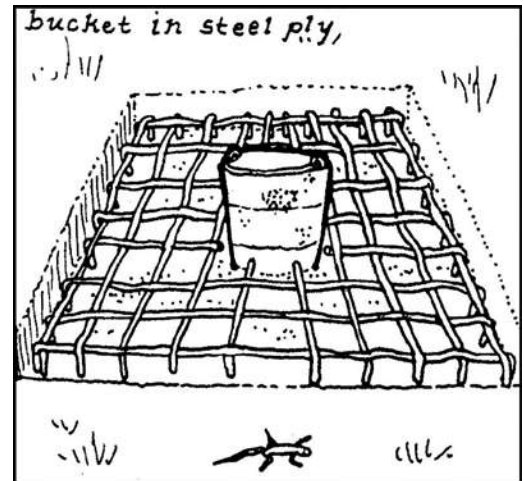
**IF EVERYONE USED PIT LATRINES,
PEOPLE WOULD NOT GET MOST WORMS,
WE WOULD HAVE MUCH LESS RUNNY STOMACH AND DYSENTERY,
PEOPLE WOULD CATCH LESS TYPHOID AND YELLOW JAUNDICE,
LESS CHILDREN WOULD DIE, AND
THE COMMUNITY WOULD BE HEALTHIER.**



For someone who can afford to buy cement and steel rod, a stronger floor can be made for a latrine that will not rot and can be moved if the latrine hole fills up and a new hole must be dug.

You will need:

- Cement
- Hoe
- Small bucket with rope
- Sand
- Tie wire
- ¼ inch steel rod



How to make the cement slab for the floor:

1. Dig a shallow hole about 3–4 inches deep and wide enough to overlap the latrine hole by at least one foot on each side.
2. Make sure the bottom is level and smooth.
3. Cut the steel rods and lay them in the hole and cross and tie them as shown here.
4. Put an old bucket in the center of the steel ply in the hole. Then mix 1 part of cement, 2 parts of sand, and 3 parts of gravel with water, and pour it in the hole covering the rods. Remove the old bucket slowly after 20 minutes. Let the cement become hard for 2 days, then move it over the hole that you dug for the latrine.

Prevent Hookworm infestations

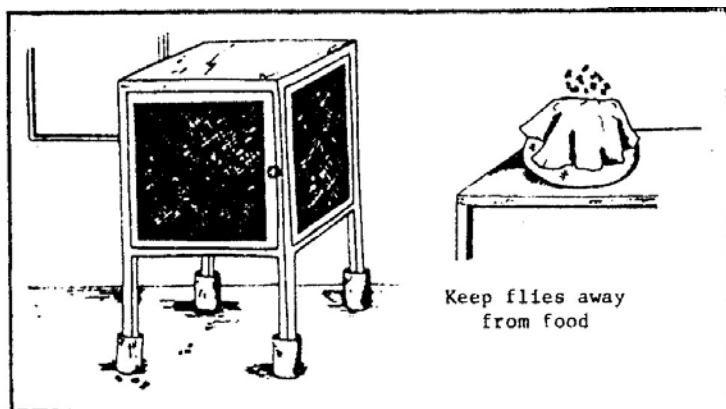
Because not everyone uses latrines, wear shoes or slippers to help prevent hookworm. Small hookworms hatched from eggs passed in the stool live in the ground. When a bare foot is on the ground, they attach to the foot and crawl through the skin into the body and suck your blood.

Take Care of Food

Cover food to keep off flies. Flies often land on stool and waste. They carry germs from the stool on their feet to the food they land on. Keep food covered.

**WASH YOUR HANDS BEFORE HANDLING FOOD.
USE CLEAN DISHES AND SPOONS.**

Do not let food remain long enough to spoil or become sour. Spoiled food will cause sickness. If food cooked for supper sleeps overnight, eat it soon the next morning.



Use this blank page for additional notes.

THE ROLE OF CLINIC STAFF IN THE PRIMARY HEALTH CARE PROGRAM

Adapted from Dr. Regina Cooper, Maryland Village Health Worker Program

One of the most important duties of middle level health personnel is to assist with the program of primary health care (PHC). This includes:

- **Helping to introduce the PHC program to the villages (mobilizing)**
- **Assisting with the training of the community health volunteers**
- **Supervising the community health volunteers**

Health personnel must therefore be well-acquainted with the PHC program and understand the duties of the community health committees (CHCs) and community health volunteers (CHVs).

THE PRIMARY HEALTH CARE PROGRAM

The main purpose of our national health care delivery system is to provide better health for all the people, but especially for the poor both in the city and rural areas.

To do this, the government has built a network of hospitals, rural health centers, and clinics and trained personnel to staff them. These health facilities have cured many people, but have not done much to prevent illness and improve health in the villages. Improving health in the villages requires persuading the people in each village to help themselves through:

- Developing safe water sources and good latrines
- Growing more food, and feeding children properly
- Breastfeeding for 2–3 years
- Cooperating in getting all the children correctly vaccinated
- Knowing how to make salt-sugar solution for diarrhea
- Having simple health care available in the village for common health problems
- Working to improve the economy and education of the village

It is hard for a clinic staff to actually accomplish these things because:

- They are limited in numbers and unable to do this for all of the many towns around them.
- They are often too busy taking care of the sick at the clinic
- Often they are not correctly trained

Therefore, Liberia has adopted a Primary Health Care (PHC) approach to accomplish these necessary tasks to improve village health.

What Is Primary Health Care?

PHC is health care that depends upon all the people in the community working together to:

- Identify the health problems of the community.
- Decide which problems are most important to work on first.
- Make good plans to solve these health problems.

It is health care available to all the people in each community. Most of the effort is toward preventing illness and improving health in the community instead of treating illnesses.

It is carried out by the community itself through their own Community Health Volunteer (CHV) and Community Health Committee (CHC), with support from the Ministry of Health and Social Welfare (MOHSW) through the personnel in the health facilities.

It does not consider health as a separate thing. Rather, it looks at it as part of the total needs of the community, which include such needs as agriculture, education, communications, roads, etc.—all of which effect health, and brings all of the activities together to work for general development.

It encourages immediate action in all villages, using the simple things that the people already have to solve the village's problems, especially the health problems.

Illustration of PHC in Action

A village that identifies diarrhea as its biggest health problem learns that it is caused by contaminated drinking water. The village decides as first action to clean and fence in the place around the spring where people get their drinking water, and then to build wells, which they dig later with help from the National Health Service.



Roles of the Community Health Committee and Community Health Volunteer

For a community to have a good PHC program, the people must come together to select a Community Health Committee and a Community Health Volunteer. The CHC and CHV will be trained for their work by the clinic staff and personnel from the county hospital community health department.

Main Tasks of the Community Health Committee (CHC)

- To be the link between the community and the MOHSW and other health and development agencies.
- To discuss with the people of the community the health problems and the plans to solve them, and to evaluate the results of the community's actions.
- To organize and encourage community action, and to help the community collect the things it needs for such actions.
- To control the activities and the working materials of the CHV.
- To support the CHV where necessary.

Main Tasks of the Community Health Volunteer (CHV)

- To be the direct link between the people of the community and the personnel in the nearest clinic.
- To give health education on nutrition, maternal and child health, personal and environmental hygiene, etc., and to demonstrate these through his/her own family.
- To be able to advise the village health committee and community concerning health problems.
- To prepare the villagers for and to assist teams for Maternal-Child Health (MCH) as well as vaccinating teams, and TB and leprosy control personnel and environmental health technicians when they come to the village.
- To give simple treatment for common illnesses and to refer serious cases, and to make home visits to high-risk cases.
- To assist the CHC and the community with community actions.

Clinic Personnel Develop Primary Health Care (PHC)

It is very unlikely that a community will develop a health care system such as this all by itself. **Normally, PHC has to be introduced to the village by the members of the clinic staff.**

There are four steps in introducing and developing PHC to a community:

- | | | | |
|---|---|--|--|
| 1.
Develop friendship between the clinic workers and the community. | 2.
Start talking about health problems between the village and clinic staff, and among the villagers. | 3.
Actions by the community, supported from outside when needed. | 4.
Improvements that are accomplished, and evaluation of the improvements. |
|---|---|--|--|

STEP 1: DEVELOP A FRIENDSHIP WITH THE COMMUNITY—In addition to the relationship between the clinic workers and individual patients, for PHC to develop, the clinic staff must cultivate friendship with and gain the confidence of the community before they can explain the concept of PHC and the need for a CHC and CHV. To really develop such mutual trust with the community the health workers must:

- Visit the village regularly and frequently.
- Understand and respect the tradition and wishes of the community and gain their respect.

STEP 2: START DISCUSSIONS WITH THE COMMUNITY—No worthwhile discussion with real exchange of opinions and wishes will ever occur unless there is mutual trust. Through such discussions the community should be convinced that:

- Each individual is first of all responsible for his own health.
- Each community is first of all responsible for the community's own health.
- Health problems can only be solved when the whole community works together to improve health and prevent disease, not just by trying to cure illness.
- The only way the whole community can work together is by organizing itself (in committees, women's groups, etc.). The community choosing a community health committee and a community health volunteer are very important steps.

The role of the clinic worker in the discussions is to:

- Help the community, by asking questions, to define its own solutions.
- Help the community, by asking questions, to decide which problems are most important and which they should try to solve first.
- Encourage the people in the community to discuss their problems among themselves.
- Encourage the community to take action, and then assist it when needed.
- Carefully consider his or her own opinions and the community's opinions about which problems are the most important during the discussions. The health worker should not force his or her own opinions upon the community.



STEP 3: ACTIONS BY THE COMMUNITY—As a result of the discussions the community should make a plan for action and learn how to carry it out successfully. Often the plan is developed by the community health committee (which the town has appointed) in consultation with the clinic worker and after discussions with the people of the town, and meetings of all the townspeople with the CHC. The plan should include:

- What to do, and why should they do it.
- What is needed from the community and what from outside.
- Who will do each step, and exactly what will he or they do.
- In what order will each step be done.
- When will it start.

The action that is taken as a result should be according to what is practical and realistic to do at the moment.

The physician assistant, health technician or other clinic worker should identify himself with and encourage any action that the community feels is important and that leads toward development, such as digging a well, construction of a school, starting gardens, making cloth, learning to read, etc.

STEP 4: EVALUATING THE IMPROVEMENTS—The best way to evaluate the improvements is to get the community to discuss them, and for themselves to identify the successes and failures and their causes.

Each evaluation of success or failure should lead the community to develop new plans, and encourage them to go on or to start again in a better way. This means that the community's evaluation leads to more community discussion, which leads to more community action, which will lead to further community evaluations, etc.

VILLAGE SUPERVISION IN PHC:	1) CONTACT 2) DISCUSSION 3) ACTION 4) EVALUATION
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In other words, to develop PHC, the clinic worker must be doing village supervision. For successful village supervision, the clinic worker should:

- Take time, feel at ease, and make others feel at ease.
- Try to stay overnight sometimes in the village.
- Remember that village supervision is much more than simply being friendly, drinking cane juice, and making reports.

SUPERVISION OF THE COMMUNITY HEALTH VOLUNTEER (CHV)

The physician assistant or other health worker is responsible for the supervision of the CHVs. Presently a nurse assistant makes frequent visits, but the P.A. should also make visits. Supervisory visits are very important. Without them, the CHVs begin to feel no one is concerned with them or their difficulties, and soon problems begin to develop. To make good supervisory visits, it is important to understand what a supervisor should be trying to accomplish on such visits, and to know the steps he must take. These steps are:

- Make out a supervision schedule for each month. Try to supervise each CHV monthly.
- Try for the same schedule every month—
 - Example: (PA in Zolowo with 3 CHVs to supervise)
 - *Newtown CHV* 1st Thursday each month in the morning
 - *Gbongyee CHV* 2nd Thursday
 - *Fassama CHV* 3rd Thursday
- Keep the schedule and be on time.
- Remember that you have come to teach and to help—not to criticize or to give the person a hard time.
- As you do your supervision, check the correct boxes and write comments on your supervisor's checklist (see the list on pg. 356 - 357).
- Review the records:
 - What kinds of illnesses is the CHV seeing?
 - Is the CHV doing well in correctly diagnosing simple conditions? Do not be critical if he or she is not doing too well—just teach the CHV how to do better.
 - How many patients were seen last month? How many births and how many deaths last month?
- The present health plan calls for no fees. If fees are started again, ask how much money was collected last month.



- Ask the CHV about high risk persons or groups, such as babies and pregnant women. Did the CHV make home visits? What did he or she talk about while doing these visits?
- Review patient problems—Ask the CHV if some illnesses or treatments gave him or her problems. See some problem patients with the CHV if possible. Use the problem patients to teach about how to correctly diagnose and treat these problem conditions, and when to refer a patient to the clinic.
- If a problem patient is also a problem to you, and you are not certain what the patient has, refer the patient to the doctor. Give demonstrations in treating patients during your presence. Use only the few drugs which the CHV also has. (Do not take injections with you into the village).
- Listen to the health worker’s problems and discuss them:
 - Does the CHV have any personal problems?
 - Supply problems?
 - Equipment and building problems?
 - Any problems between the health volunteer and townspeople?
 - Any problems between him or her and the CHC?
- Ask the CHV about community actions taken and his or her idea about the reasons for success or failure.
- Compliment the volunteer whenever possible. Encourage him or her. Do not criticize or scold. Correct problems with tact.
- Give “continuous” education, using the CHV training curriculum as a guide.
- Review community health activities and progress—
 - Has anything been done to make water more safe to drink?
 - Have any new good wells been constructed?
 - Have any new latrines been built?
 - How is garbage being disposed of?
 - Has the CHV given any instruction on making sugar-salt solution for diarrhea this month?
- Somewhere during your discussion find a situation that gives you an opportunity to do some health teaching—not as a lecture, but as a natural part of the conversation.
- When restocking drug funds (RFDs) are started again, check the fund:
 - Do an inventory to check the drugs on hand.
 - Count the cash on hand.
 - Check the receipts for money turned over to the CHC.
 - Fill in the RDF summary in the back of the guide or handbook in addition to the checklist.

- Complete, together with the health volunteer, the report of the past month. Take time for the diagnosis of deaths, especially of children and mothers. **Do not accept “unknown”**— at least get a description of the death, such as: “Fever and severe cough x 5 days—probable pneumonia.”

SUPERVISION OF THE COMMUNITY HEALTH (OR DEVELOPMENT) COMMITTEE

Meet with the CHC:

- Start with a general discussion about what has been happening in the town during the last month. Was the month good or bad? Did any special things happen? Maybe you already know some news that they have not heard yet. Do not start directly with the problems.
- If necessary lead the discussion in a direction to gain more information. Then, discuss the problems which the CHV may have mentioned to you.
- Bring the discussion around to evaluating community action. Why was there progress or why not? Don't blame anyone for failures, but encourage the committee.
- Are there new problems or new plans? Analyze them together by asking questions. Try to help them make good plans by discussion.

INSPECTION OF THE TOWN

Walk about town to see for yourself what is happening. Whenever possible, this should be done together with the CHC and CHV.

- Is the environment in the town clean?
- How is the water source? If a pump has been installed, is it working?
- Look at what has been accomplished by community action, and what is being done at the present.
- Are the houses in good repair and clean? What about the bath houses?
- How many latrines are there in the town? Are new ones being built? Are they actually being used?
- What is being done for garbage disposal?
- Enter some houses. Speak to some women. Visit some high-risk patients that you know about, or ask about them from their families.
- Visit the midwife, school, country doctor and others if possible.

FINISH the CHECKLIST REPORT

Remember to use the back of the form, if the space on the front is too small.

- Evaluate the health worker.
- Write your recommendations on the back of the checklist.
- Discuss the outcome of your visit with the CHV. Explain your evaluation and recommendations to him.
- Have the health worker sign the checklist to show he has read it. You should also sign the checklist.
- File the checklist in a file folder in your clinic.
- Carry the completed checklist to the community health department at the county hospital on the next in-service continuing education day. (See the sample checklist on the next page.)

STAY OVERNIGHT

Stay overnight, at least sometimes. In the evening, visit or have a meeting with influential persons, such as the chief, elders, teacher, commissioner, etc. If you have such a meeting, discuss some of the same things you went over with the community health committee. Do not lecture. Visit instead and ask questions.

Sample Supervisory Checklist for Community Health Volunteers

TOWN _____ COUNTY _____ DATE _____

NAME(S) OF PERSONNEL 1) _____ 2) _____

CLINIC BUILDING? Yes No If a building, answer the following:

Built by town Rented Built by Govt Donated Church or NGO
 State of repair: Poor Fair Good Excellent

PATIENT RECORDS: Number seen last 30 days _____ Number referred _____

Number of: BIRTHS _____ DEATHS, <5 yr. _____ Maternal DEATHS _____ TOTAL DEATHS _____

Cases of MEASLES _____ MEASLES DEATHS? _____ (List all causes of deaths on back)

How well does he seem to diagnose and treat? Poor Fair Good

Financial Records: Income Last Month: RDF \$ _____ FFS \$ _____

RDF Cash \$ _____ Stock Value \$ _____ Total value RDF \$ _____ FFS Cash \$ _____

RDF value increasing every month? CHC issues receipts to worker?

Drug Shelf:	Appropriate Supply <input type="checkbox"/>			Drugs Same As Records Show <input type="checkbox"/>		Secure <input type="checkbox"/>
Drugs In Stock:	ACT <input type="checkbox"/>	Syrup <input type="checkbox"/>	ORS <input type="checkbox"/>	ASA <input type="checkbox"/>	Paracet. <input type="checkbox"/>	Vermox <input type="checkbox"/>
B.Benzoate <input type="checkbox"/>	Vit <input type="checkbox"/>	Syrup <input type="checkbox"/>	Fe <input type="checkbox"/>	FolicAcid <input type="checkbox"/>	Alcohol <input type="checkbox"/>	Cotton <input type="checkbox"/>

PROBLEMS:

SUGGESTIONS/SOLUTIONS

1) Personal:

2) Supply:

3) Equip. and/or Bldg.:

4) With town:

5) With CHC:

COMMUNITY HEALTH:

Total good wells _____ Total good latrines _____ Health talks
 New wells this mo. _____ New latrines this mo. _____ given this mo. _____
 Other health activities:

COMMUNITY HEALTH COMMITTEE: Monthly meeting Community meetings

Is CHC supervising Revolving Drug Fund? Yes No

Comments by CHC:

FINDINGS ON WALK ABOUT TOWN:




EVALUATION: Poor Fair Good Excellent

RECOMMENDATIONS: Write them on the back of this page

Signature of Person Supervised

Supervisor's Signature

Note: The form on the previous page will fit on a 8-1/2 x 12 inch sheet, or with an 8-1/2 x 11 inch sheet. Information that might not fit on the front, such as descriptions of problems, etc., can be written on the back.

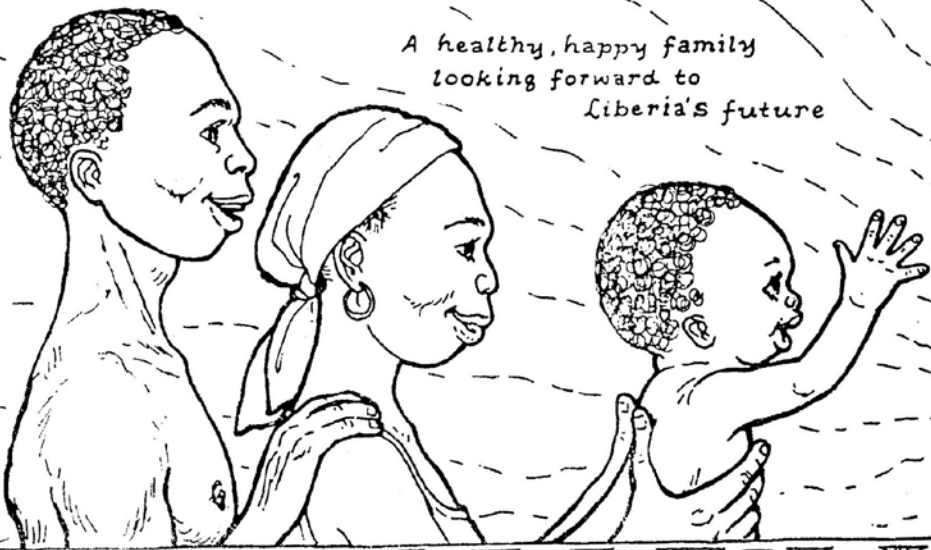


~ remember ~

*Primary Health Care can improve the Health of
the Community but Primary Health Care takes
much Work and Dedication.*

WE PLACED THIS SECTION LAST
NOT BECAUSE IT IS LESS IMPORTANT
(IN FACT, IT IS VERY HIGHLY IMPORTANT)
BUT
BECAUSE WE WANT YOU NEVER TO FORGET IT
AND TO CONTINUE THINKING ABOUT
THE IMPORTANCE OF PRIMARY HEALTH CARE
WHEN YOU LAY DOWN THIS BOOK

A healthy, happy family
looking forward to
Liberia's future



INSTRUCTIONS FOR USING THE CARDS FOR DIAGNOSIS AND TREATMENT

The 5 double-sided cards summarize the most common symptoms for which patients come for treatment. The symptoms are grouped under body systems. Therefore when the patient gives you his complaint, decide in what system this complaint belongs, and after getting appropriate history and examining the patient, look on the card for that system. The cards are set up as follows:

- 1st White -- Side 1—Gastrointestinal complaints--Diarrhea, dysentery & vomiting
Side 2--Gastrointestinal--Constipation, distention, black stool & jaundice
- 2nd White -- Side 1--Gastrointestinal--Abdominal pain
Side 2--Extremities & low back complaints (Musculo-skeletal)
- Blue -- Side 1--Selected Emergencies--Cuts, burns, dehydration, seizures, etc.
Side 2--Fever and Cellulitis and Abscesses
- Yellow -- Side 1--Head and Central Nervous System complaints
Side 2--Skin, Urinary and Reproductive System complaints
- Red -- Side 1--Cardiovascular--Heart rate & rhythm, Anemia, B.P. & chest pain
Side 2—Respiratory System complaints

An example would be a patient coming for **cough**. This complaint is in the **respiratory system**, so you will use the **red card**, side 2. Note that coughs are divided into coughs of less than 2 weeks and more than 2 weeks, so first find out how long the patient has been coughing. Let us say he tells you he has been coughing for 4 days. Now you need to ask the appropriate questions and do the appropriate basic examinations for a cough of less than 2 weeks. This information is spelled out in the Respiratory section of chapter 3 in Handbook, but can be easily figured out from looking at the card.

The Handbook, Respiratory section, complaint of **Cough** says:

S—Ask: When did the patient start coughing?

How severe is the cough?

Is he having fever?

Coughing up sputum? What color?

Any difficulty breathing?

Any wheezing?

O--Take the temperature and respiratory rate, the BP and pulse.

Observe for difficulty breathing (dyspnea)

Listen to the chest for rales, ronchi, decreased breath sounds, wheezes or other abnormalities

The patient says he is having much fever, a severe cough, feels very ill, and breathes fast but with no difficulty. On observation his temp. is 39° C., R-36, and he has rales in his right lower posterior lung, but no dyspnea, retractions, cyanosis or flaring nostrils. Now you look at the part of the red card for cough less than 2 weeks: The only match is with number 3 under “Cough of less than 2 weeks”, so the patient has **pneumonia** and should be treated with **amoxicillin**, or **erythromycin**. (Ampicillin IV or IM every 6 to 8

Instructions for Using the Diagnosis and Treatment Sections of the Handbook

This Handbook is written for health personnel who have been trained as physician assistants, nurses or midwives, and have been taught the cause, mode of transmission, symptoms, severity, pathology, clinical findings, laboratory results, and usual treatment of most common illnesses. This Handbook does not attempt to review all that has already been taught, but concentrates on a simplified method of making the correct diagnosis and giving the proper treatment when a patient comes in with a complaint such as “cough” or “fever”.

It assumes that the clinician will have a stethoscope, sphygmomanometer, watch, thermometer, flashlight and scale for equipment, and the rapid diagnostic test (RDT) to detect falciparum malaria. (Better equipped clinics and health centers may also have additional equipment, such as a glucometer, microscope with counting chamber, hemoglobinometer and/or urine dip sticks, but the instructions do not depend on these.)

The system was developed at the Tubman National Institute of Medical Arts, and the first edition of the Handbook was produced in 1979, and those using it markedly improved their diagnostic and treatment skills. The second edition was printed shortly before the civil war in 1989. The first printing of this third edition occurred in January, 2012, and also includes the protocols for the Integrated Management of Childhood Illnesses (IMNCI), and step-by-step directions for deliveries and their complications.

The first 3 chapters of the Handbook contain the information on diagnosing and treating the more common acute illnesses and emergencies. The fourth chapter goes into more detail with diagnosing and treating eight chronic illnesses. The large fifth chapter discusses the prevention of illness, as well as not overlooking severely ill children and treating them correctly (IMCI), prenatal and maternal health care (and treatment of complications), mental health, environmental sanitation, and supervision of the community health volunteer.

It is best to attend a workshop on the use of the system for diagnosis and treatment, but it can be learned by simply studying the book. Students now at TNIMA are now being taught it in class.

The system works as described on the following pages:

Clinical Reasoning and Differential Diagnosis--To make the correct diagnosis for any complaint you must:

1. **Know the various common illnesses all of which have that symptom.** The Handbook contains such lists (there will also always be some unusual illnesses with the symptom as well, but don't feel bad if you miss an unusual illness--you will be correct 90+% of the time).
2. **Ask the necessary questions and do the needed examinations** to gain the required information to choose the correct diagnosis. For each complaint the Handbook contains:
 - The appropriate questions to ask
 - The physical exams to perform, and
 - Labs (if available) to check
3. **Know the differentiating points** to tell you which of the various conditions, all of which have this symptom, is actually causing this illness. The charts in the Handbook list the differentiating points for you to choose the correct diagnosis.

Here is an example of how this works from the Nose and Throat Complaints section in the Handbook—**assume that a patient comes in with a throat complaint, such as a sore throat.** (Note # 3, 4, 5, 6, 8, & 9 on the chart are all sore throat problems—you must choose the correct one.)

NOSE and THROAT COMPLAINTS (used by permission-property of MOHSW, Liberia)

S--Ask:

- How long has the patient had this complaint?
- How severe is this complaint?
- Does he also have:
 - Runny nose?
 - Cough?
 - Ear pain? or
 - Fever?

O--Examine the nose, throat, and cervical nodes. Take the temp.

After asking the questions, and examining the patient, you find:

- 1) Sore throat for 4 days
- 2) Fever for 4 days, now 39.3 C.
- 3) Very red throat with 1+ swollen tonsils
- 4) Swollen & tender anterior cervical (neck) nodes

A & P—Now match your findings with the symptoms and observations on the next page:

- Nose and Throat Complaints

	ASSEMENT	PLAN of TREATMENT (adult doses)
1) FRESH COLD (runny nose) (throat not sore) with little or NO FEVER	RHINITIS (Viral)	PARACETAMOL or decongestants or nose drops if available
2) Recurring RUNNY NOSE, WATERY EYES, & MUCH SNEEZING (usually at the same time every year)	ALLERGIC RHINITIS	ANTIHISTAMINE tablets or syrup
3) SORE THROAT but NO (or little) FEVER & NO SWOLLEN TENDER NECK NODES	VIRAL PHARYNGITIS	PARACETAMOL or salt-water gargle (Penicillin will not help)
4) SORE THROAT & FEVER with YELLOW PAPULES IN THROAT	VIRAL (Echo?) PHARYNGITIS	PARACETAMOL or salt-water gargle (Penicillin is useless here)
5) SORE very RED THROAT, FEVER & SWOLLEN & TENDER NECK NODES	Likely STREP PHARYNGITIS	PENICILLIN Tabs or AMOXICILLIN Caps 500 mg. t.i.d. for 7 - 10 days
6) SORE RED THROAT, FEVER, TENDER NECK NODES & VERY SWOLLEN TONSILS	TONSILLITIS	PENICILLIN Tabs or AMOXICILLIN 500 mg t.i.d., or PEN 2 cc. IM x 7-10 days
7) PAIN—CHEEKS & UPPER TEETH Colored NASAL DISCHARGE, SOMETIMES WITH BLOOD IN IT	SINUSITIS	AMOXICILLIN or CEPHALEXIN 500 mg. q.i.d. x10–14 days
8) SORE THROAT, FEVER, HEADACHE, MUSCLE PAIN, VOMITING and DIARRHEA for over 1 week	Possible LASSA FEVER	Refer to HOSPITAL for correct diagnosis and treatment—pages 332 – 333.
9) ADULT, SORE THROAT OVER 2 WEEKS, RED, but FULL OF WHITE THRUSH (NOT JUST STREP EXUDATE)	Possible HIV With Thrush (& maybe Strep)	AMOXICILLIN 500 mg q.i.d. x 10 days & Treat Thrush. Advise HIV testing.

Since the patient had a sore throat for 4 days, and you find fever, a very red throat, and swollen tender neck nodes, you would diagnose a **strep throat** and treat with amoxicillin or penicillin tabs. X 10 days—only number 5 in the chart matches all your findings.

On the other hand, if this patient had no swollen anterior cervical nodes, or yellow papules in his throat, then even with a fever the sore throat is probably viral—treat it with paracetamol and not amoxicillin.

The same type of reasoning for diagnosing physical illnesses also works for diagnosing mental illnesses, with the use of interviews which give you a suspicion concerning the diagnosis, and screening tools to help you to be more certain. See the Mental Health section in Chapter Five.

After using the Handbook for a few months you likely won't need the more common charts anymore, but keep the Handbook where you can refer to it in case you need it.

The accompanying 5 x 8 inch cards in the pocket in the back of the Handbook contain a summary of the more common complaints, and are easier to refer to in a busy clinic situation.

hours could be used instead of oral amoxicillin if the patient appears very ill or has difficulty swallowing.)

The appropriate section of the red card is reproduced below:

RESPIRATORY SYSTEM COMPLAINTS		
SYMPTOM-COMPLEX (S & O)	ASSESSMENT	PLAN OF TREATMENT
A. COUGH of LESS THAN 2 WEEKS' duration:		
1. With NO FEVER & NO RAPID or DIFFICULT BREATHING	COMMON COLD	Cough syrup &/or Paracetamol if symptoms severe
2. With DEFINITE FEVER, but NO RAPID or DIFFICULT BREATHING (breathing is normal & no rales)	EARLY PNEUMONIA? VIRAL INFLUENZA?	1.If not very ill,Paracetamol, observe daily 2.If more ill or worsening, AMOXICILLIN 3.Refer if not improving
3. With FEVER, & BREATHING RAPIDLY but BREATHING WITHOUT DIFFICULTY(rales usually present)	PNEUMONIA	1. AMOXICILLIN or ERYTHROMYCIN 500 mg q.i.d. x 10 days 2. Paracetamol for fever 3.Refer if not improving.
4. With FEVER with BOTH RAPID & DIFFICULT BREATHING Rales/ronchi usually present, nostrils may flare	SEVERE PNEUMONIA	1. AMOXICILLIN 500 mg cap 3 STAT or AMPICILLIN 1 gm IV 2. Refer STAT to HOSPITAL (will do better with oxygen)
5. In CHILD over 6 mo. old with COUGH, RUNNY NOSE, RED EYES & FEVER for 1-4 days (NO previous measles or vaccine) (Look in mouth for Koplik' s Spots)	EARLY MEASLES	1. Paracetamol & cough syrup 2. Add Amoxicillin later if pneumonia develops 3. Watch hydration-Oral Rehydration Soln. if diarrhea

In the same way you can choose the card for almost any common complaint, get a little history from the patient, do a basic examination, and find the best match for your history and findings among the possibilities listed under that complaint on the card.

The cards supplement the HANDBOOK, and can be used as a quick reference in the clinic.

GASTROINTESTINAL SYSTEM – ABDOMINAL PAIN

SYMPTOM-COMPLEX (S & O)		ASSESSMENT	PLAN of TREATMENT (adult doses)
A	UPPER ABDOMINAL PAIN:		
	1. Recent onset R.C.M. pain, COUGH, FEVER, RALES base of right lung	PNEUMONIA	AMOXICILLIN 500 mg q.i.d. x 10 days
	2. Recent RIGHT COSTAL MARGIN PAIN and JAUNDICE, TENDER LIVER	HEPATITIS	Vitamins, rest (avoid fatigue), no alcohol or acetaminophen
	3. RIGHT COSTAL MARGIN PAIN and FEVER, TENDER LIVER and FLUCTUANT (fluid-filled) LIVER MASS	BACTERIAL or AMEBIC LIVER ABSCESS	Refer to Hospital. If Amebic--Metronidazole 500 mg. t.i.d. x 10 days. May add Chloroquine 250 mg b.i.d. x 21 days.
	4. SEVERE EPISODES of R.C.M. PAIN REFERRED TO RIGHT SHOULDER	CHOLELITHIASIS	Refer to HOSPITAL for gallbladder removal
	5. RIGHT COSTAL MARGIN PAIN, JAUNDICE and HARD IRREGULAR LIVER MASS	LIVER CANCER	Refer to HOSPITAL
	6. Burning EPIGASTRIC PAIN, mild to moderate, which becomes BETTER AFTER EATING NON-IRRITATING FOODS or TAKING ANTACIDS	GASTRITIS-R/O ULCER	Give antacids or Cimetidine, stop alcohol and pepper, and no aspirin or ibuprofen
	7. BURNING EPIG. Or RIGHT UPPER QUADRANT PAIN, moderate to severe BETTER AFTER EATING. Often also looks PALE & may have BLACK STOOL	PEPTIC ULCER	Give Cimetidine 300 mg q.i.d. (or Omeprazole) and antacids Refer to HOSPITAL if very pale or if black stool
	8. Mild RIGHT UPPER QUADRANT BURNING, WORSE AFTER EATING, and often LOOKING PALE, but NO BLACK STOOL	Often HOOKWORM- (Check stool if scope)	Try MEBENDAZOLE 100 mg-5 tabs single dose (not for children under 1 year)
	9. LEFT UPPER QUADRANT PAIN and SHOCK—Hx. of RECENT ACCIDENT to left lower ribs, and LEFT LOWER RIBS TENDER on examination	RUPTURED SPLEEN	Send to HOSPITAL STAT lying down in car with IV Ringers or Saline running—see SHOCK, pages 22 – 24.
B	PERIUMBILICAL PAIN with CRAMPING but NOT DISTENDED or TENDER (and cramping and pain present less than one day)	HYPERPERISTALSIS (gas cramps)	PROMETHAZINE 25 mg (single dose) or ZOFRAN 4 mg
C	LOWER ABDOMINAL PAIN:		
	1. RIGHT LOWER ABDOMINAL PAIN with REBOUND TENDERNESS	APPENDICITIS	Refer to HOSPITAL STAT for surgery
	2. LOWER ABDOMINAL PAIN with REBOUND TENDERNESS	PERITONITIS	Send to HOSPITAL STAT for surgery and antibiotics
	3. VERY LOW ABD. PAIN and REBOUND in FEMALE (not a child) No periods missed, not looking pale, and not in shock	PELVIC INFLAMMATORY DISEASE (PID)	If severe, refer to HOSPITAL If mild try Cipro or Chloramph. + Ampicillin (See page 85)
	4. FEMALE, CHILD-BEARING AGE, LOW ABDOMINAL PAIN with SUDDEN ONSET Looking PALE, MISSED a PERIOD	ECTOPIC PREGNANCY See pages 33 - 34	Send to HOSPITAL STAT for surgery (lying down in car with IV Ringers). Help find immediate transportation.
	5. FEMALE who says LOW ABDOMINAL PAIN and BLACK SCANTY MENSES (No recent live infant, no missed periods, not pale, normal pulse and B.P.)	INFERTILITY	Refer to fertility clinic
	6. FEMALE, LOW ABD. and LOW BACK PAIN, CRAMPY in nature Occurring with every or most MENSTRUAL PERIODS	MENSTRUAL CRAMPS	IBUPROFEN 200mg—3 t.i.d. with food until cramps stop May also try Paracetamol—Ibuprofen usually better
D	GENERALIZED ABDOMINAL PAIN:		
	1. With ABDOMINAL DISTENTION and VOMITING or CONSTIPATION	BOWEL OBSTRUCTION	Refer to HOSPITAL STAT for surgery
	2. With REBOUND TENDERNESS	PERITONITIS	Sent to HOSPITAL STAT for surgery and antibiotics
	3. With SHOCK (weak, sweating, low blood pressure)	Ruptured organ or Hemorrhage in abd.	Refer to HOSPITAL STAT lying down in car with IV of Ringers or Normal Saline to support blood pressure
	4. With FEVER and BONE PAIN and LOOKING PALE, and HISTORY OF BONE PAIN And ANEMIA EVER SINCE A CHILD	SICKLE CELL CRISIS	ASA, and AMOXICILLIN or PEN for possible INFECTION Refer to HOSPITAL if severe
Any SEVERE ABDOMINAL PAIN which DOES NOT STOP SOON is usually an ABDOMINAL EMERGENCY—refer to the hospital STAT			

FEVER AND CELLULITIS

	SYMPTOM-COMPLEX (S & O)	ASSESSMENT	PLAN of TREATMENT (adult doses)
A	CELLULITIS, ABSCESES and COUNTRY SORES 1. WARM, TENDER SWELLING of FACE (Recent onset)	CELLULITIS of FACE	1. If small swelling-AMOXICILLIN 500 mg q.i.d. x 10 days 2. If large, send STAT to doctor
	2. SWOLLEN, WARM, TENDER FINGER	FINGER ABSCESS	1. Drain it if trained—refer if not trained or unable 2. FLUCLOXACILLIN 250 mg q.i.d. x 10 days
	3. WARM TENDER SWELLING ELSEWHERE	CELLULITIS or ABSCESS	1. FLUCLOXACILLIN as above 2. Drain if fluctuant
	4. MANY WARM LARGE TENDER FLUCTUANT SWELLINGS which are DEEP in MUSCLES, with FEVER (Usually also PALE)	PYOMYOSITIS	Refer to hospital with blood donors—usually needs IV Chloramphenicol, and usually blood transfusions.
	5. ULCER of ANKLE or LEG reaching to bone with bad smell Often present for more than 1 month	“COUNTRY SORE”	1. Daily Penicillin and dressing until looks clean 2. Then refer to hospital for grafting
ANY PATIENT with CELLULITIS LOOKING VERY ILL SHOULD BE GIVEN FLUCLOXICILLIN 500 mg or PENICILLIN 4 ml IM and SENT IMMEDIATELY to HOSPITAL			
B	FEVERS OF LESS THAN 1 WEEK (over 99.6 F) 1. Mild fever with MILDLY RED SORE THROAT WITHOUT ANY EXUDATE, and NO SWOLLEN TENDER NECK NODES	VIRAL PHARYNGITIS	PARACETAMOL, THROAT LOZENGES and/or SALT-WATER GARGLES
	2. DEFINITE FEVER with VERY RED SORE THROAT, SWOLLEN TENDER NECK NODES, perhaps with EXUDATE	Probably STREPTOCOCCAL PHARYNGITIS	1. AMOXICILLIN 500 mg t.i.d. x 10 days 2. If allergic, ERYTHROMYCIN 500 mg q.i.d. x 10 days
	3. With HEADACHE, STIFF NECK, NOT ABLE TO THINK CLEARLY or COMATOSE, DEFINITE FEVER (and sometimes a SEIZURE)	MENINGITIS	1. AMPICILLIN 2 gm & CHLORAMPHENICOL 1 gm IV STAT 2. COTRIMOXAZOLE 400/80—4 STAT (adult doses) 3. Refer to HOSPITAL STAT—help people find car
	4. HEADACHE and CHILLS (no other symptoms or findings)	Probable MALARIA	RDT—if positive-AMODIAQUINE + ARTESUNATE (See protocol pages 47 – 48)
	5. COUGH, FAST BREATHING but NO DIFFICULTY BREATHING	Probable PNEUMONIA	AMOXICILLIN 500 mg q.i.d. x 10 days
	6. COUGH, FAST and DIFFICULT BREATHING with RALES	Severe PNEUMONIA	AMPICILLIN 1 gm IM and refer STAT to HOSPITAL
	7. With BACK PAIN and a KIDNEY TENDER TO PERCUSSION	PYELONEPHRITIS	COTRIMOXAZOLE 400/80 tabs—2 b.i.d. x 10-14 days or CIPRO 500 mg—1 b.i.d. x 10 – 14 days
	9. With WARM, REDDENED TENDER SWELLING anywhere	CELLULITIS	See “CELLULITIS” above in A-1, 2 & 3
	10. With ABDOMINAL TENDERNESS & REBOUND TENDERNESS	PERITONITIS	Refer STAT to HOSPITAL
	11. FEVER with NONE of the SIGNS LISTED ABOVE NO HEADACHE and NOT LOOKING CRITICALLY ILL	Probably VIRAL Do RDT to R/O Malaria	Give Paracetamol and watch for other symptoms
	C	FEVERS of MORE THAN 1 WEEK (over 99.6 F) 1. COUGH for ONE MONTH or more and WEIGHT LOSS	Probable TUBERCULOSIS
2. FEVER more than 7 days with DIARRHEA & VERY ILL		Possible ENTERIC FEVER	Refer to HOSPITAL
3. HEADACHE, SORE THROAT, MUSCLE PAIN & LOOSE STOOL		Possible LASSA FEVER	Refer to HOSPITAL

Selected Emergencies—CUTS. TETANUS PREVENTION, BURNS, REHYDRATION

SYMPTOM-COMPLEX (S & O)		ASSESSMENT	PLAN of TREATMENT (adult doses)
A	CUTS—With any cut give TETANUS PREVENTION (See “B”) 1. ANY CUT in which FINGERS, TOES, WRIST, etc. CANNOT MOVE WELL	CUT TENDON	Wash, Bandage and REFER STAT without suturing to HOSPITAL
	2. CUT less than 6 hours old, ALL PARTS MOVE WELL, NO NUMBNESS	FRESH CUT	Wash, CLOSE with suture, watch for INFECTION If INFECTION develops give FLUCLOXACILLIN and REMOVE SUTURES
	3. CUT 6-12 hours old, ALL PARTS MOVE WELL, NO NUMBNESS	Some Risk of Infection	Wash, Suture, start FLUCLOXACILLIN 250 mg t.i.d. x 5 days
	4. CUT over 12 hours old, looks CLEAN, PARTS MOVE WELL, NOT NUMB	OLD CUT—Likely will become infected	Wash, draw skin edges closer with suture but do not close Give FLUCLOXACILLIN 250 mg t.i.d. x 10 days if infection begins
	5. CUT over 12 hours old, DIRTY (leaves, etc.) PARTS MOVE WELL and NO NUMB AREAS	OLD CUT with GREAT DANGER of INFECTION	Wash, draw skin edges closer with suture but do not close Start FLUCLOXACILLIN 250 mg t.i.d. x 10 days immediately
B	TETANUS PREVENTION (for person with an injury): 1. PREVIOUSLY IMMUNIZED with DPT or TETANUS TOXOID (not TAT)	Person has some IMMUNITY	If immunization more than 5 years ago, ½ cc TETANUS TOXOID IM
	2. NEVER IMMUNIZED with DPT or TT, but CUT by CLEAN OBJECT	NO IMMUNITY	Give ½ cc TETANUS TOXOID (TT), and repeat in 1 and 4 weeks
	3. NEVER IMMUNIZED with DPT, TT or POLYVALENT, and CUT or PUNCTURE WOUND caused by DIRTY or CONTAMINATED OBJECT	NO IMMUNITY and DANGER of TETANUS	Give 1500 u. TETANUS ANTITOXIN (preferably human), and (at a different site) ½ cc TETANUS TOXOID and REPEAT in 4 and 8 weeks
C	BURNS: 1. Mildly REDDENED, NO BLISTERS, and RED AREA FEELS TOUCH WELL	FIRST DEGREE BURN	Needs no treatment
	2. BLISTERS, BURN AREA LESS THAN 7% of SKIN SURFACE (Slightly less than a 9% area-see Handbook pages 6 and 7)	Small or Moderate 2 nd DEGREE BURN	Remove any broken blisters and dress But DO NOT remove any UNBROKEN blisters
	3. BLISTERS, AREA is MORE THAN 7% of SKIN SURFACE	LARGE 2 nd DEGREE	Refer to HOSPITAL
	4. NO BLISTERS, BURNED SKIN LOOKS COOKED & CANNOT FEEL TOUCH 1% or LESS of SKIN BURNED (Smaller than 2 Liberian 5 dollar notes) Note—Often some skin has 2 nd and some 3 rd degree burn—if so, treat as a third degree burn	Small 3 rd DEGREE BURN	REMOVE any really loose dead skin and DRESS burn Give TETANUS PREVENTION if dirty or contaminated FLUCLOXACILLIN if fever or if cellulitis developing Refer for GRAFTNG when clean and granulating
	5. NO BLISTERS, LOOKS COOKED, CANNOT FEEL TOUCH, & MORE THAN 1%	Large 3 rd DEGREE BURN	Refer to HOSPITAL
D GUIDELINES for IV REHYDRATION—Use RINGERS LACTATE for INITIAL REHYDRATION (Add 5 ml 10% KCl to 1000 ml of RINGERS LACTATE)			
1. MILD DECREASE in SKIN ELASTICITY, MILDLY SUNKEN EYES, NORMAL B.P.	MODERATE DEHYDRATION	Give IV RINGERS equal to 5% of body weight—1/2 in 1 st 30 minutes and ½ in next 2 hours. Then give O.R.S. if able to drink.	
2. SEVERE DECREASE in SKIN ELASTICITY, DEEPLY SUNKEN EYES LOOKING VERY WEAK and LOW B.P.	SEVERE DEHYDRATION	Give IV RINGERS equal to 10% of body weight—1/2 in 1 st 30 minutes and ½ in next 3 hours. Then give O.R.S. if able to drink.	
O.R.S. for MOTHERS to make to PREVENT DEHYDRATION—TEACH THEM TO COMBINE: Two SUGAR CUBES, 3-finger pinch of SALT, JUICE of 1 ORANGE and 1 COKE BOTTLE FULL of WATER		Mother should give small amounts to child frequently while child is having diarrhea	
O.R.S. for CLINIC to make to REHYDRATE CHILDREN—Use syringe or 4 ml tsp. to measure: SUGAR 20 ml SALT 6 ml (or SALT 4 ml & SODIUM BICARBONATE 3 ml), JUICE of 3 ORANGES & WATER to make 1000 ml MAKE FRESH SOLUTION EVERY DAY		Give small amount very frequently night and day until child is looking all right (10 ml every 5 minutes makes 1200 ml in 10 hours)	

SKIN, URINARY and REPRODUCTIVE COMPLAINTS

SYMPTOM-COMPLEX (S & O)		ASSESSMENT	PLAN of TREATMENT
SKIN COMPLAINTS:			
A	ITCHING:		
	1. With SMALL RASH (CRAW-CRAW)-FINGERS, WRISTS, ELSEWHERE	SCABIES	Benzyl Benzoate x 2 days (see Scabies p. 53-54)
	2. ITCHING with JAUNDICE PRESENT (yellow eyes)	Itching from JAUNDICE	Send to doctor to diagnose cause of Jaundice
	3. ITCHING with URTICARIA (HIVES) PRESENT	ALLERGY	Chlorpheniramine 4 mg q.i.d. or other antihistamine
	4. CHRONIC ITCHING with NO HIVES, JAUNDICE or SCABIES	Possible ONCHOCERCIASIS	Skin snip-if positive IVERMECTIN 3 tabs yearly
B	DISCOLORED SKIN AREAS:		
	1. Lesion with RINGED BORDER and CENTRAL HEALING	RINGWORM	Clotrimazole or Benzoic Acid Compound--apply b.i.d.
	2. MANY SMALL 3 mm LIGHT SPOTS on UPPER CHEST & ARMS	TINEA VERSICOLOR	Clotrimazole bid x 10 d, or Selenium Sulfide shampoo
	3. LARGER LIGHT ANESTHETIC SKIN PATCHES--often 2-4 cm	LEPROSY	See protocol for Rx., & notify Leprosy Control
C	SUPERFICIAL INFECTED & CRUSTED SKIN AREAS	IMPETIGO	Amoxicillin t.i.d. or Erythromycin q.i.d.
D	RASHES:		
	1. CHILD--SMALL VESICLES COMING ON SKIN, MILD FEVER	CHICKENPOX	PARACETAMOL for fever (Do NOT give ASA)
	2. PAINFUL VESICLES in 1 BAND, on 1 SIDE--SPINE to FRONT	HERPES ZOSTER	If just started (1-3 days)--ACYCLOVIR FROM HOSPITAL
	3. GENERALIZED RED RASH, COUGH, FEVER, RED MATTED EYES & RUNNY NOSE in CHILD 5 months or older	MEASLES	PARACETAMOL, & WATCH HYDRATION AMOXICILLIN LATER if DEVELOPS PNEUMONIA
	4. URTICARIAL LESIONS (HIVES) and ITCHING	ALLERGY	Chlorpheniramine 4 mg q.i.d. or other antihistamine
URINARY COMPLAINTS:			
A	PAINFUL & FREQUENT URINATION in SMALL AMOUNTS	CYSTITIS	COTRIMOXAZOLE 400-2 bid x 5-7 d., or CIPRO b.i.d.
B	BLOODY URINE "RED G.C."if FREQUENCY MAY BE CYSTITIS (IF MICROSCOPE, SEE IF SCHISTO EGGS, WBC OR BACTERIA)	S. HEMATOBIIUM or CYSTITIS or CANCER	If no scope, refer for URINE MICROSCOPY If Schisto. eggs give METRIFONATE or PRAZIQUANTEL
C	FREQUENT URINATION with LARGE AMOUNTS, NO PAIN ALWAYS HUNGRY and FREQUENTLY DRINKING WATER	DIABETES	Test urine for sugar--if positive, refer the patient to HOSPITAL to regulate diabetes
D	UNABLE to URINATE or URINATING BY DROPS, LARGE BLADDER	URINARY STRICTURE	Refer to HOSPITAL STAT for urethral dilatation
REPRODUCTIVE SYSTEM COMPLAINTS:			
A	URETHRAL DISCHARGE (male)	G.C. &/or CHLAMYDIA	Cipro 500 x 2 days + Doxycycline bid x 7 d., p. 84
B	IMPOTENCE in an ILL YOUNG MAN	Caused by ILLNESS	Treat the illness--he will do better when well
C	IMPOTENCE in a WELL YOUNG MAN	Often ANXIETY or ANGER	Get better history. & find cause-if anxiety, anger or depression, he must solve emotional problem
D	VAGINAL DISCHARGE		
	1. CURDY, CHEESE-LIKE DISCHARGE, ITCHING VULVA	MONILIASIS	NYSTATIN, Gentian Violet, or special creams
	2. PALE YELLOW & BUBBLY THIN DISCHARGE	TRICHONOMIASIS	Flagyl 1 t.i.d. x 7 days -- also treat husband
	3. DISCHARGE ALLMOST LIKE YELLOW PUS	Possible G.C.	Cipro 500 x 2 d. + Doxycycline b.i.d. x 7 days
E	Says"BLACK SCANTY MENSES & LOW ABD. PAIN"	INFERTILITY	Refer to HOSPITAL with a good fertility clinic
F	VAGINAL BLEEDING or SPOTTING BETWEEN PERIODS	Rule out CANCER	Refer to HOSPITAL to find cause of bleeding
G	VERY HEAVY BLEEDING WITH MENSTRUAL PERIODS	POLYP or FIBROID?	Refer to HOSPITAL for correct diagnosis & Rx.

HEAD and CENTRAL NERVOUS SYSTEM COMPLAINTS

SYMPTOM-COMPLEX (S and O)		ASSESSMENT	PLAN of TREATMENT
HEAD COMPLAINTS:			
A	HEADACHE:		
	1. MILD, on BOTH SIDES, NO FEVER, NOT RECURRENT	COMMON HEADACHE	Give Paracetamol 500 mg or 2 tabs Ibuprofen 200 mg
	2. RECURRENT, FREQUENT, CHRONIC and BOTH SIDES HURT	R/O HYPERTENSION	Take B.P. x 3 days, treat Hypertension if B.P. high
	3. HEADACHE on ONE SIDE OF HEAD, SEVERE, RECURRENT	Probable MIGRAINE	Pain-Paracetamol or Ibuprofen. Propranolol may prevent.
	4. HEADACHE with FEVER and CHILLS (no other symptoms)	Probable MALARIA	RAPID TEST-if positive AS + CM (see Malaria Protocol)
	5. HEADACHE with FEVER, CHILLS and STIFF NECK and NOT ABLE to THINK CLEARLY (and maybe a SEIZURE)	MENINGITIS	Ampicillin 2 gm & Chloramph. 1 gm IV, Cotrimox. 400 -4 STAT Then send to HOSPITAL STAT (help people find car)
	6. FEVER, SORE THROAT, MUSCLE PAIN & DIARRHEA over 1 Wk	Possible LASSA FEVER	Refer to HOSPITAL
B	ITCHING EYES, CHRONIC (present for weeks or months) (Often SKIN also ITCHING)	Possible ONCHOCERCIASIS	1. Skin Snip or Mazotti Test to diagnose 2. If positive, give IVERMECTIN 3 tabs once each year
C	CHRONIC ITCHING EYES with NEGATIVE ONCHO. TESTS	Probable ALLERGY	Chlorpheniramine tabs or decongestant eye drops
D	BOTH EYES RED and STICKY (mattered) (less than 7 days)	CONJUNCTIVITIS	Antibiotic eye ointment q.i.d. x 5 – 7 days
E	FOREIGN BODY IMBEDDED in EYE or OTHER EYE INJURY	EYE INJURY	Bandage eye and refer to HOSPITAL IMMEDIATELY
F	ONE EYE RED and PAINFUL with DILATED PUPIL	GLAUCOMA	Refer to HOSPITAL STAT
G	EARACHE or FRESHLY-DRAINING EAR (If draining over 1 month refer to HOSPITAL)	OTITIS MEDIA	AMOXICILLIN or CEPHALEXIN 500 mg t.i.d. x 10 – 14 days (Child—250 mg t.i.d.)
H	PAIN in CHEEK and MAX. SINUS TENDER to PERCUSSION	MAX. SINUSITIS	AMOXICILLIN or CEPHALEXIN 500 mg t.i.d. x 10 – 14 days
I	NOSEBLEED (started today and patient is not pale)	EPISTAXIS	Compress nostril gently x 10 minutes, refer if it will not stop
CENTRAL NERVOUS SYSTEM COMPLAINTS:			
A	SEIZURE (Convulsion)		
	1. In a CHILD with FEVER, and NO STIFF NECK (Child becomes alert awhile after fever is less)	FEBRILE SEIZURE R/O Malaria	1, Sponge with cool water 2. Paracetamol when alert 3. RDT 4. Treat malaria if RDT positive 5. Refer if not improving
	2. Seizure with FEVER, STIFF NECK and HEADACHE, and NOT THINKING CLEARLY-CONFUSED (Child or adult)	MENINGITIS	Ampicillin 2 gm & Chloramph. 1 gm IV, Cotrimox. 400 -4 STAT Then send to HOSPITAL STAT (help people find car)
	3. In INFANT with FEVER, IRRITABLE, STOPPED NURSING	MENINGITIS	AMPICILLIN 250-500 mg IV/IM & refer to HOSPITAL STAT
	4. With STIFF NECK, BACK & LIMBS but THINKING CLEARLY	TETANUS	Give diazepam, phenobarb & TAT & refer to HOSPITAL STAT
	5. Seizure in PATIENT TAKING INH, AMBILHAR or INSULIN and no fever, stiff neck, addicting drugs, or much alcohol	SEIZURE from DRUG	Refer to HOSPITAL STAT. If taking INSULIN or GLIBENCLAMIDE give immediate IV glucose.
	6. OLDER ADULT with NO HISTORY of SEIZURES and no fever, stiff neck, addicting drugs, or much alcohol	Possible BRAIN TUMOR	Refer to HOSPITAL
	7. SEIZURE with HISTORY OF PREVIOUS SEIZURES and NO FEVER or STIFF NECK	EPILEPSY (Check RDT anyway)	Phenobarb 60 mg b.i.d. (adult). Increase to 120 mg b.i.d. if needed. Continue for lifetime. Alternative: Phenytoin
B	UNCONSCIOUSNESS from ANY CAUSE & CANNOT BE AWAKENED	COMA	Refer to HOSPITAL STAT
C	NERVOUS, HEADACHE, CANNOT SLEEP WELL, believes HEART BEATS FAST, but no fever, pallor, edema, high BP or fast pulse	ANXIETY (R/O Depression)	Refer to Mental H Clinician. Diazepam 5 mg tid x 3-5 days may help when anxiety is most severe (not for continuous use).
D	ACTING CRAZY—ABNORMAL ACTIONS, THOUGHTS & SPEECH	PSYCHOSIS	Refer to HOSPITAL—Chlorpromazine or Haloperidol may help
E	FEELING SAD, WORTHLESS, UNMOTIVATED more than 2 weeks	DEPRESSION	Refer to M H Clinician for antidepressant (Is patient suicidal?)

RESPIRATORY SYSTEM COMPLAINTS

	SYMPTOM-COMPLEX (S and O)	ASSESSMENT	PLAN of TREATMENT
A	COUGH LESS THAN 2 WEEKS DURATION: 1. With NO FEVER and NO RAPID or DIFFICULT BREATHING	COMMON COLD	Cough syrup and/or Paracetamol if symptoms are severe
	2. With DEFINITE FEVER, but NO RAPID or DIFFICULT BREATHING (Breathing is normal, and no rales heard)	EARLY PNEUMONIA? or VIRAL INFLUENZA?	1. If not very ill-Paracetamol & observe daily, but if MORE ILL or WORSENING—AMOXICILLIN. 2. REFER if NOT IMPROVING.
	3. With FEVER and RAPID BREATHING, but BREATHING WITHOUT DIFFICULTY (Rales usually present)	PNEUMONIA	1. AMOXICILLIN or ERYTHROMYCIN 500 mg q.i.d. x 10 days 2. Paracetamol for fever 3. Refer if not improving
	4. With FEVER with BOTH RAPID and DIFFICULT BREATHING Rales &/or ronchi usually present, nostrils may flare	SEVERE PNEUMONIA	1. AMOXICILLIN 500 MG CAPS-3 stat, or AMPICILLIN 1 gm IV 2. Refer STAT to HOSPITAL (will do better with oxygen)
	5. CHILD over 6 mo. old with COUGH, RUNNY NOSE, RED EYES & FEVER x 1-4 days (No previous measles or vaccine) (Look in mouth for Koplik's spots)	EARLY MEASLES (Expect rash on day 5)	1. Paracetamol and cough syrup 2. Add AMOXICILLIN later if pneumonia develops 3. Watch hydration-Oral Rehydration Solution if diarrhea develops
B	COUGH of MORE THAN 2 WEEKS or RECURRENT EPISODES: 1. COUGH for MORE THAN 3 WEEKS (sometimes with blood), LOSING WEIGHT, and NIGHT SWEATS	Probable TUBERCULOSIS	1. Collect 3 sputum samples for diagnosis 2. See TB protocols Chap. 4 3. Advise test for HIV 4. Inform County TB Focal Person
	2. EXPIRATORY WHEEZING with DIFFICULTY BREATHING History of repeated similar attacks in past	ASTHMA	1. Epinephrine 0.4 cc SC for severe attack 2. Salbutamol inhaler or Salbutamol tabs 3. Steroid inhaler if available
	3. CHILD with SPASMOTIC SEVERE COUGHING SPELLS which END WITH A WHOOP (and MAY VOMIT after COUGH)	PERTUSSIS	1. Refer to HOSPITAL IF UNDER 1 YEAR, or if doing poorly 2. ERYTHROMYCIN 250 mg q.i.d. x 10 days (15 kg. child)
	4. CHRONIC COUGH with SHORTNESS-OF-BREATH, ANKLE EDEMA and DISTENDED NECK VEINS—if severe may need to SIT UP AT NIGHT TO BREATHE	CONGESTIVE HEART FAILURE	LIFETIME TREATMENT—Doctor should CHOOSE DRUGS—Usually: 1.Diuretic-Hydrochlorothiazide or Furosemide 2.Lisinopril if available 3.May need digoxin and/or beta blocker 4.Check for Hypertension and ANEMIA—Treat if present
C	FRESH COLD (runny nose), NO FEVER	RHINITIS (likely viral)	Needs no treatment, but Decongestant o.k. if available
D	SORE THROAT: 1. With NO FEVER and NO SWOLLEN TENDER NECK NODES	VIRAL PHARYNGITIS	Paracetamol, Throat Lozenges, or Salt-water Gargles
	2. With DEFINITE FEVER and YELLOW PAPULES in THROAT	VIRAL PHARYNGITIS	Same treatment as above
	3. With FEVER, RED THROAT, and SWOLLEN TENDER NECK NODES	STREP PHARYNGITIS	PENICILLIN TABS or AMOXICILLIN 500 mg t.i.d. x 10 days
	4. FEVER, RED THROAT, SWOLLEN TENDER NECK NODES, SWOLLEN TONSILS Complication: Abscess behind tonsil can cause it to bulge into throat	TONSILITIS Maybe from STREP	AMOXICILLIN 500 mg t.i.d. x 10 days (If 1 tonsil huge & bulging into throat, send to hospital stat to have peritonsillar abscess drained.)
	5. Adult-SORE THROAT OVER 2 WEEKS—RED, but full of WHITE THRUSH (Not just white strep exudate)	Possible HIV, THRUSH and maybe strep	1. NYSTATIN or GENTIAN VIOLET for THRUSH 2. Advise HIV testing 3. AMOXICILLIN 500 mg t.i.d. X 10 days for possible strep
	6. SEVERE SORE THROAT, HEADACHE, DIARRHEA, MUSCLE PAIN (and sometimes nausea and edema) LASTING MORE THAN 1 WEEK	Possible LASSA FEVER	Refer STAT to HOSPITAL
	7. FEVER, RED SORE THROAT with EXUDATE, SWOLLEN NODES (Often a teenager or young adult. Fatigue follows. If given Amoxicillin may get red rash—try Erythromycin instead.	Possible MONONUCLEOSIS But R/O STREP	Paracetamol, get sufficient rest, avoid fatigue. Antibiotics do not help if actually is mononucleosis, but can try Erythro. in case strep. Patience—may take some months to recover from fatigue.

CARDIOVASCULAR SYSTEM COMPLAINTS

SYMPTOM-COMPLEX (S and O)		ASSESSMENT	PLAN of TREATMENT
A	HEART PALPITATION (Fast or irregular heartbeat): 1. With EDEMA, DISTENDED NECK VEINS, SHORTNESS-OF-BREATH and often COUGH (If severe, may have ORTHOPNEA-MUST SLEEP SITTING UP in order to breathe sufficiently)	CONGESTIVE HEART FAILURE	LIFETIME TREATMENT-Doctor may CHOOSE DRUGS-Usually: 1.Diuretic-Hydrochlorothiazide or Furosemide 2.Lisinopril if available 3.May need digoxin &/or beta blocker 4.Check for Hypertension and ANEMIA—Treat if present
	2.And LOOKING PALE—No cough, edema or fever, normal BP	ANEMIA	Treat ANEMIA (See “Anemia” below)
	3.With BULGING EYES and ENLARGED THYROID	HYPERTHYROIDISM	Refer to HOSPITAL. See HANDBOOK, page 69 for meds.
	4.With HEADACHE, NERVOUSNESS, CANNOT SLEEP WELL but no edema, shortness-of-breath, pallor or fever	ANXIETY (often chronic)	Diazepam 5 mg. t.i.d. for only 3 to 5 days may help if symptoms are very severe. Refer to M. H. Clinician.
	5.FAST,REGULAR PULSE with FEVER (No edema, not pale)	Fast pulse from FEVER	Find cause of fever--See “FEVER” on blue card
B	ANEMIA: (LOOKING PALE) 1.With WEAKNESS, SWEATING and LOW BLOOD PRESSURE	SHOCK (Blood loss?)	Refer to HOSPITAL STAT (with IV-lying down in car)
	2.With History of BONE & JOINT PAIN WITH FEVERS SINCE A SMALL CHILD (and maybe JAUNDICE at times)	SICKLE CELL ANEMIA	ASA for pain, Penicillin if high fever, and folic acid Refer if severely ill or very pale—see p. 163 - 166
	3.Anemia with JAUNDICE but NO HISTORY OF BONE PAIN	HEMOLYTIC ANEMIA?	Refer to HOSPITAL
	4.With VERY LARGE SPLEEN (below navel)	Likely HYPERSPLENISM	Refer to HOSPITAL (may need surgery)
	5. With BLACK TARRY STOOLS & EPIGASTRIC PAIN	Bleeding PEPTIC ULCER	Refer to HOSPITAL STAT (and send blood donors)
	6.FEMALE--AGE 14-45, LOW ABDOMINAL PAIN & WEAKNESS Looking pale & usually has missed 1 or 2 periods	ECTOPIC PREGNANCY	Refer to HOSPITAL STAT for emergency surgery (with IV--lying down in car). (See HANDBOOK page 33-34)
	7.CONTINUING BLOOD LOSS from ANY CAUSE - SUCH AS:	Severe MENORRHAGIA,other	Refer to HOSPITAL
	8.Anemia with PREGNANCY (If microscope available check stool for hookworm, or if no microscope, treat possible hookworm anyway	Probable ANEMIA OF PREGNANCY but look for other causes	1.Iron tablets 1 daily or b.i.d. until delivers 2.Folic acid 5 mg. daily 3.Mebendazole 1 b.i.d. x 3 days_unless stool neg.
	9.DEFINITELY ANEMIC but with NONE OF ABOVE SYMPTOMS (If microscope available check stool for hookworm & if no microscope, treat possible hookworm anyway)	Probable IRON DEFICIENCY ANEMIA But look for other causes	1.Iron tablets 1 b.i.d. x 2 months 2.Mebendazole 1 b.i.d. x 3 days-unless stool negative 3.To HOSPITAL for blood if anemia is very severe
With SEVERE ANEMIA FROM ANY CAUSE OR WITH SIGNS OF CONGESTIVE HEART FAILURE WITH ANEMIA--REFER PATIENT TO HOSPITAL STAT			
C	HIGH BLOOD PRESSURE--DISCOVERED on a ROUTINE B.P. CHECK (Recheck B.P. after patient has been resting for 5 minutes and daily x 2 more days)	Possible HYPERTENSION	If always elevated see Handbook protocol and start meds: 140/90-160/100—start with hydrochlorothiazide 25 mg daily 160//100-180/120—HCTZ 25 or 50 + Reserpine or ACE inhib. Over 180/120—Best to let doctor choose medications
D	CHEST PAIN (May be from heart or other organs—See HANDBOOK pages 38-39 for causes such as Pleurisy, Shingles and Cancer)		
	1. Hx. TRAUMA, POINT TENDERNESS over RIB, No DYSPNEA NORMAL BREATH SOUNDS BILAT., & NORMAL BP & RESP.	FRACTURED RIB	Ibuprofen,limit activity until improved (3-4 weeks)—But to HOSP. STAT if severe injury, poor vital signs or breath sounds
	2. PAIN and POINT TENDERNESS WHERE RIB JOINS STERNUM	COSSTOCHRONDRITIS	IBUPROFEN 600 mg t.i.d. with food, perhaps x 1 month
	3. SUDDEN CHEST PAIN, DYSPNEA, low O ₂ Sat.& SWOLLEN CALF	PULMONARY EMBOLISM	ASA 325 mg-2 STAT and SEND STAT to HOSPITAL (O ₂ if avail.)
	4. Anterior CHEST PAIN running to SHOULDER, NECK or ARM-often left. Occurs with EXERCISE, goes away soon with REST	ANGINA PECTORIS	NITROGLYCERIN 0.4 mg SL with PAIN, and SIT DOWN & REST REFER to INTERNIST—May need Bypass Surgery or STENT.
5. SEVERE CHESST PAIN running to SHOULDER, ARM or NECK WEAK and DIAPHORETIC, NOT STOPPING with REST	Possible MYOCARDIAL INFARCT	ASA 325 mg 2 STAT, NITROGLYCERIN 0.4 mg if available, and SEND STAT to HOSPITAL (with O ₂ if available)	

Extremities (Arm and Legs) and Low Back

Symptom-Complex (S and O)	Assessment	Plan of Treatment
A. SWELLING in ONLY ONE FOOT OR LEG:		
1. SWELLING which is WARM, TENDER, PAINFUL and RECENT	CELLULITIS	FLUCLOXICILLIN 250 mg.-2 q.i.d. x 10 days
2. LOWER LEG SWOLLEN, GASTROC. TENDER, PAIN with DORSIFLEXION FOOT	THROMBOPHLEBITIS	ASA 650 mg. p.o. and send to hospital
3. PITTING CHRONIC LEG SWELLING—NOT WARM, TENDER or PAINFUL	ELEPHANTIASIS	HETRAZAN 50 mg-2 tid x14 d.-1st CK. for ONCHO
4. AREA OF BONE PAINFUL and TENDER, and OFTEN FEVER (Tissue over bone may also be tender, swollen and may be draining pus.)	OSTEOMYELITIS	Refer to HOSPITAL
5. BONY SWELLING in ARM or LEG (NOT VERY TENDER, NO DRAINAGE) or FIRM SWELLING NOT FITTING DESCRIPTIONS ABOVE	Possible BONE TUMOR	Refer to HOSPITAL for DIAGNOSIS and TREATMENT
B. BOTH LEGS SWOLLEN:		
1. With DISTENDED NECK VEINS, COUGH, and SHORTNESS-OF-BREATH	CONGESTIVE HEART FAILURE	See Cardiovascular card—refer to HOSPITAL
2. With POSITIVE URINE ALBUMIN, HIGH B.P. and NOT MUCH COUGH	KIDNEY DAMAGE	Refer to HOSPITAL
3. PREGNANT, EDEMA, NORMAL B.P. and NO URINE ALBUMIN	EDEMA OF PREGNANCY	Needs additional bedrest daily
4. PREGNANT, EDEMA, HIGH B.P. and POSITIVE URINE ALBUMIN	TOXEMIA OF PREGNANCY	Refer to midwife in hospital quickly
5. CHILD with SWOLLEN FEET, THIN LIGHT HAIR DISCOLORED SKIN and often DIARRHEA	KWASHIORKOR (Protein-Energy Malnutrition)	Help mother treat vigorously with a good diet that includes much protein, or send to FEEDING CENTER
C. SWELLING STARTS WHILE TAKING DIETHYLCARBAMAZINE (Hetrazan) for Elephantiasis (either 1 or 2 legs or hands)	Reaction to dying Oncho. microfilaria	Stop Hetrazan until swelling goes down and then begin again with a very low dose
D. SWOLLEN JOINTS:		
1. With history of BONE PAIN, FEVERS and ANEMIA SINCE SMALL	SICKLE CELL ANEMIA	CIPRO 1000 mg. and SEND to HOSPITAL STAT.
2. 1 or 2 JOINTS SWOLLEN, WARM, PAINFUL with FEVER (RECENT)	SEPTIC JOINT	Send to hosp. STAT for surg. and antibiotics
3. 1 or more JOINTS-CHRONIC, NOT WARM, NO FEVER (older person)	OSTEOARTHRITIS	Paracetamol p.r.n. if pain and refer if severe
4. ADULT, MANY JOINTS, SYMMETRICAL, CHRONIC, DEFORMED HANDS	RHEUMATOID ARTHRITIS	IBUPROFEN 200 mg.-3 t.i.d. for pain
5. CHILD, MANY JOINTS PAINFUL and SWOLLEN, SWELLING MAY MOVE FROM JOINT TO JOINT, FEVER PRESENT, NOT VERY PALE (Age not less than 3 years, occasionally an adult)	RHEUMATIC FEVER	1. AMOXICILLIN 500 mg. t.i.d. x 10 days (adult) 2. ASA 325 mg. q.i.d. or IBUPROFEN 4 t.i.d. x 2 mo. 3. Bedrest. However, 4. Refer if severe 5.Pen.x 3-5 yr.
E. PARALYSIS and MUSCLE WEAKNESS:		
1. ARM and LEG PARALYZED (BOTH ON SAME SIDE of BODY)	STROKE	1. Check BP—if hypertensive, treat cautiously 2. Refer to HOSPITAL if cannot swallow
2. CONTRACTED FINGER or FOOT-DROP and LIGHT ANESTHETIC SKIN PATCHES	LEPROSY with NERVE DAMAGE	1. Follow instructions for Leprosy Treatment 2. Show to or notify Co. Leprosy Focal Person
3. CHILD with WEAK LEG or ARM FOLLOWING A FEVER	POLIO	Weak leg needs brace if it does not improve
F. BONE PAIN with FEVERS and LOOKING PALE with repeated episodes ever since a small child	SICKLE CELL ANEMIA (also check RDT)	1. ASPIRIN with 2. AMOXICILLIN if having fever 3. Refer to HOSPITAL if severe or very pale
G. LOWER BACK PAIN with TENDERNESS TO PERCUSSION OVER RIGHT or LEFT KIDNEY, and FEVER	PYELONEPHRITIS (KIDNEY INFECTION)	COTRIMOXAZOLE 400/80-2 b.i.d. x 10 days or CIPRO 500 mg. b.i.d. x 10 days
H. LOW CENTRAL LUMBAR BACK PAIN NO FEVER WORSE with BENDING or LIFTING	LUMBAR MUSCLE STRAIN or HERNIATED DISK	1. IBUPROFEN 2 q.i.d. and 2. Firm and level mattress 3. NO HEAVY WORK or LIFTING UNTIL PAIN GONE

Gastrointestinal System—Constipation, Distention, Black Stool, or Jaundice

Symptom-Complex (5 and 0)	Assessment	Plan of Treatment
A. CONSTIPATION (Can't pass stool): 1. With DISTENDED ABDOMEN, NO FLATUS or STOOL (often ABD. PAIN) 2. With REBOUND TENDERNESS (either generalized or in RIGHT LOWER QUADRANT) 3. In a BABY that is looking well and nursing well with no abd. distention (passes stool, but not every day) 4. ADULT—No pain, distention or vomiting, no stool few days	BOWEL OBSTRUCTION PERITONITIS or APPENDICITIS WELL BABY with anxious mother Simple CONSTIPATION	Refer to hospital STAT. (needs surgery) Refer to hospital STAT. (needs surgery) (NO Laxatives) 1. Give vitamin drops if available, or 2. Advise orange juice if mother is worried Give LAXATIVE
B. ABDOMINAL DISTENTION: 1. With ABDOMINAL PAIN and REBOUND TENDERNESS 2. With VOMITING and CONSTIPATION (NO STOOL or FLATUS) 3. ABDOMEN NOT TENDER and NOT VOMITING or CONSTIPATED, but with SHIFTING DULLNESS present	PERITONITIS BOWEL OBSTRUCTION ASCITES	Refer to hospital STAT for surgery Refer to hospital STAT for surgery 1. Refer to hospital 2. MUST NOT DRINK ALCOHOL and NO PARACETAMOL
C. BLACK STOOL: 1. SINCE TAKING IRON TABS—STOOL OTHERWISE NORMAL and NO ABD. PAIN 2. Black just for 1 or 2 days following severe NOSEBLEED, then no more black stool (and NEVER ANY ABDOMINAL PAIN) 3. After excessive ALCOHOL or much ASPIRIN or IBUPROFEN (with NO previous UPPER ABDOMINAL PAIN) 4. History RIGHT UPPER ABD. or EPIGASTRIC PAIN, looking PALE 5. With LARGE LIVER, DISTENDED ABDOMEN, and SHIFTING DULLNESS	Color from IRON SWALLOWED BLOOD GASTRITIS from ASA or ALCOHOL PEPTIC or GASTRIC ULCER Probably BLEEDING ESOPHAGEAL VARICES	No treatment needed Check if ANEMIC, and take B.P. If both normal, no treatment needed. STOP ASPIRIN or ALCOHOL and give antacids (Also check for anemia—may need iron) Refer to hospital STAT (may need blood) Refer to hospital STAT
D. RED BLOOD on HARD or NORMAL STOOL	HEMORRHOIDS (often) (if no hemorrhoids or fissure—refer) ESOPHAGEAL VARICES	1. Rectal exam for cancer (hard mass) 2. If soft hemorrhoids felt—hemorrhoidal suppositories and brown rice for fiber
E. JAUNDICE: 1. With LIVER TENDERNESS after recent FEVER 2. With HARD IRREGULAR LIVER MASS 3. With attacks of SEVERE RIGHT COSTAL MARGIN PAIN and RIGHT SHOULDER PAIN 4. With BONE and JOINT PAIN and LOOKING PALE and HISTORY of BONE PAIN and ANEMIA since a SMALL CHILD (sometimes also fever) 5. Patient taking ISONIAZID, RIFAMPIN, PYRAZINAMIDE, DAPSONE-CHLORPROMAZINE or AMBILHAR	HEPATITIS LIVER CANCER GALLSTONE in BILE DUCT Sickle Cell Anemia (with jaundice likely a Sickle Crisis)	B-vitamins, rest—no alcohol or paracetamol Refer to hospital Refer to hospital quickly (may need cholecystectomy) 1. Give ASPIRIN for pain, and 2. PEN. or AMOXICILLIN when having fever 3. Refer STAT if VERY ILL or VERY PALE; STOP ADMINISTERING DRUGS and send to hospital STOP ADMINISTERING DRUGS and send to hospital

Gastrointestinal System—Diarrhea, Dysentery, and Vomiting

Symptom-Complex (S and O)	Assessment	Plan of Treatment
A. DIARRHEA with signs of SERIOUS DEHYDRATION —Restlessness, weakness, poor skin turgor, sunken eyes and fontanel.	DEHYDRATION—Exact cause is not important	STAT IV rehydration—Refer if no IV-lying down in car and drink O.R.S. while going
B. DIARRHEA with VERY MILD signs of DEHYDRATION —(FONTANEL and EYES SLIGHTLY SUNKEN, SKIN TURGOR perhaps SLIGHTLY DECREASED), B.P. NORMAL and NOT MUCH VOMITING	EARLY 2nd DEGREE DEHYDRATION	1. O.R.S. (Infant 100 ml/lb/day) or IV rehyd. 2. Loperamide 1 dose STAT (2 years or older) 3. If not improving with O.R.S., change to IVs
C. DIARRHEA of LESS THAN 7 DAYS DURATION WITHOUT DEHYDRATION 1. With LITTLE or NO FEVER, NO BLOOD or MUCOUS in STOOL, and NO SEVERE VOMITING (NORMAL B.P. and SKIN ELASTICITY, EYES NOT SUNKEN)	Common VIRAL or E. COLI DIARRHEA	1. Examine daily (if a child, weigh daily) 2. Loperamide 1 dose STAT (2 years or older) 3. Give Oral Rehydration Solution—daily
2. DIARRHEA with BLOOD and MUCOUS in stool (and usually FEVER but NOT DEHYDRATED)—See note at bottom of card	BACILLARY DYSENTERY (R/O Amebic Dysentery)	1. Co-trimoxazole 400/80 2 b.i.d. x 5 d. or 2. Ciprofloxacin 500 mg. b.i.d. x 5 days
D. DIARRHEA of MORE THAN 7 DAYS DURATION WITHOUT DEHYDRATION 1. With BLOOD and MUCOUS in stool* (but NOT dehydrated—if dehydrated, see instructions in "A" above and also treat dehydration immediately)	AMEBIC DYSENTERY—Check stool if a microscope is available	1. Metronidazole 250 mg. 3 t.i.d. x 10 days and 2. DOXYCYCLINE 100 mg. b.i.d. x 10 days 3. Follow with Chloroquine 500 mg. x 7 days
2. Repeated episodes of DIARRHEA every few days with loose or mucous stools*, but not bloody	GIARDIA or AMEBA—Check stool if microscope is available	Metronidazole 750 mg. t.i.d. x 10 days will cure either illness (Giardia needs 250 t.i.d.)
3. CHILD with DIARRHEA and signs of MALNUTRITION (Discolored skin, light reddish thin hair, edema)	Diarrhea from MALNUTRITION (P.E.M.)	Help mother treat vigorously with a good diet that includes much protein, or send to feeding center
4. DIARRHEA for MORE THAN 1 WEEK with HIGH FEVER	SALMONELLA—Enteric Fever R/O TYPHOID or LASSA	Refer to hospital
E. VOMITING 1. With ABDOMEN DISTENDED and CANNOT PASS STOOL or GAS	BOWEL OBSTRUCTION	Refer to hospital STAT (needs surgery)
2. With ABDOMINAL PAIN and REBOUND TENDERNESS PRESENT	PERITONITIS	Refer to hospital STAT for surgery and antibiotics
3. With SHOCK (weakness, sweating, low blood pressure)	ABDOMINAL EMERGENCY	Refer STAT—lying down in car with IV saline
4. With signs of DEHYDRATION—Restlessness, weakness, poor skin elasticity, sunken eyes and fontanel	DEHYDRATION from vomiting	STAT IV rehydration (Refer if no IVs—lying down in car, and drink O.R.S. while going)
5. SEVERE VOMITING but NOT YET DEHYDRATED and none of the danger signs listed above are present	Danger of BECOMING DEHYDRATED	PROMETHAZINE 25 mg (adult) to stop vomiting Start IV after 1 hr. if still much vomiting
6. MILD VOMITING (none of above danger signs) and NAUSEA present for 1 to 3 days (if present longer send to doctor)	GASTROENTERITIS or MILD FOOD POISONING or SYSTEMIC ILLNESS	1. PROMETHAZINE 1 dose STAT for nausea 2. Frequent sips of Oral Elect. Solution 3. Check b.i.d.—Start IV if not improving

*Note for Stools With Blood and Mucous: If microscope available, examine a very fresh stool (5 min. or less after it is passed) amebic dysentery has many RBC and few WBC in stool and often moving trophozoites.

Bacillary dysentery has many RBD and many WBC in stool and no trophozoites.