

Somalia Standard  
Treatment Guidelines  
and  
Training Manual on Rational  
Management and Use of  
Medicines at the Primary  
Health Care Level

Second edition

These guidelines were produced in collaboration  
with the World Health Organization



**World Health  
Organization**

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Treatment Guidelines  
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Medicines at the Primary  
Health Care Level

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## Foreword

It is a great honour to write an introduction to this second edition of the manual, *Somalia standard treatment guidelines and training manual on rational management and use of medicines at the primary health care level*. The first edition of this manual has been a major source of reference for many health workers in the field since its publication in 1998. It has also been a useful tool to educate the Somali health professionals on the optimal use of medicines. Nine years after its publication, the WHO office for Somalia is pleased to release an updated version of the manual in a pocket format—a request frequently made by the users.

The essential medicines concept, fully and properly applied, can improve health care and contribute to human development, but only if the medicines are of good quality, are safe, available, affordable and rationally used. It is close to 30 years since the inception of the concept of the essential medicines. Today, it is a universally accepted tool to lead people to better health with the available technology. More than 160 countries today have national essential medicine lists, while over 100 countries have national medicine policies in place or being developed. Access to essential medicines has grown from around 2 billion people in 1977 to close to 4 billion today. A concept which was associated with poor countries has now achieved wide recognition even among rich countries. Despite all the achievements, the concept still remains elusive to millions of people around the world, including for many Somalis. WHO studies show that irrational use of medicines, such as excessive use of antibiotics, overuse of injections, self-medication and the poor storage of pharmaceuticals, are major impediments to a healthy pharmaceutical sector—so is the case in Somalia.

WHO has taken the lead in improving the accessibility, optimal storage and proper use of medicines in Somalia. During the past few years, a large number of training courses have been held on essential medicines. WHO has rehabilitated and improved medicine warehouses in several parts of the country, including training of new staff. Access to vaccines and essential medicines, particularly in the areas of tuberculosis and malaria, has been improved. An essential medicines list covering both primary health care and hospital level, and a curriculum on the rational use of drugs at the primary health care level have been compiled. WHO could not have succeeded in all these activities without the full support, collaboration and interaction of the local health authorities, Somali health professionals, and other international organizations working in the health sector. WHO Somalia appreciates the time that many organizations and individuals took to share ideas, discuss their own practical experiences, and review drafts of these manuals.

For all those who use it, we hope that this new edition of the manual, *Somalia standard treatment guidelines and training manual on rational management and use of medicines at the primary health care level* will continue to provide guidance to Somali health professionals on the optimal use of medicines.

Dr Ibrahim Betelmal  
Former WHO Representative for Somalia,  
September 2006

## Preface to the second edition

*Somalia standard treatment guidelines and training manual on rational management and use of medicines at the primary health care level* has been written primarily for health professionals working in maternal and child health and outpatient facilities. However, the book will be of major help to any one working with medicines, particularly doctors, nurses and pharmacists working in hospitals as well as those in private clinics and pharmacies.

*Part 1: Somalia standard treatment guidelines* describes the treatment aspects of diseases commonly encountered in Somalia. Each section consists of a short definition followed by common symptoms and signs of the disease, medicine treatment and prevention. The language is simple and is expected to pose no problems to the readers. This section is written in alphabetical order from Bacterial to Viral infections and readers can quickly refer to the section they are interested in.

*Part 2: Training manual on rational management and use of medicines at the primary health care level* can be studied individually or in groups. It can also be used as a teaching companion on the rational management and use of medicines. The manual starts with a chapter on health centre management and administration, since proper management of a clinic or health centre is prerequisite for smooth running of services. A chapter on management of medicines, covering the areas of procurement, storage and dispensing, is followed by a chapter on rational use of medicines, including some important aspects of irrational practices such as misuse of injections, overuse of antibiotics and the importance of making a correct diagnosis. The final chapter provides a methodology to investigate medicine use in health facilities.

We are confident that this publication will prove to be of great assistance to all medicine prescribers and particularly to those in primary health care centres, and also to all health providers in the public and the private sector. Properly used, it is hoped it will reduce the misuse and irrational management and use of drugs in the country.

This manual was first published in 1998 under the title *Somalia standard treatment guidelines and rational use of drugs at the primary health care level*. This second edition has been thoroughly revised and made into a pocket format. Besides correcting some spelling mistakes and minor changes and additions to the text here and there, the title has been changed to reflect a change in structure of the book. Volume I of the first edition now comprises Part 2. Training manual on rational management and use of medicines at primary health care level. Volume II now comprises Part 1. Somalia standard treatment guidelines. Within those revised sections the following are the main changes.

#### Part 1

- A “REMINDER” is added for all diseases susceptible to outbreaks and which need to be reported.
- New topics in this manual include sections on kala-azar, micronutrients and sexually transmitted diseases based on syndromic management.
- Sections dealing with pneumonia, tuberculosis, emergencies and diarrhoea are replaced by more expanded chapters.
- The section on protein energy malnutrition has been substantially revised and updated, the text shortened and the terms made more understandable.
- The chapter on sexually transmitted diseases has been replaced with a section based on syndromic management.
- The table summary of dosage recommendations has been deleted.

- The following medicines are added to the new list: dexamethasone injection; silver sulfadiazine; ranitidine; zinc sulfate; cetrимide + chlorhexidine; dextrose 50%; insulin short acting, insulin medium acting; streptomycin; meglumine antimoniolate injection; and tuberculosis medicines based on the fixed dose combinations.
- The following medicines are deleted from the new essential medicines list (Annex 1): syrup forms of amoxicillin and cotrimoxazole; zinc oxide; cimetidine; diazepam tablets; digoxin tablets; hydrocortisone eye ointment; metrifonate tablets; nystatin oral tablets; pilocarpine eye drops; tetanus immunoglobulin; tetracycline tablets; and ergometrine tablets.

#### Part 2

- Chapter 2, a completely new section, 2.3 dealing with good dispensing practice, has been added.
- Tables on medicine management dealing with medicine ordering and receiving have been deleted and replaced by text. Many readers expressed difficulty understanding these forms. Different books use different forms but since the content in those forms is largely the same, a simple text explaining the different parts of such forms is more easily understood.
- Medicine supervision guideline – this section presents a medicine supervision guideline, which will help health providers and health administrators to enhance the quality of the work they are doing in the area of the rational use of medicines. The section presents a simple methodology to investigate the proper storage and use of medicines at the primary care level.

#### Annexes

- Annex 1 is the updated version of the Somalia Essential Medicines List. The medicines are classified according to the type of health facility where they should be used. i.e. level A health

facilities close to referral sites (hospitals), level B remote health facilities without the ability to refer urgently, and hospital referral sites. Medicines required for special programmes are also included.

Yakoub Aden Abdi MD, PhD  
WHO Consultant on Essential Medicines

## Acknowledgements

This new edition of the *Somalia standard treatment guidelines and training manual on rational management and use of medicines at the primary health care level* was revised and written by Dr Yakoub Aden Abdi, who served as a short term consultant for WHO Somalia. We would like to express to Dr Aden Abdi our sincere thanks for the valuable and outstanding work done during his assignment. Special thanks are due to Dr Stephen Lonsdale for the final review and revision of this new edition of the guidelines and for his contribution as a short-term consultant in Somalia in the 1990s. Many people have contributed to the development of this manual. WHO Somalia appreciates the time that many organizations and individuals took to share ideas, discuss their own practical experiences, and review different drafts of the manual. Thanks are due to the WHO Somalia staff and to the Regional Office for the Eastern Mediterranean for its continuous advice and technical guidance.

We are sincerely thankful to all the different international organizations and nongovernmental organizations who contributed in one way or the other to the development of this manual. We are especially grateful to UNICEF Somalia, Food Security Assessment Unit, International Committee of the Red Cross (ICRC) and other international and national nongovernmental organizations working in Somalia .

WHO Somalia highly appreciates the prominent role that the Essential Medicines Working Group of the Somali Aid Coordination Body (SACB) has played in the process of revising this manual. We are also thankful to the Health Sector Coordinator of the SACB and his team for all the meetings, good comments and constant support during the progress of this work.

Of course, the revision of this manual would not have been possible without the full support of the health authorities and Somali health professionals. We are particularly grateful to all the many Somali doctors and nurses whose comments enriched this new edition of the manual.

WHO Office for Somalia  
September 2006

## Abbreviations

<b>AIDS</b>	acquired immunodeficiency syndrome
<b>ASA</b>	acetyl salicylic acid
<b>CSF</b>	cerebrospinal fluid
<b>DOTS</b>	directly observed treatment, short-course
<b>DPT</b>	diphtheria–pertussis–tetanus
<b>EPI</b>	Expanded Programme on Immunization
<b>FIFO</b>	first-in-first-out
<b>g</b>	gram
<b>GV</b>	gentian violet
<b>HIV</b>	human immunodeficiency virus
<b>i.m.</b>	intramuscular
<b>INN</b>	internationally recognized non-proprietary names
<b>IU</b>	international units
<b>i.v.</b>	intravenous
<b>kg</b>	kilogram
<b>L</b>	litre
<b>LP</b>	lumbar puncture
<b>MCH</b>	maternal and child health
<b>mg</b>	milligram
<b>ml</b>	millilitre
<b>NSAID</b>	non-steroidal anti-inflammatory drug
<b>Oint.</b>	ointment
<b>OPD</b>	outpatient department
<b>ORS</b>	oral rehydration salts
<b>PEM</b>	protein–energy malnutrition
<b>PHC</b>	primary health care
<b>PID</b>	pelvic inflammatory disease
<b>PO</b>	per os (by mouth)
<b>PPH</b>	postpartum haemorrhage
<b>RBC</b>	red blood cells
<b>SACB</b>	Somali Aid Coordination Body
<b>SC</b>	subcutaneously
<b>STD</b>	sexually transmitted diseases
<b>TB</b>	tuberculosis
<b>TBA</b>	traditional birth attendants
<b>URI</b>	upper respiratory infection
<b>UTI</b>	urinary tract infections
<b>WBC</b>	white blood cells

# Part 1

## Standard treatment guidelines

# Chapter 1

## **Bacterial infections**

- Meningitis
- Pertussis
- Tetanus
- Typhoid fever

## MENINGITIS is a notifiable disease

# Meningitis

## Description

Meningitis is a serious infection of the membranes covering the brain (meninges). The disease may cause death if untreated. It is usually of bacterial origin, the most common organisms being *Neisseria meningitides*, *Streptococcus pneumoniae* and *Haemophilus influenzae*.

## Signs and symptoms

<b>In neonates</b>	Signs may be vague and non-specific Failure to suck Vomiting repeatedly Fever may be absent Bulging fontanel (may come late) Signs of shock
<b>In children &gt;1 month and adults</b>	High fever Convulsions Headache and vomiting Neck stiffness (Kernig's sign positive) Confusion Stiff neck or back (may be absent) Sensitivity to bright lights Rash (in meningococcal septicaemia)

## REMEMBER!

It is vital to exclude malaria. If it is not possible to exclude malaria treat the patient for both diseases. Take thin and thick blood slides and then give first-line malaria treatment.

## Management

- a) Lumbar puncture (LP) **not possible**, patient **can** reach hospital within 3 hours:
- Make a blood slide;
  - Give a single dose of first-line malaria treatment (see under malaria);
  - REFER immediately with the blood slide.
- b) Lumbar puncture (LP) **not possible**, patient **cannot** reach hospital within 3 hours:
- Make a blood slide;
  - Give a single dose of first-line malaria treatment (see under malaria);
  - Give a single dose of benzylpenicillin intravenously (see below);
  - Give a single dose of chloramphenicol intramuscularly (see below);
  - REFER with blood slide;
- c) Lumbar puncture (LP) **possible**, patient **cannot** reach hospital within 3 hours:
- Do a lumbar puncture without delay;
  - Make a blood slide;
  - Give a single dose of first-line malaria treatment (see under malaria);
  - Give a single dose of benzylpenicillin intravenously (see below);
  - Give a single dose of chloramphenicol intramuscularly (see below);
  - REFER with blood slide and CSF in a sterile container.

## Doses

- Chloramphenicol, given intramuscularly:
  - Adults 1 g;
  - Children 25 mg/kg (neonates 6.25 mg/kg, under 1 year 12.5 mg/kg);
- Benzylpenicillin, given i.v. if possible, otherwise i.m.:
  - Adults 5 up to 14.4 g daily in divided doses;
  - Children 180–300mg/kg daily in 4–6 doses.

### REMEMBER!

Meningococcal meningitis is a medical emergency and benzylpenicillin should be given immediately if the diagnosis is suspected

## Supportive treatment

- Give diazepam slow i.v. or rectal if convulsions:
  - Adults: 10–40 mg;
  - Children under 3 years: maximum dose 5 mg;
  - Children over 3 years: maximum dose 10 mg;

*Repeat dosage if necessary;*
- Antipyretics such as aspirin or paracetamol;
- Ensure hydration and nutrition (nasogastric, if necessary).

### REMEMBER!

The importance of obtaining a CSF specimen for visual inspection to confirm meningitis, even in the absence of laboratory facilities, cannot be overemphasized. A CSF can be safely obtained (using standard technique) with a sterile needle when spinal needles are not available.

## PERTUSSIS is a notifiable disease

## Pertussis (whooping cough)

### Description

Whooping cough is a childhood disease characterized by paroxysmal cough, inspiratory whoops and tenacious sputum, which is caused by the bacterium *Bordetella pertussis*. In affected children it might lead to malnutrition.

### Signs and symptoms

- Spasmodic cough, which is worse at night, and is often followed by choking and vomiting
- Characteristic inspiratory whoops (occurring after the first week of the illness)
- Conjunctival haemorrhages (from coughing)
- Infants less than 3 months may develop apnoeic episodes or periods of hypoxia (cyanosis) without cough, which may be fatal.

### Management

- In the early stage (<1 week), erythromycin may help to prevent the spread of the disease to others. Give: 7.5–12 mg/kg every 6 hours for 7 days;
- During the paroxysmal stage, antibiotics are of NO use. Treatment is largely symptomatic;
- Advise the mother:
  - to ensure adequate hydration;

- to remove any tenacious strands of sputum from the oropharynx;
- and most importantly to continue good nutrition of the child;
- REFER infants less than 3 months, the very weak and malnourished and those with complications (e.g. pneumonia, convulsions, dehydration, malnutrition).

### REMEMBER!

Cough medicines, sedatives, mucolytics and antihistamines are useless and must NOT be given.

## Prevention

- Immunization (part of the DPT vaccination)
- Avoid contact with other children with whooping cough
- Consider giving close contacts of the child with pertussis prophylactic erythromycin.

## Tetanus

### Description

A bacterial infection characterized by involuntary spasm, usually fatal if untreated. Tetanus bacteria live all around us in the air and in the ground. The port of entry is either an uncleaned wound or, in the case of neonates, the umbilical cord. The incubation period is between 2 and 60 days.

## Signs and symptoms

<b>In infants</b>	Baby cannot suck Infected umbilicus Stiff body Irritability Spasms Cyanosis during spasms
<b>In older children</b>	Risus sardonicus (mocking smile) Trismus (lockjaw) Opisthotonos (stiff arched back) Spasms (initially induced by any stimuli but later spontaneous)

## Management

- REFER as quickly as possible. If quick referral is not possible:
- Nurse the patient in a place with minimal sensory stimuli; noise and unnecessary touching can provoke fits;
- Clean the umbilicus/wound with soap and water or antiseptic solution;
- Control the spasms by:
  - Diazepam in a generous dose: start with 10-40 mg i.v. or rectal;
  - Repeat the dose if needed;
- Give benzylpenicillin (i.m., or slow i.v.):
  - Adults: 1 million IU 6 hourly for 7 days;
  - Children: 50 000 IU/kg every 6 hours for 6 days.

If available give human tetanus immunoglobulin 500 IU i.m. to neutralize free toxin.

If only horse antitenanus serum is available, give 10 000 IU i.v. (after a small subcutaneous test dose) and 750 IU/day to the wound for three days.

## Prevention

- Education of traditional birth attendants (TBAs);
- Cleanliness during delivery;
- Vaccination of pregnant women with tetanus toxoid, once during the first antenatal visit and the second at least 1 month after the first and no later than 1 month before delivery;
- Routine immunization of all children with DPT.

## TYPHOID is a notifiable disease

## Typhoid fever

### Definition

Typhoid is a systemic illness caused by a bacterium, *Salmonella typhi*, which infects the small intestine and the blood stream via the lymphatic system. The infection may be transmitted in water and food and is dose related.

### Signs and symptoms

- High fever which persists
- Constipation in the early stage
- Abdominal pain and diarrhoea in the second week of illness
- Severe headache
- Low pulse in the presence of high fever

- Mental confusion
- Deafness
- Splenomegaly, usually at the end of the first week.

## Complications

- Intestinal perforation
- Intestinal bleeding
- Acute cholecystitis
- Sepsis
- Pneumonia
- Meningitis
- Sepsis (typhoid abscess can occur almost anywhere)
- Septic arthritis and osteomyelitis
- Renal disease (failure or nephritic syndrome).

## Management

- Good nursing care is essential;
- Observe closely for complications;
- Treat fever and hydrate;
- Antibiotic treatment: Chloramphenicol capsule 250 mg:
  - Adults: 500 mg 6-hourly for 14 days;
  - Children: 25 mg/kg 6-hourly for 14 days;*Alternative:* Cotrimoxazole (sulfamethoxazole + trimethoprim) orally:
  - Adults: 960 mg 12-hourly for 14 days;
  - Children: 24 mg/kg 12-hourly for 14 days;
- If the patient cannot take oral medications and you cannot REFER, give the same dose i.v., but switch to oral therapy as soon as possible.

# Chapter 2

## **Dental and oral diseases**

- Dental abscess
- Dental caries
- Periodontal disease

## Dental abscess

### Description

Dental abscess is a collection of pus around the affected tooth, which may spread into the surrounding tissue. A dental abscess may develop from gum disease or dental decay.

### Signs and symptoms

- A constant throbbing pain
- The tooth is painful when tapped with something hard
- There may be tender swelling on the gum around the affected tooth
- There may be a discharge
- The infection may spread through adjacent tissues causing facial or neck swelling or difficulty opening the mouth
- There might be fever.

### Management

- Give paracetamol 500 mg tablets:
  - Adults and children over 12 years: 1–2 tablets 6-hourly;
  - Children 8–12 years: 1 tablet 6-hourly;
  - Children: 3–7 years: ½ tablet 6-hourly;
  - Children: 1–2 years ¼ tablet 6-hourly;
- Warm saline gargles;
- If high fever, give penicillin v 500 mg 6-hourly and REFER.

## Dental caries

### Description

The formation of holes in the teeth—decay of the teeth. This happens mainly as a result of poor oral hygiene (e.g. teeth not brushed) but could also be the result of trauma where bacteria attacks and corrodes the teeth. In adults khat chewing could be a major cause of tooth damage because of the high level of tannins in the khat leaves.

### Signs and symptoms

- Pain after hot or cold foods or drinks
- Pain may be intermittent, severe sharp or constant
- A hole or black spot may be visible on the tooth.

### Management

- Clean the hole in the tooth wall, removing all food particles;
- Rinse the mouth with warm salt water;
- Give paracetamol 500 mg tablets:
  - Adults and children over 12 years: 1–2 tablets 6-hourly;
  - Children 8–12 years: 1 tablet 6-hourly;
  - Children: 3–7 years: ½ tablet 6-hourly;
  - Children: 1–2 years ¼ tablet 6-hourly;
- REFER for treatment to dental practitioner.

### Prevention

- Brush teeth after every meal if possible and at bedtime;
- Tooth decay and cavities must be corrected promptly;
- Minimize sugar intake, particularly in children;

- Avoid cigarette smoking and khat chewing.

## Periodontal disease (gum disease)

### Definition

Inflammation or degeneration of tissues that surround and support the teeth: gingiva, alveolar bone, periodontal ligament and cementum. Periodontal disease most commonly begins as gingivitis and progresses to periodontitis.

### Signs and symptoms

- Bleeding of the gum
- Bad smelling breath
- The presence of plaque, especially around the necks of teeth and on the gum;
- Calculus
- Swollen red gums
- Recession of the gums exposing the root of the teeth
- The teeth may be loose in the gums.

### Treatment

- Effective brushing to remove plaque;
- Gargle with hot water and salt after meals and before bed;
- Increased intake of fruits;
- In case of pain, give paracetamol 500 mg tablets:
  - Adults and children over 12 years: 1–2 tablets 6-hourly;

- Children 8–12 years: 1 tablet 6-hourly;
- Children: 3–7 years: ½ tablet 6-hourly;
- Children: 1–2 years ¼ tablet 6-hourly;
- In severe cases, REFER.

### Prevention

- Brush teeth after every meal if possible and at bedtime;
- Tooth decay and cavities must be corrected promptly;
- Minimize sugar intake, particularly in children;
- Avoid cigarette smoking and khat chewing.

# Chapter 3

## **Emergencies and trauma**

Accidents causing major and minor injuries happen frequently. People with injuries will come to the health facility for advice and treatment. Injuries may take different forms and can be serious and life-threatening. There may be visible bleeding. Sometimes the bleeding may be in the internal organs and you cannot see it.

The most common conditions, which might present acutely at the health facility, are:

- Allergic shock
- Bites
- Bleeding
- Burns
- Convulsions
- Fever
- Fractures
- Pain
- Poisoning
- Wounds

## Allergic shock

### Description

Allergic shock is also called anaphylactic shock or anaphylaxis. This reaction is often caused by an injection of a medicine, but can also be caused by oral medication, food or by stings of bees and wasps. The reaction is most frequently seen with:

- Antibiotics (penicillin injections are the most common)
- Antitoxins made out of horse serum, e.g.
  - Snake antivenom
  - Tetanus antitoxin
  - Rabies antisera
- Food (nuts, eggs, fish)
- Bee stings.

#### REMEMBER!

The risk of a serious reaction is greater in a person who has previously been given these medicines or antisera, especially if this person had an allergic reaction such as itching, swelling or breathing difficulties (even if it was hours or days after the medicine was given).

### Signs and symptoms

- Swelling of lips or itchy rash
- Cool, clammy skin (cold sweat)
- Weak, rapid pulse
- Low blood pressure
- Cyanosis
- Difficulty in breathing; (asthma like symptoms)
- Loss of consciousness
- Tinnitus.

### Management

- Lie patient down with legs elevated;
- Clear the airway;
- IMMEDIATELY inject 0.5 ml adrenaline 1:1000 (1 mg/ml) i.m. or 0.01 ml/kg in children;
- This dose of adrenaline can be repeated every 10 minutes until the patient is better.
- If despite your treatment the patient does not improve, REFER.

*Anaphylactic shock can be fatal. If you suspect that is what happening you must administer ADRENALINE WITHOUT DELAY. Administering adrenaline to someone not actually suffering an anaphylactic reaction is extremely unlikely to do harm. Withholding adrenaline from someone who is suffering an anaphylactic reaction may prove FATAL.*

### Prevention

- Use injections only when absolutely necessary;
- Always ask for a history of medicine reaction before giving an injection.

#### REMEMBER!

In the management of anaphylaxis there are no contraindications to the use of adrenaline.

## Bites

### Description

Animal bites can easily cause infections and severe pain. A very dangerous bite is that of

a rabid dog. When a patient presents with a bite wound you have to be cautious. Human bites usually cause severe infections.

## Management

- Any patient presenting with bite wounds requires antibiotics;
- Clean all bite wounds thoroughly with soap and water or an antiseptic;
- Check the patient's tetanus immunization status and treat accordingly;
- Report a suspected rabid dog to the veterinary officer or any other concerned authority. REFER the patient if rabies vaccination is required;
- NEVER stitch a bite. Stitching locks the bacteria inside the wound and an infection is the inevitable result;
- In a suspected poisonous snakebite, the wound should be cleaned as above, and the patient REFERRED.

### REMEMBER!

Poisonous snakebites may have serious consequences. The patient may lose the affected limb or may even die. Always REFER immediately if a patient looks sick, shows difficult breathing or has developed a large swelling of the bitten area within 2 hours after the bite. However do not panic, reassure the patient. Do not put a tight tourniquet on the affected limb and do not incise the wound. More damage may be done by stopping the blood circulation than the snakebite.

## Bleeding

### Description

Bleeding may occur from external wounds or from body openings. In accidents bleeding may be happening internally without any initial signs.

### Management

#### *External bleeding*

To prevent a patient from losing a lot of blood and going into shock, it is important that the bleeding is stopped as soon as possible. Patients presenting with bleeding may be treated as follows:

- If bleeding is from a limb, elevate the limb;
- Apply pressure on the bleeding point for 5 minutes. For epistaxis (nose bleeding) squeezing the nostrils together with the head down is often sufficient. On other sites, apply a pressure bandage if needed;
- If you are skilled in stitching, you may arrest the bleeding by stitching a wound. If not, REFER the patient after applying a pressure bandage: put a sterile pad over the bleeding point and firmly apply a bandage over it (not too tight as this may prevent normal blood circulation).

#### *Internal bleeding*

In some accidents the patient may have suffered injuries of the internal organs. This is usually accompanied by bleeding, which cannot be seen. However, the nature of the injury and the signs and symptoms may give you an indication of the location and

seriousness of the bleeding. Well-known causes of internal bleeding are:

- Ruptured spleen (e.g. child fell out of a tree);
- Lung tissue damage (e.g. fractured ribs);
- Ruptured liver (e.g. road accidents);
- Ectopic pregnancy (ask for date of last menstrual period);
- Ruptured uterus (with or without postpartum haemorrhage).

A patient with internal bleeding can easily go into shock. Therefore, if you suspect internal bleeding, ALWAYS LOOK FOR SIGNS OF SHOCK:

- Rapid and weak pulse
- Low or not measurable blood pressure
- Fast shallow breathing
- Restlessness
- Cool, clammy skin
- Cyanotic (blue) lips and /or nails
- Thirst.

### REMEMBER!

Do not remove any penetrating foreign bodies.

## Management of internal bleeding

- Always REFER the patient immediately, accompanied by 1 or 2 blood donors and a nurse or medical assistant;
- If possible, put up a drip of i.v. fluid (normal saline if possible) and make it run fast;
- Take blood for grouping and cross-matching if possible.

## Burns

### Description

Burns can be serious wounds caused by open fire, electricity or hot fluids such as water, oil or porridge. A large burn is more dangerous than a small burn and a deep burn is more dangerous than a superficial burn. A burn on the face or hand is more dangerous than a burn on the abdomen or on the back. For every burn you need to ask yourself three questions:

- How big is the burn?
- How deep is the burn?
- Where is the burn?

*How big is the burn?*

A large burn causes more pain and more easily becomes infected. If the burn affects a large area, a lot of fluid and protein are lost and the patient may go into shock. If the burn is more than twice the size of the patient's hand size, then the patient is in danger of dehydration. You must give oral rehydration salts (ORS) and refer.

A hand area is about 1% of the total body surface area.

### REMEMBER!

If the area of the burn is more than twice the size of the patient's hand, give ORS or any fluid and REFER.

*How deep is the burn?*

The skin has two parts or layers. The thin outer layer is the *epidermis*. The thicker inner layer is called *dermis*, which contains the

sweat glands and their follicles. Burns can be divided according to the layer involved:

#### **First-degree burn or superficial burn:**

- Only reddening of the skin;

#### **Second-degree burn or partial thickness burn:**

- Superficial partial thickness: reddening of the skin and blister or vesicle formation. Healing is without scars;
- Deep partial thickness: the epidermis is destroyed but the hair follicles and sweat glands are still alive. These burns heal easily;

#### **Third degree burn or full thickness burn:**

- The dermis is completely destroyed and raw flesh exposed;
- Healing takes a long time and leaves scars.

Through a deep burn the patient loses body fluids, which contain much protein. In such a situation, replacement of fluids will become necessary.

#### *Where is the burn?*

Burns on the face are serious because of the scars and deformities they may leave. Damage to the eyes may cause blindness. Burns on a hand may cause contractures, thereby limiting its function. If a patient has inhaled hot smoke, the respiratory tract may be burnt and pneumonia may develop.

### **Complications of burns**

Patient with burns can suffer short-term as well as long-term complications:

- Shock can occur, due a combination of body fluids loss, severe pain and fever;

- A large area of skin loss leaves tissue wide open to all forms of infections, including tetanus;
- Shrinking of scar tissue can cause contractures.

### **Management of burns**

#### *First aid for burns*

- Keep the affected part in cold water for at least 15 minutes;
- Give analgesics for pain (i.e. paracetamol);
- Always REFER a patient with a THIRD degree burn;
- DO NOT break the blisters in a SECOND degree burn, as they protect against infection;
- Give ORS to every patient with a burnt body surface of more than the size of your two palms (2% of body surface) and REFER immediately.

#### **REMEMBER!**

*Always cool the affected part with cold water for at least 15 minutes to prevent further damage.*

#### *Treatment of burns*

- Clean the wound with soap and water;
- Thoroughly rinse with plenty of water;
- For burns on extremities apply silver sulfadiazine 1% cream for all partial thickness burns to prevent infection;
- For partial thickness burns cover with sterile dressings, which can be changed from twice daily to once a week according to circumstances and the condition of the wound;
- For facial burns and all third degree burns REFER;

- Provide pain relief for dressing changes with paracetamol.

#### *High-risk groups for burns*

- Children may fall into a fire or upset hot fluid over themselves;
- An epileptic patient may fall into an open fire;
- People with leprosy may not feel that an object is burning hot.

### **Prevention of burns**

Most of the victims of burns are children. Parents have to be taught how to prevent these burns:

- Do not leave small children near open fires or stoves, or hot liquids that may spill;
- Turn handles of pans on the stove away so that children cannot reach them;
- Keep paraffin lamps and matches out of reach of children.

#### **REMEMBER!**

Teach everyone who cares for children the danger of fire.

## **Convulsions**

### **Description**

Paroxysmal involuntary movements of cerebral origin with loss of consciousness often accompanied by biting of the tongue and/or involuntary release of urine.

### **Possible causes**

- Hyperthermia (overheating), high fever due to any cause

- Cerebral meningitis
- Metabolic cause: hypoglycaemia (severe malnutrition, neonate or patient being treated with i.v. quinine)
- Epilepsy
- Head injury
- Malaria
- Poisoning

### **Management**

*Stop the convulsion:*

- Give slow intravenous or rectal diazepam (2 ml amp, 5 mg/ml):
  - Children: 0.2–0.5mg/kg (max 5 mg infants, 10 mg children);
  - Adults: 10–20 mg.

*If needed, repeat after 10–20 minutes, maximum of 30 mg within 1 hour.*

*Treatment of fever:*

- Tepid wet towels;
- Give paracetamol tablets (500 mg):
  - Adults and children over 12 years: 1–2 tablets 6-hourly.
  - Children 8–12 years: 1 tablet 6-hourly.
  - Children: 3–7 years: ½ tablet 6-hourly.
  - Children: 1–2 years ¼ tablet 6-hourly.

*Treatment of the cause:*

- Cerebral malaria: see under malaria;
- Meningitis: see under meningitis;
- Hypoglycaemia: i.v. hypertonic solution;
  - 2 ml/kg, if you use dextrose 50% solution
  - 3 ml/kg, if you use dextrose 30% solution
- Epilepsy: if genuine epilepsy is suspected, REFER for investigation and long-term management.

### *Supportive treatment:*

- Place the patient on his left side and flex upper leg; (coma position)
- Maintain a clear airway by removing secretions and vomit;
- Ensure adequate nutrition and hydration (nasogastric tube if necessary);
- During convulsions, put something in the mouth to avoid biting of the tongue;
- When the patient is stabilized, REFER.

## Fever

### Description

Fever is a symptom of an increased body temperature. Fever is present when the rectal temperature is above 37.0°C in the morning, and above 37.5°C in the evening. The corresponding axillary temperature would be above 37.5°C and 38.0°C, respectively. High fever in newborns and infants can cause serious and fatal complications such as convulsions, dehydration and death.

Possible causes to look for in cases of high fever in a patient	
Fever	Possible causes
Fever + shivering, sweating, headache	Malaria
Fever + general health impairment	Typhoid
Fever + neck stiffness, neurological signs	Meningitis
Fever + jaundice	Hepatitis
Fever + shock	Septicaemia
Fever + respiratory signs	Pneumonia Bronchiolitis Epiglottitis
Fever + bloody diarrhoea	Dysentery
Fever during last month of pregnancy	Malaria Pyelonephritis
Fever + general health impairment, adenopathies, chronic diarrhoea	Opportunistic infection; AIDS

### Management

- Investigate and treat the underlying cause;
- General measures to control the fever:
  - Undress the patient;
  - Start tepid sponging of the skin (lukewarm, not cold);

- If high temperature ( $>40.0^{\circ}\text{C}$ ), give a tepid bath;
- Advise the mother continuous feeding and hydration of the child;
- Antipyretic treatment: paracetamol 500 mg tabs.
  - Adults: 1 g orally 6-hourly as required (max: 4 g/24 hours);
  - Children: 10 mg/kg 6-hourly as required (max: 4 doses/24 hours). If small children, crush the tablets and mix with a sweet drink;
- If convulsions, give slow i.v. diazepam 0.2–0.5mg/kg (max. 5 mg infants, 10 mg children), if not possible give the same dose rectally. Repeat the dose after 10 minutes if necessary;
- In unresolvable cases, REFER.

## Fractures

### Description

Fractures may occur in any bone. They may include an open wound, in which case it is called an **open or compound fracture**, or the skin may be undamaged in which case it is called a simple fracture. There are many possible sites for fractures, and each should be dealt with in a specific way. Therefore, unless you have had specific training, follow the general principles listed, and REFER.

### Management

- If there is an open wound, clean it as thoroughly as possible and dress it, but **DO NOT SUTURE IT CLOSED**;
- Stabilize the fracture as best as you can.

- This means splinting the affected part;
- Do not move or bend the fractured part more than necessary. Testing for abnormal movement can cause more damage;
- Give pain relief (i.e. paracetamol);
- If the fracture has occurred in a large bone, such as the thigh or the pelvis, considerable internal blood loss may take place, and the patient may go into shock due to blood loss. Therefore for fractures of large bones i.v. fluid is necessary;
- REFER as quickly as possible.

### REMEMBER!

Do not carry out primary closure in any case of open fracture.

## Pain

### Description

Pain is a common symptom in many different conditions. It may alert the health worker to the possibility of an underlying medical problem. In some chronic diseases such as AIDS, cancer etc., pain may be persistent and disabling. Pain is a subjective experience and can be expressed differently by different people and depends on emotional and/or cultural factors.

### Signs and symptoms

For a rational treatment of pain it is important to define the pain in terms of onset, duration, localization, radiation, nature, association with other systemic features and possible factors that induce it.

## Management

- Investigate and treat the cause;
- Symptomatic therapy.

*Headache and joint pains:* Paracetamol tablets (500 mg):

- Children 8–12 years: 1 tablet 6-hourly;
- Adults and children over 12 years: 1–2 tablets 6-hourly;
- Children: 3–7 years: ½ tablet 6-hourly;
- Children: 1–2 years ¼ tablet 6-hourly;

If no relief add:

- For adults ibuprofen tablets (400 mg) 8 hourly to be taken with food.
- Children 8–12 years ½ tablet 8 hourly.
- Children 3–7 years ¼ tablet 8 hourly.

For acute severe pain, REFER immediately.

## Poisoning

### Description

People who swallow something poisonous can become very ill and may even die. Many poisonings or intoxications occur in children.

### Signs and symptoms

Symptoms of poisoning depend on the poison taken:

- Drowsiness
- Rapid respirations and cough
- Vomiting or diarrhoea
- Convulsions
- Frothing at the mouth.

## Management of poisoning

- REFER ALL PATIENTS with suspected poisoning. If quick referral is not possible:
- INDUCE VOMITING:
  - If tablets, capsules or other kinds of medicines have been swallowed;
  - If you are certain the poison is not corrosive or a hydrocarbon solvent;
- DO NOT MAKE THE PATIENT VOMIT IF:
  - You suspect paraffin poisoning (SMELL). Give water/milk;
  - You suspect poisoning with a corrosive chemical e.g. bleach. Give water/milk;
  - If the patient is drowsy and may not have an adequate gag reflex;
  - If the poison was taken more than 1–2 hours previously.

The best way of inducing vomiting is with syrup of ipecac 10 ml in children 1–10 years, 15 ml in children 12–16 years and 30 ml in adults. Give with 300–600 ml of water to drink.

### Prevention of poisoning

- Keep medicines and chemicals out of the reach of children;
- Do not put paraffin or other chemicals in empty mineral water bottles as children may drink by mistake.

#### REMEMBER!

Keep medicines and chemicals out of the reach of children.

# Wounds

## Description

A wound is a break in the skin and/or damage to parts of the body under the skin often due to a violent impact.

## Signs and symptoms

- Pain
- Bruising and/bleeding
- Sometimes there is major tissue damage.

## Management of wounds

- Clean the wound thoroughly with soap and water or with an antiseptic like cetrimide + chlorhexidine solution;
- Check the patient's tetanus immunization status;
- If not immunized and the wound is dirty, consider giving antitetanus serum or immunoglobulin if available;
- If the wound is large and less than 6 hours old, sticking (suture) is indicated;
- Dress the wound;
- If you are not skilled or lack the necessary equipment, REFER the patient after dressing the wound.

### REMEMBER!

Always clean wounds thoroughly and remove foreign bodies and dead tissue.  
Never suture a dirty wound.

# Chapter 4

## **Eye conditions**

- Conjunctivitis
- Trachoma

# Conjunctivitis

## Description

Acute inflammation of the conjunctivae, which may be caused by infection (viral or bacterial), allergy, foreign body or chemical. Conjunctivitis causes redness, pus, and mild 'burning' in one or both eyes. Eyelids often stick together after sleep. It is especially common in children.

## Signs and symptoms

- The eye becomes red
- The infection may affect only one or both eyes
- The infected eye(s) water(s)
- There may be a purulent discharge 'pus'
- Vision is normal

## Management

### *Simple conjunctivitis*

- Regular eye washing with cooled boiled water;
- NO need for antibiotics.

### *Allergic conjunctivitis*

- Avoid the causative agent if possible;
- Regular eye washing with cooled boiled water;
- Chlorpheniramine 4 mg tablets:
  - Children 6 months to 1 year: ¼ tablet twice daily as required;
  - Children 1–5 years: ¼–½ tablet three times daily as required;
  - Children 5–12 years: ½–1 tablet 8-hourly as required;
  - Adults and children over 12 years: 1 tablet 8-hourly as required.

## Note!

Allergic conjunctivitis is rare in children under 1 year.

### *Purulent conjunctivitis*

- Apply tetracycline eye ointment 1% in both eyes, 8-hourly for 7 days.

### *Ophthalmia neonatorum (gonococcal)*

- Clean with normal saline or cooled boiled water;
- In both eyes, apply tetracycline eye ointment 1%, 2 hourly initially;
- Then REFER for further assessment;
- Don't forget that both parents need treatment for gonorrhoea as well.

If not possible:

- Give benzylpenicillin (i.m.): 25 000 IU/kg 6-hourly for 7 days;
- If newborn, review daily and treat the mother too.

## Prevention of ophthalmia neonatorum

- Health education for mother;
- Treat gonorrhoea in pregnancy;
- Clean the eyes of all newborn babies as above;
- Apply tetracycline 1% eye ointment to the eyes of all newborn babies at birth.

## REMEMBER!

Ophthalmia neonatorum is due to gonorrhoea contracted by the newborn from the mother at birth. Unless treated it will rapidly lead to blindness.

## Foreign body on the cornea

Particles of dust, dirt or loose eyelashes are the most common foreign bodies found in the eyes. They are often under the eyelid.

### Management

- Irrigate the eye using clean warm water;
- It may be possible to lift the foreign body off with a moistened swab or the corner of a clean cloth;
- If the foreign body is under the upper lid ask the patient to look down. Grasp the eyelashes and pull the upper lid downwards and outwards over the lower lid;
- Do not attempt to remove a foreign body embedded in the cornea; If you cannot remove the foreign body easily, apply tetracycline ointment, cover the eye and REFER.

## Trachoma

### Description

Trachoma is a chronic infection of the eye caused by *Chlamydia trachomatis*. It begins like conjunctivitis but slowly gets worse. It spreads from person to person by hand or by flies and is most common in places with poor hygiene and sanitation. Trachoma may last for many months or years. If not treated in its early stages it can cause partial or total blindness.

### Signs and symptoms

#### Stage 1

In the first stage trachoma looks like conjunctivitis (red, watery or pus filled eyes).

#### Stage 2

About two months later, small pinkish grey lumps appear inside the upper lids. In this stage you may also be able to see that the top of the cornea looks grey instead of brown.

#### Stage 3

After several years, the pinkish grey lumps disappear, leaving white scars. These scars can:

- make eyelids thick and keep them from opening fully;
- pull the eyelashes down into the eye and scratch the eye surface, causing blindness.

#### Stage 4

After several more years the cornea becomes even more grey and scarred, causing partial or complete blindness. The eyelids are deformed and they do not close normally over the eyes. The eyelashes turn inwards due to scarring, and they scratch the cornea. The eyelids no longer protect the eyes and repeated infections occur.

### Management

*Stage 1:* Tetracycline eye ointment (1%) 3 times a day for 1 to 2 months depending on the response;

*Stage 2:* Same treatment for 2-3 months;

*Stage 3:* complete cure is no longer possible;

- local disinfection;
- tetracycline 1% eye ointment.

*Stage 4:* Surgery, REFER

## **Prevention**

- Teach mothers to wash their children's eyes daily with clean water;
- Use sufficient quantities of soap and water;
- Personal hygiene (hand washing, eye washing);
- Advise early attendance for treatment.

# Chapter 5

## **Gastrointestinal diseases**

- Diarrhoea and dehydration
- Gastritis and peptic ulcer
- Stomatitis

# Diarrhoea and dehydration

## Description

Diarrhoea is the passage of 3 or more loose stools in 24 hours. Frequent passing of normal consistent stools is not diarrhoea. Diarrhoea is most common in children, especially those between 6 months and 2 years of age. It is also common in babies under 6 months who are drinking cow's milk or infant feeding formulas. People who have diarrhoea lose a lot of water and salt. The two main dangers of diarrhoea are dehydration, which can lead to sudden death and malnutrition. Children are more susceptible to the effects of dehydration. The most important parts of treatment of diarrhoea are prevention and treatment of dehydration and zinc supplementation.

## Causes of diarrhoea

In children, diarrhoea is commonly caused by viruses and the only treatment is rehydration. Diarrhoea can however be caused by bacteria or parasites. The stools may contain blood, in which case the diarrhoea is called dysentery (bacillary or amoebic).

## Types of diarrhoea

### *Acute diarrhoea*

A sudden onset of change in consistency and frequency of stools with or without vomiting in children. Acute diarrhoea is defined as diarrhoea lasting less than 14 days. Acute diarrhoea in adults is usually self-limiting and is managed by fluid replacement.

### *Chronic diarrhoea*

Continuous or episodic diarrhoea lasting more than one month. This might indicate serious underlying diseases such as cancer of the bowel or HIV infection. For all patients suspected to have chronic diarrhoea REFER. The treatment of diarrhoea in known AIDS patients is described under the section dealing with HIV infection.

### *Persistent diarrhoea*

A continuous or episodic diarrhoea lasting more than more than 14 days. In patients with persistent diarrhoea, REFER for further assessment.

### *Acute diarrhoea in children*

Acute diarrhoeal disease can affect all people, but severity varies in different age groups. Dehydration occurs rapidly in children and is a common cause of death. Infants, weanlings and bottle-fed children are especially at risk. Travellers are also at risk.

## Signs and symptoms

- The disease usually occurs in children under 2 years and is very serious in infants under 1 year.
- The onset may be very abrupt. The severity of the attack varies from a mild rapidly cured condition to a fulminating fatal disease.
- The stools are characteristically frequent, watery, and green or bright orange in colour.
- Signs of dehydration which rapidly appear include:
  - Sudden weight loss
  - Dry mouth

- Depressed fontanelle
- The skin, when pinched, remains in a fold
- Sunken and tearless eyes
- Fast weak pulse and a low blood pressure

## Management

The steps to treat diarrhoea are shown in the chart below.

1	<b>Assess degree of dehydration</b>	Ask for symptoms and look for signs indicating other problems.
2	<b>Select treatment and treat appropriately for degree of dehydration</b>	Treat for any other problems.
3	<b>Counsel mother</b>	Teach mother to give ORS and zinc (if available). Explain good food choices, including breast-feeding.

<b>How to assess your patient for rehydration</b>			
	<b>"A" state 2 signs present</b>	<b>"B" state 2 signs present</b>	<b>"C" state</b>
<b>1. Look</b>			
Condition	Well alert	Restless, irritable	Lethargic or unconscious
Eyes	Normal and dry	Sunken	Very sunken
Tears	Present	Absent	Absent
Mouth and tongue	Moist	Dry	Very dry
Thirst	Drinks normally, not thirsty	Thirsty, drinks eagerly	Drinks poorly or not able to drink
<b>2. Feel</b>			
Skin pinch	Goes back quickly	Goes back slowly	Goes back very slowly
<b>3. Decide</b>			
	No signs of dehydration	Some signs of dehydration	Severe dehydration
<b>4. Hydration plan</b>			
	<b>Plan A</b>	<b>Plan B</b>	<b>Plan C</b>

## PLAN A: Treat diarrhoea at home

**Counsel the mother on the 4 rules of home treatment (see below): Give extra fluid, Give zinc supplements, Continue feeding, Inform when to return.**

- 1. Give extra fluid** (as much as the child will take):
  - Tell the mother to:
    - Breastfeed the child frequently and for longer at each feed;
    - If the child is exclusively breastfed, give ORS or clean water in addition to breastmilk;
    - If the child is not exclusively breastfed, give one or more of the following: ORS solution, food-based fluids (such as soup, rice water and yoghurt drinks) or clean water.

**It is especially important to give ORS at home when:**

- The child has been treated with Plan B or Plan C during this visit.
- The child cannot return to a clinic if the diarrhoea gets worse.
- Teach the mother how to mix and give ORS. Give the mother 2 packets of ORS to use at home.
- Show the mother how much fluid to give in addition to the usual fluid intake:
  - Up to 2 years: give 50 to 100 ml after each loose stool;
  - 2 years or more: give 100 to 200 ml after each loose stool.
- Tell the mother to:
  - Give frequent small sips from a cup;

- If the child vomits, wait for 10 minutes. Then continue, but more slowly;
- Continue giving extra fluid until the diarrhoea stops.

- 2. Give zinc supplements** (if available)
  - Tell the mother how much zinc to give:
    - Up to 6 months: give ½ tablet per day for 14 days;
    - 6 months or more: give 1 tablet per day for 14 days.
  - Show the mother how to give zinc supplements
    - Infants: dissolve the tablets in a small amount of expressed breastmilk, ORS or clean water, in a small cup or spoon.
    - Other children: tablets can be chewed or dissolved in a small amount of water in a cup or spoon
  - Remind the mother to give the zinc supplements for the full 14 days
- 3. Continue feeding**
- 4. When to return**

} see Counsel the mother

## PLAN B: Treat some dehydration with ORS

### Give in clinic recommended amount of ORS over 4-hour period:

- Determine amount of ORS to give during first 4 hours.

Age*	Weight	Give
Up to 4 months	<6 kg	200–400 ml
4 months up to 12 months	6–<10 kg	400–700 ml
12 months up to 2 years	10–<12 kg	700–900 ml
2 years up to 5 years	12–9 kg	900–1400 ml

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

- If the child wants more ORS than shown, give more;
- For infants under 6 months who are not breastfed, also give 100–200 ml clean water during this period.
- Show the mother how to give ORS solution:
  - Give frequent small sips from a cup;
  - If the child vomits, wait 10 minutes. Then continue, but more slowly;

- Begin feeding the child in clinic.
- After 4 hours
  - Reassess the child and classify the child for dehydration;
  - Select the appropriate plan to continue treatment;
  - Begin feeding the child in clinic.
- If the mother must leave before completing treatment:
  - Show her how to prepare ORS solution at home;
  - Show her how much ORS to give to finish the 4-hour treatment at home;
  - Give her enough ORS packets to complete rehydration. Also give 2 packets as recommended in Plan A;
  - Explain the 4 rules of home treatment:

1. Give extra fluid
  2. Give zinc supplements
  3. Continue feeding
  4. When to return
- } See Plan A for recommended fluids and Counsel the mother

## PLAN C: Treat severe dehydration quickly

Follow the arrows. If the answer is “yes,” go across. If the answer is “no,” go down.

START HERE

Can you give intravenous (IV) fluid immediately?

NO

YES

Is IV treatment available nearby (within 30 minutes)?

NO

YES

Are you trained to use a nasogastric (NG) tube for rehydration?

NO

YES

Can the child drink?

NO

YES

Refer URGENTLY to hospital for IV or NG treatment

Start fluid immediately. If the child can drink, give ORS by mouth while the drip is set up. Give 100 ml/kg Ringer’s Lactate Solution (or, if not available, normal saline), divided as follows:

AGE	First give 30 ml/kg in:	Then give 70 ml/kg in:
Infants (under 12 months)	1 hour*	6 hours
Children (12 months up to 5 years)	30 minutes*	2 ½ hours

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

- Reassess the child every 1–2 hours. If hydration status is not improving, give the IV drip more rapidly.
- Also give ORS (about 5 ml/kg/hour) as soon as the child can drink: usually after 3–4 hours (infants) or 1–2 hours (children).
- Reassess an infant after 6 hours and a child after 3 hours.
- Classify dehydration. Then choose the appropriate plan (A, B, C) to continue treatment.
- Refer URGENTLY to hospital for IV treatment.
- If the child can drink, provide the mother with ORS solution and show her how to give frequent sips during the trip.
- Start dehydration by tube (or mouth) with ORS solution by giving 20 ml/kg/hour (total of 120 ml/kg).
- Reassess the child every 1–2 hours:
  - If there is repeated vomiting or increasing abdominal distension, give the fluid more slowly.
  - If hydration status is not improving after 3 hours, send the child for i.v. therapy
- After 6 hours, reassess the child. Classify dehydration, then choose the appropriate plan (A, B, or C) to continue treatment.

### Note!

If possible, observe the child at least 6 hours after dehydration to be sure the mother can maintain hydration by giving the child ORS solution by mouth

#### Counsel the mother

- Food – Assess the child's feeding  
Is the mother breast feeding? How often?  
Does the child take other food or fluids?  
What does he/she take? How much and how often?
- Fluid – Advise the mother to increase fluid during illness. Giving extra fluid can be life saving. Give fluid according to Plan A or Plan B. Show the mother how to prepare ORS.
- When to return – Advise the mother when to return to the health worker If the diarrhoea persists for more than 5 days. If there is blood in the stool. If the child is drinking poorly or vomiting.
- Counsel the mother about feeding problems If the child is not feeding well, breastfeed more frequently and for longer, if possible. Give soft, varied, appetizing favourite foods to encourage the child to eat as much as possible.
- Counsel the mother about her own health. Check that the mother is well and does not have diarrhoea or other illness (HIV)

#### Other treatments

- Antibiotics: Antibiotics are not effective against most diarrhoea-causing organisms. Their indiscriminate use will make some people sicker, increase medicine resistance and deplete meagre resources (money).

They are only indicated in dysentery (bacillary or amoebic).

- Adsorbents: Adsorbents (such as kaolin, pectin activated charcoal) are not useful for the treatment of diarrhoea and should not be given.
- Antimotility medicines: Antimotility medicines (such as loperamide) have no place in the treatment of diarrhoea in children less than 5 years old. They can be dangerous and even fatal if used improperly in infants. In adults they can give symptomatic relief, but they may only prolong the illness by delaying the elimination of the organism causing the diarrhoea.

### REMEMBER!

Antidiarrhoeal medicines and antiemetics should never be used. None has proven practical value. Some are dangerous. For patients with bloody diarrhoea. REFER.

### Prevention of diarrhoea

- Breastfeeding – Infants should be exclusively breastfed during the first 6 months. Breastfeeding should be continued until at least 2 years of age, but complementary foods should normally be started at 6 months of age. If breastfeeding is not possible, cow's milk or milk formula should be given from a cup. Feeding bottles and teats should never be used.
- Use of safe water: Using clean water also protected from contamination can reduce the risk of diarrhoea.
- Hand washing: Hands can easily spread diarrhoeal diseases. The risk of diarrhoea

can be substantially reduced by regular hand washing of the whole family.

- Use of latrines and safe disposal of stools.
- Measles immunization.

## Bloody diarrhoea

Patients with acute bloody diarrhoea, especially if there is fever, usually have bacillary dysentery (*Shigella*). They should be treated according to the schedule below. If possible confirm that there is blood in the stool.

- Give: cotrimoxazole 480 mg (sulfamethoxazole + trimethoprim)
- Children: If you know the weight of the child, give trimethoprim (TMP) 5 mg/kg + sulfamethoxazole (SMX) 25 mg/kg twice daily.
- *The dosage below refers to tablets for adults, each containing 80 mg TMP + 400 mg SMX*  
**two times a day for 5 days**  
 (Remember: Patients must complete the full course of 5 days)

Age	Morning	Evening	Total number of tablets/day (never give less)
Less than 2 months (< 5 kg) (Do not give to a premature or jaundiced baby!)	¼ tab  (Crush tablet with a spoon and mix with water)	¼ tab  (Crush tablet with a spoon mix with water)	½
2 months to 12 months (6–9 kg)	½ tab	½ tab	1
12 months to 5 years (10–19 kg)	1 tablet	1 tablet	2
5 years to 10 years (20–30 kg)	1 ½ tablets	1 ½ tablets	3
Adults (more than 30 kg)	2 tablets	2 tablets	4

### REMEMBER

The very young (<5 years), the very old, and the very sick should be treated in a hospital if there is still bloody diarrhoea after 5 days, give metronidazole for amoebic diarrhoea

## Gastritis and peptic ulcer

### Description

Inflammatory or ulcerative lesions of the gastro-intestinal mucosae.

### Signs and symptoms

- Epigastric pain sometimes made worse and sometimes relieved by food;
- Acid regurgitation, nausea.

### Management

- Avoid spices, tobacco, carbonated drinks, tea and coffee;
- Eat small but frequent meals;
- Reduce stressful factors;
- Check if the patient is taking medicines likely to be associated with dyspepsia i.e. aspirin, ibuprofen;
- Symptomatic treatment:
  - Aluminium hydroxide: give 2 tablets chewed and swallowed 1 hour after meals or as needed;
- If the condition does not settle or is recurrent REFER (for *Helicobacter* testing, other causes).

#### REMEMBER!

Acetylsalicylic acid is contraindicated in patients with a history of peptic ulcer.

## Stomatitis

### Description

Stomatitis is an inflammation of the oral mucosa, with or without infection, frequently found in infants. Possible causes include *Candida albicans*, herpes simplex or vitamin deficiency. If severe, it can lead to malnutrition. Always treat carefully, and explain the treatment to the mother. Oral candidiasis is seen in patients with AIDS, malnutrition, diabetes or taking long-term antibiotics.

### Signs and symptoms

- Sore mouth, dysphagia, anorexia, nausea, vomiting;
- Depending on the aetiology, there might be red mucus, aphthous vesicles or white plaques.

### Management

- Candidiasis (characterized by white plaques: common in infants)
  - Adults: The patient should take nystatin tablets 100 000 IU every 8 hours after food for 10 days (vaginal tablets are also available);
  - Children: Nystatin oral suspension 2 drops in the mouth after each feed for at least 10 days. If nystatin oral suspension is not available use 0.5% gentian violet aqueous solution topically;
  - Treat any underlying disease (e.g. malaria, pneumonia).
  - In severe forms, consider HIV infection, REFER.

- Herpes simplex (common in older children and adults)
  - Oral toilet and apply 0.5% gentian violet aqueous solution;
  - Give paracetamol 500 mg tablets as required:
    - Adults and children over 12 years: 1–2 tablets 6-hourly;
    - Children 8–12 years: 1 tablet 6-hourly;
    - Children: 3–7 years: ½ tablet 6-hourly;
    - Children: 1–2 years ¼ tablet 6-hourly;
  - Continue feeding and ensure good hydration;
  - Treat any underlying illness (e.g. malaria, pneumonia)
  - In severe cases, REFER.
- Scurvy (vitamin C deficiency) (haemorrhagic stomatitis with bone and joint pains in the lower limbs)
  - Oral toilet;
  - Apply 0.5% gentian violet aqueous solution;
  - Give vitamin C (ascorbic acid) tablets:
    - Adults: 500–1000 mg daily divided in 3 doses for 2 to 3 weeks;
    - Children: 100–300 mg daily divided in 3 doses for 2 to 3 weeks;
  - Nutritional education.

# Chapter 6

## **Nutrition disorders**

- Anaemia, iron deficiency
- Micronutrient malnutrition
- Pellagra (nicotinamide deficiency)
- Protein–energy malnutrition
- Moderate acute malnutrition
- Severe acute malnutrition
- Vitamin A deficiency  
(xerophthalmia)

## Anaemia, iron deficiency

### Definition

Anaemia is defined as low concentrations of haemoglobin (below 12 g/100 ml in males, 11 g/100 ml in females).

### Causes

- Nutritional deficiencies (i.e. not eating foods rich in iron and/or folic acid or deficient in vitamin A). In children it can also come from breast-feeding or bottle-feeding after 6 months without giving complementary foods. There may be poor absorption of iron and vitamins due to malabsorption (chronic diarrhoea or AIDs).
- Excessive blood loss (due to menstrual bleeding, gastrointestinal bleeding, hookworm infestations, *schistosoma haematobium* infection).
- Elevated iron needs (i.e. during pregnancy).
- Haemolysis (due to malaria, glucose 6 phosphate deficiency).

### Signs and symptoms

- Pale insides of eyelids, gums, palms, tongue
- White fingernails
- Weakness and fatigue
- In very severe cases there might be swelling of face and feet, rapid heartbeat and shortness of breath.

### Treatment

#### General measures

- Eat food rich in iron, e.g. meat, fish, chicken, liver and vegetables;
- Exclusive breastfeeding for 6 months;
- Increased consumption of iron absorption enhancers e.g. lemon, citrus fruits (oranges, grapefruits, mango).

#### Specific treatment

- Adults: Exclude underlying disease. Give iron 60 mg + folic acid 400 microgram orally every 8 hours for at least 3 months.
- Pregnant women: 120 mg iron + 800 microgram folic acid (2 tablets) to be taken for 3 months followed by preventive regime.
- Children <2 years: 30 mg iron + 200 microgram folic acid (½ tablet) daily to be taken for 3 months.
- Children 2–12 years: 60 mg ferrous sulfate + 400 microgram folic acid (1 tablet) daily for 3 months.

## Prevention of iron deficiency anaemia

Age group	Indications for supplementation		Dosage schedules per day	Duration
Low birth weight infants	Universal supplementation		Iron: 2 mg/kg body weight	From 2–23 months of age
Children 6–23 months	Where the diet does not include foods fortified with iron or where anaemia prevalence is above 40%		Iron: 2 mg/kg body weight/kg	From 6–23 months of age
Children 24–59 months	Where anaemia prevalence is above 40%		Iron: 2 mg/kg body weight/kg up to 30 mg	3 months
School-age children (above 60 months)	Where anaemia prevalence is above 40%		Iron: 30 mg/day Folic acid: 200 µg/day	3 months
Women of child-bearing age	Where anaemia prevalence is above 40%		Iron: 60 mg/day Folic acid: 400 µg/day	3 months
Pregnant women	Universal supplementation		Iron: 60 mg/day Folic acid: 400 µg/day	As soon as possible after gestation, starting no later than the 3 <sup>rd</sup> month, and continuing for the rest of pregnancy
Lactating women	Where anaemia prevalence is above 40%		Iron: 60 mg/day Folic acid: 400 µg/day	3 months postpartum

### REMEMBER!

Intake of tetracycline reduces the absorption of iron. Avoid taking them together. Iron taken in excess doses can also be toxic.

## Prevention

- De-worming must take place as part of the anaemia prevention and control strategy. Also consumption of fortified foods enhances anaemia control at community level.
- Eating food rich in iron such as meat (spleen, kidney, liver), chicken, fish, eggs, legumes (beans, peas) and dark green leafy vegetables.

## Micronutrient malnutrition

### Description

Micronutrients are nutrients (vitamins and minerals), which the body needs in minute quantities for growth, development and maintenance. Vitamin and mineral deficiencies have a significant impact on human welfare and on the economic development of communities and nations. These deficiencies can lead to serious health problems, including reduced resistance to infectious disease, blindness, lethargy, reduced learning capacity, mental retardation and, in some cases, death. Among the debilitating consequences of these dietary deficiencies is loss of human capital and worker productivity. Unlike many other impediments, micronutrients can be reduced with relatively small investments in public health, agriculture and education.

Poverty, lack of access to a variety of foods, lack of knowledge of optimal dietary practices and high incidence of infectious diseases are some of the factors which lead to micronutrient malnutrition. In Somalia, the deficiencies of greatest public health significance are those of **vitamin A, iron and iodine**. Other important micronutrients include nicotinamide, zinc, vitamin D and calcium.

Vitamin A deficiency is most common in young children. Untreated, it can lead to blindness and death. Iron deficiency anaemia (IDA) is the most common dietary deficiency in Somalia affecting mostly children and women of childbearing age. IDA is a significant factor in the high maternal and neonatal death rates in Somalia. Iodine deficiency disorder occurs in mountainous and flood plain areas where iodine has been washed away from soils. It is the most common cause of preventable mental retardation, including low IQ (intelligence quotient). Severe iodine deficiency can lead to cretinism, stillbirth and birth defects.

### Management

The treatment of vitamin A deficiency, iron deficiency anaemia (IDA) and nicotinamide deficiency (pellagra) are described in their respective sections under this chapter. Universal salt iodization (USI) is the recommended intervention for preventing and correcting iodine deficiency disorder (IDD).

## Prevention and control

- Food-based interventions, particularly fortification programmes, such as salt iodization, and use of concentrated micronutrient supplements;
- A mix of accompanying programmes for infection control;
- Community participation, including education, communication and information exchange;
- Private sector involvement.

## Pellagra (nicotinamide deficiency)

### Description

Pellagra is a form of malnutrition that affects the skin and sometimes the digestive and nervous systems. It is common in places where people eat a lot of maize (corn), or other starchy foods and not enough beans, meat, eggs, vegetables and other bodybuilders and protective foods. This can also occur among refugees or displaced persons fed on inadequate diet. The condition is due to nicotinamide (vitamin B3) deficiency.

### Signs and symptoms

- Lesions appear only on skin exposed to sunshine.
- In the initial stage painful, symmetrical red lesions can be found on the forehead, top of the cheeks, on the front of the neck, on the outer parts of lower arms and on the lower legs.

- At a later stage the lesions become dark, rough and scaly. There is a clear border between the healthy and the diseased skin.
- A child with pellagra is usually underweight.
- Diarrhoea often with a sore tongue and other GI symptoms may occur.
- In adults there can be dementia or, more often, anxiety and depression.

### Management

- Nicotinamide 50 mg tablets: Adults and children: 2 tablets 8-hourly for 28 days or until healing occurs.

#### Note!

Nicotinamide is not included in the Somalia primary health care essential medicines list and patients who have pellagra should be REFERRED to hospital for investigation and treatment.

### Prevention

Educate people to eat foods rich in niacin such as beans, meat, groundnuts, fish, eggs and vegetables.

## Protein–energy malnutrition

### Description

Malnutrition severely increases a child's risk of death. Protein–energy malnutrition (PEM) is identified by the lack of growth of the child. A child will stop growing for weeks or even months and may be suffering from acute

malnutrition before showing any visible signs, but even when mildly malnourished, the child's risk of death from illness is dramatically increased. Therefore, there are some steps that need to be considered in order to prevent malnutrition and to identify and treat cases at an early stage.

Weight, height and age are three measurements that can be combined to form indicators of the nutritional status. These indicators are weight-for-age (W/A), height-for-age (H/A), and weight-for-height (W/H). One more indicator to mention is the mid upper arm circumference (MUAC).

### REMEMBER!

Weight-for-height is recommended by WHO as the indicator of acute malnutrition, but other indicators can be used if necessary.

In surveys, there are some cut-off points that can help us in determining what level of acute malnutrition the child is suffering from. These are based on z-scores. A z-score or standard deviation score is the number of standard deviations (SD) below or above the mean value of a reference population. The z-score of weight-for-height of an individual is given by the following formula:

$$\frac{\text{individual's weight} - \text{median value of reference population}}{\text{SD value of reference population}}$$

You will need to know the SD and median value of your reference population to calculate the individual's z-score.

*The cut-off-points for z-scores (standard deviation scores) are:*

- A z-score between -2 and -3 indicates moderate severe malnutrition;
- A z-score below -3 shows severe acute malnutrition;
- The presence of oedema is also indicative of kwashiorkor.

*The cut-off-points for MUAC are:*

- 110 mm to 124 mm for moderate acute malnutrition;
- <110 mm for severe acute malnutrition.

## Moderate acute malnutrition

A child who is less than 75% of the expected weight-for-height (W/H) with a z-score between -2 and -3 (or MUAC between 110 to 124 mm).

### Signs and symptoms

- The child is thin with mild muscle wasting;
- The child plays less because of lack of energy.

### Management

If there is a supplementary feeding programme then admit the child to this programme. If there is no supplementary feeding programme, then follow the same steps shown below.

1. Give the child energy-dense food rich in proteins and micronutrients that would provide 150–200 kcal/kg body weight/day. Advise the mother to give family food to which extra oil is added. If you have Supermix, add more Supermix to the water than usual, and add oil or fat. It is important to:
  - Feed the child frequently, 6–8 meals per day
  - Continue breastfeeding
  - Continue feeding even if the child is vomiting or has diarrhoea.
2. Treat infections: Follow instructions under treatment of moderate acute malnutrition.
3. Immunize the child, if not immunized.
4. Correct micronutrient deficiencies:
  - Give iron and folate tablets during the second week of treatment as ½ or 1 tablet per day;
  - Give the child vitamin A as follows:
    - Under 6 months, 50 000 IU if not breastfed;
    - 6–12 months, 100 000 IU;
    - 1–5 years, 200 000 IU;
  - Give the child 100 mg/day vitamin C (two 50 mg tablets) if scurvy is a risk and no fresh food is available.
5. Give the child 500 mg mebendazole as a single dose after the second week if hookworm/whipworm are a problem in children in your area, and if the child is 2 years of age or older, and if the child has not had a dose in the previous 6 months;
6. Treat dehydration by giving ORS.

## REMEMBER!

When the child shows no improvement because of underlying disease, the child should be referred to a treatment-feeding centre (TFC) or to hospital for specialized care.

## Severe acute malnutrition

Children with severe malnutrition look sick, weak and unhappy. Their weights are less than 70% of the expected weight for height (W/H) with a z-score below -3 (or MUAC <110 mm). In this stage you will find signs of marasmus and/or kwashiorkor.

### Signs and symptoms

*Marasmus* results from prolonged starvation. It may also result from chronic or recurring infections with marginal food intake. The main sign is a severe wasting and the child appears very thin and has no fat. The affected child is very thin (“skin and bones”), most of the fat and muscle mass having been expended to provide energy. There is severe wasting of the shoulders, arms, buttocks and thighs, with no visible rib outlines.

#### *Associated signs*

- A thin “old man” face
- “Baggy pants” (the loose skin of the buttocks hanging down)
- Affected children may appear to be alert in spite of their condition
- There is no oedema (swelling that pits on pressure) of the lower extremities
- Ribs are very prominent.

*Kwashiorkor* usually affects children aged 1–4 years, although it also occurs in older children and adults. The main sign is oedema, usually starting in the legs and feet and spreading, in more advanced cases, to the hands and face. Oedema may be detected by the production of a definite pit as a result of moderate pressure for 3 seconds with the thumb over the lower end of the tibia and the dorsum of foot. Because of oedema, children with kwashiorkor may look “fat” so that their parents regard them as well fed.

#### *Associated signs*

- Hair changes: loss of pigmentation; curly hair becomes straight, fairer, finer and easy to break off;
- Skin lesions and hypo-pigmentation: dark skin may become lighter in some places especially in the skin folds; outer layers of skin may peel off and ulceration may occur; the lesions may resemble burns;
- Children with kwashiorkor are usually apathetic, miserable, and irritable. They show no signs of hunger, and it is difficult to persuade them to eat.

#### **REMEMBER!**

Remember that these signs happen at a late stage and that the child may be acutely malnourished before showing any of these signs. In some cases, oedema may be the only visible sign, while in others all the signs may be present.

*Marasmic kwashiorkor (mixed form)* is a mixed form of PEM, and manifests as oedema occurring in children who may or may not have other signs of kwashiorkor

## **Management**

- REFER

## **Prevention**

- Encourage breastfeeding up to 2 years.
- Introduce a weaning diet at 4–6 months, using locally available foods, appropriately prepared for the child.
- Food for young children should be soft, mashed, with a mixture of different ingredients, like cereals with pulses, milk, vegetables and fruits, meat, fish or eggs. Make sure that the food is energy dense by adding oil or sugar.
- All children aged 6–11 months should be given a dose of 100 000 IU of vitamin A every 4–6 months. Their parents should be counselled on increasing their dietary intake of vitamin A rich food such as dark green leafy vegetables etc.
- Immunize all children and monitor their growth monthly.
- Encourage family planning.
- Encourage a balanced diet for pregnant and lactating women.
- All mothers should be given 200 000 IU of vitamin A within 40 days of delivery.
- Encourage nutrition education in schools and villages.

## Vitamin A deficiency (xerophthalmia)

### Definition

Xerophthalmia is a nutritional deficiency of vitamin A and is mainly seen in children. It is associated with decreased intake especially in seasons when or areas where vitamin A rich foods are not available or as a consequence of certain diseases, e.g. measles. In xerophthalmia the eye loses its shine and begins to wrinkle.

### Signs and symptoms

#### Stage 1

- Initially the person cannot see in the dark (night blindness)

#### Stage 2

- The patient develops dry eyes (xerophthalmia);
- The white part of the eyes loses its shine and begins to wrinkle;
- Patches of grey bubbles (Bitots spots) may form in the eyes;

#### Stage 3

- The sclera becomes more grey;
- The conjunctiva becomes more folded;
- The cornea becomes cloudy (opaque);
- Cornea ulcerates easily (keratomalacia);

### Treatment

Treat all forms of xerophthalmia, although only stage 1 and 2 may be completely reversible.

Treatment	Infants (6–11 months)	Children (1–6 years)
Immediately	100 000 IU	200 000 IU
Following day	100 000 IU	200 000 IU
Two weeks later	100 000 IU	200 000 IU

Treat all children with prolonged or severe diarrhoea, acute respiratory infection, chickenpox, severe malaria and/or other infections:

Age	Dosage
Infants below 6 months, if not breastfed	50 000 IU, as a single dose
Infants 6–11 months	100 000 IU, as a single dose;
Children $\geq$ 12 months	200 000 IU, as a single dose

Treat all children with measles without eye signs:

Age	Dosage
Infants < 6 months	50 000 IU, on day 1; repeat dose on day 2
Infants 6–11 months	100 000 IU, on day 1; repeat dose on day 2;
Children $\geq$ 12 months	200 000 IU, on day 1; repeat dose on day 2;

## Prevention

- Infants: 6–11 months 100 000 IU, every 6 months;
- Children: 12–59 months 200 000 IU, every 6 months;
- Pregnant women: 10 000 IU, daily (as soon as pregnancy is detected);
- Postpartum women: 200 000 IU, single dose within 8 weeks of delivery;
- Eating food rich in vitamin A such as breast milk, animal products (cheese, butter, eggs, milk, meat), green vegetables and fruits.

# Chapter 7

## **Obstetrics and gynaecology**

- Breast abscess
- Breast infection (mastitis)
- Cystitis
- Postpartum haemorrhage
- Sore nipples
- Vaginal candidiasis

## Breast abscess

### Description

Breast abscess is the formation of a cavity full of pus in the breast. It is usually a complication of a breast infection.

### Signs and symptoms

- Part of the breast becomes hot, swollen and very painful
- A firm lump can be felt, usually with fluctuation
- Lymph nodes in the armpit are often sore and swollen
- Fever.

### Management

- If the breast abscess does not respond to antibiotics, REFER for surgery.
- If the condition is bad and quick referral is not possible, give doxycycline 200 mg orally on first day and then 100 mg daily until the patient reaches a hospital (doxycycline is given no more than 6 days).
- Give analgesics for pain: paracetamol 500 mg tablet; 2 tablets 6-hourly as required.

## Breast infection (mastitis)

### Description

Mastitis is a bacterial infection of the breast and is usually associated with lactation, but it may occur in the absence of lactation.

### Signs and symptoms

- Hot, painful and swollen breast (the swelling may be of one sector of the breast due to a blocked duct)
- No firm lump present with touching.

### Management

- Give doxycycline 200 mg orally on first day and then 100 mg daily for a further 6 days.
- Give analgesics for pain: paracetamol 500 mg 6-hourly as required.
- Express regularly to avoid engorgement.
- Apply hot compresses and a constriction bandage to relieve pain in the affected breast.

## Cystitis

### Description

Infection of the bladder and urethra. Very frequent in women.

### Signs and symptoms

- Pain during urination
- Polyuria (increased urination)
- Nocturia (getting up in the night to urinate)
- Cloudy and bad smelling urine
- There may be haematuria (blood in the urine).

### Management

- Exclude schistosomiasis in endemic areas.
- Advise increased intake of fluids.
- Antibiotics:

- Non-pregnant: Cotrimoxazole 960 mg (sulfamethoxazole + trimethoprim) (2 tablets) orally every 12 hours for 7 days;
- Pregnant: amoxicillin 250 mg; 500 mg 8-hourly for 7 days.

If no response, REFER.

- Children and men with recurrent cystitis should be REFERRED.

## Postpartum haemorrhage

### Definition

Postpartum haemorrhage (PPH) is a loss of 500 ml or more of blood from the genital tract after delivery and includes all occurrences of bleeding within 24 hours after delivery. The bleeding may be due to perineal tears, cervical tear or poorly contracted uterus.

### Signs and symptoms

- Vaginal blood loss of more than 500 ml within 24 hours
- There may be signs of shock
  - Pallor
  - Fast pulse rate
  - Low or no measurable blood pressure
  - The patient feels cold.

### Management

- Examine the completeness of the placenta:
  - Suture tears immediately;
  - Make sure that no placenta remains in the uterus;
  - Rub the uterus to stimulate contraction.

- Immediately give oxytocin 10 units intramuscularly.

*Alternatively,* ergometrine 0.2 mg (1 ml) intramuscularly.

- Dose may be repeated if necessary in half an hour to an hour;
- If this fails REFER. If immediate referral is not possible give i.v. fluids (normal saline) and REFER.

## Sore nipples

### Description

Sore nipples develop when a baby sucks mainly from the nipples and does not take the whole nipple and the areola into its mouth. The nipple might show cracks, fissures and bleed easily.

### Management

- It is important to keep breastfeeding the baby.
- Stop breastfeeding only if the nipple oozes a lot of blood or pus.
- In that case milk the breast by hand until the nipples heal.
- Give the expressed milk to the baby using a spoon.
- When breast feeding, make sure that the nipple and the areola goes into baby's mouth.
- Do not apply ointments or antiseptics onto the nipples.
- Keep the breast clean.

## **Prevention**

Breast-feeding.

## **Vaginal candidiasis**

### **Description**

Vaginal candidiasis is a fungal infection of the vagina. It is common, particularly in those who are pregnant, taking antibiotics, diabetic, taking birth control pills or with HIV/AIDS.

### **Signs and symptoms**

- White discharge, which smells like baking bread
- Itching
- The lips of the vagina often look bright red and hurt
- Burning during urination

### **Management**

- Nystatin pessary 100 000 IU: Insert 1 pessary into the vagina every 12 hours for 7 days, then once in the evening for further 7 days.
- If not available, apply gentian violet solution for 14 days.
- Advise to refrain from sexual intercourse during treatment.
- Treat the sexual partner with gentian violet solution 0.5% to the penis every 12 hours for 7 days.
- If the above treatment does not help, REFER.

# Chapter 8

## Parasitic diseases

- Amoebiasis
- Ascariasis
- Enterobiasis
- Giardiasis
- Hookworms
- Kala-azar
- Malaria
- Schistosomiasis
- Taeniasis
- Trichuriasis

## Amoebiasis

### Description

Amoebiasis is an infection of the colon caused by *Entamoeba histolytica* transmitted by oral ingestion of cysts. Infection with amoebae is in most cases without any symptoms. Under certain circumstances the amoebae may invade the bowel wall causing amoebic dysentery. The infection can be spread to other organs, especially the liver, where it causes liver abscess.

### Signs and symptoms

- Commonly asymptomatic
- When the amoeba invades the tissue symptoms may include:
  - Intermittent diarrhoea and constipation
  - Flatulence
  - Mild cramping abdominal pain
  - Tenderness over the liver
  - Stools may contain mucus and blood.
- In amoebic dysentery there will be:
  - Episodes of frequent semi-fluid or fluid stools that contain blood, flecks of mucus, and active trophozoite
  - No, or only slight, fever
  - Patient may become emaciated and anaemic
  - The onset is slow; the attacks are episodic and can last up to 6 weeks.

### REMEMBER!

Rapid onset of bloody diarrhoea with fever and severe abdominal pains may suggest bacterial dysentery (*Shigella*). For differential diagnosis see Chapter 5.

### Management

- Asymptomatic patients need no treatment.
- Symptomatic patients give metronidazole 250 mg tablets:
  - Adults: 750 mg 8-hourly for 7 days.
  - Children: 15 mg/kg 8-hourly for 7 days.

### Prevention

- Boiling of water (chlorination does not kill the cysts).
- Proper faecal disposal.

## Ascariasis (round worms)

### Definition

Ascariasis is one of the commonest helminthic infections of the small intestine in Somalia. Mode of transmission is oral. Children are usually more frequently and more heavily infected than adults for the simple reason that they put everything into their mouth. The disease is caused by a type of worm (*Ascaris lumbricoides*), which belongs to the family *Nematodes*. *Ascaris* is a long and round worm, thus sometimes called round worms. A female ascaris can produce up to 200 000 eggs daily.

## Signs and symptoms

- Vague abdominal discomfort
- The adult worm may be vomited or come out with the stool upsetting the patient (and the parents)
- Intestinal obstruction may occur in very heavy infections
- Ascariasis may lead to malnutrition.

## Treatment

Mebendazole 100 mg tablets: give 1 tablet twice daily for 3 days.

## Prevention

- Environmental measures
  - Provision of clean water supply
  - Proper disposal of faeces.
- Health education
  - Proper use of latrines, including hand washing
  - Washing of hands before handling food
  - Washing of fruits and vegetables before eating.

## Enterobiasis (thread worms)

### Definition

Enterobiasis is a benign intestinal disease caused by *Enterobius vermicularis* (thread or pinworm). The worms emerge from the anus at night to lay their eggs. Infection is often direct transfer of eggs from the anus to the mouth after the person scratches the anus or perianal region.

## Signs and symptoms

- Pruritus ani is a characteristic symptom, which provokes intense scratching of the perianal-anal region, resulting in secondary bacterial infection.
- The patient might also suffer:
  - sleep disturbance, restlessness, loss of appetite, weight loss
  - vulvitis or appendicitis.

## Management

Mebendazole 100 mg tablets: Adults and children: give a single dose of 100 mg repeated after 2 weeks.

## Prevention

- Personal hygiene
- Bathing and hand washing
- Cutting nails short
- Washing underwear, nightclothes and bedclothes
- Less crowded living conditions
- Correct faeces disposal
- It is important to treat whole family.

## Giardiasis

### Definition

Giardiasis is an infection of the small intestine by a flagellated protozoal parasite, *Giardia lamblia*. The mode of transmission is oral ingestion of the cysts.

## Signs and symptoms

- The majority of patients are asymptomatic
- In symptomatic patients there may be:
  - Diarrhoea
  - Malabsorption resulting in fatty offensive stools which look like porridge
  - Weight loss
- The disease may be self-limiting or prolonged.

## Treatment

Metronidazole 500 mg tablets:

- Adults: 2 g given orally as a single dose once daily for 3 days.
- Children: 5 mg/kg orally 8-hourly for 5 days.

## Prevention

- Cooking of food and boiling of water kills the cysts rapidly.

## Hookworms

### Description

Hookworms consist of *Ancylostoma duodenale* and *Necator americanus*. The adult worms are attached to the walls of the duodenum with hook-like teeth in their buccal cavity where they suck human blood. The mode of transmission is through the skin usually of the feet.

## Signs and symptoms

- Asymptomatic in the majority of the patients
- Ground itch at the site of penetration
- Gastrointestinal tract: dyspepsia, abdominal pain, abdominal distension, sometimes diarrhoea
- In heavy infections, iron deficiency anaemia develops
- Anaemia due to hookworms is slow, and the patient can be walking with Hb less than 5 g % (walking anaemia).

### REMEMBER

Hookworm causes loss of IRON and anaemia

## Management

- Correction of anaemia
  - Adults: Iron tablet 60 mg + folic acid 400 microgram three times daily with for 2–3 months.
  - Children: Iron tablet 30 mg + folic acid 200 mg three times daily with meals for 2 months.
- Deworming
  - Adults and children over 1 year: Mebendazole 100 mg twice daily for 3 days or 500 mg as a single dose.

## Prevention

- Wearing of shoes.
- Correct disposal of faeces.
- Health education for mothers.

## Kala-azar

### Description

*Leishmania* spp. are responsible for several clinically distinctive diseases characterized by chronic inflammatory infiltration, focal necrosis and fibrosis. In some, the lesions are localized to the point of inoculation (cutaneous) but, in others, the parasite becomes widely disseminated (visceral). Worldwide, some 12 million people are estimated to be infected and over 2 million new cases occur each year. All types of leishmaniasis are transmitted by the same biting vector, the female sand fly. Visceral leishmaniasis (kala-azar) is caused by a parasite of the *Leishmania donovani* and is endemic in south-west Asia, the Indian subcontinent, China, the Mediterranean area, East Africa and Central and South America. Visceral leishmaniasis is the most serious form and is fatal if left untreated.

### Signs and symptoms

#### Early phase

- Chronic irregular fever
- Malaise
- Anorexia
- Cough
- Diarrhoea
- Secondary infection

#### Later stage

- Progressive enlargement of the spleen, liver and occasionally lymph nodes
- Anaemia
- Emaciation

### Management

- If kala-azar is suspected, REFER.

### Prevention

- Avoid/reduce contact with sand flies using bed nets, insect repellents and protective clothes with long sleeves.

## Malaria

### Definition

Malaria is an acute infective illness caused by protozoa of the genus *Plasmodium*. The infection is often accompanied by attacks of fever, which may be periodic. Malaria is an important cause of fever, convulsions, anaemia and death. In pregnancy it results in low birth weight, abortion and maternal death. Malaria is also a major cause of economic loss through working and learning days lost.

There are four different species of the malaria parasite, which infect man. These are: *Plasmodium falciparum*, *Plasmodium malariae*, *Plasmodium vivax*, and *Plasmodium ovale*. *P. falciparum* is responsible for approximately 90% of malaria cases in Somalia. The epidemiological feature of malaria in Somalia is divided into: hypoendemic (North), meso-endemic to hypoendemic in the Centre and South and hyper-endemic in the riverine areas of the Juba and Shabelle rivers. The incubation period for *P. falciparum* is 9 to 13 days, and more than 15 days for the other three forms.

## Special risk groups

- Children under 5 years of age
- Pregnant women, especially in their first pregnancy
- Travellers from non-malarious areas (no immunity)

## Signs and symptoms

- Onset of attack may resemble a flu-like illness with several days of fever, headache, aching joints and general malaise. The classical presentation is chills, shivering, high fever and sweating which does not always occur, especially in primary attacks of *P. falciparum* malaria.
- In infants there may be only poor appetite, restlessness and loss of interest in the surroundings.
- For the first few days, the fever is usually irregular or even continuous and in some cases (*P. falciparum*) the fever may not ever settle into the classical periodicity of every 48 or 72 hours.
- After the primary attack there usually follows an afebrile interval. Further attacks similar to the first occur every 48 or 72 hours (the latter in *P. malariae* only). After each attack, there is another afebrile period.
- In *P. falciparum* infections the symptoms (headache, fever, nausea, vomiting) are usually much more severe than with other malarial infections (*P. vivax* etc). The mortality is much greater and there is a greater tendency to rapidly develop complications (coma, renal failure and haemolytic anaemia, jaundice). Those that survive but have continuing infection

as a result of inadequate treatment or no treatment may suffer several weeks or months of poor health, which is characterized by febrile episodes, anaemia and weakness.

A patient should be considered as having severe malaria if any one or more of the following are observed and the patient is living in or gives a history of travel to malaria endemic area:

- Altered consciousness (e.g. sleepy, confused, in coma, etc)
- Not able to drink or eat or breastfeed in the case of small children
- Convulsions or recent history of convulsions
- Persistent vomiting
- Haemoglobinuria (dark urine, “coca-cola urine”)
- Treatment failure within 2–3 days
- Spontaneous bleeding, gum bleeding, epistaxis
- Failure to pass urine in the last 24 hours
- Respiratory problems (i.e. pulmonary oedema, difficult breathing)
- Jaundice
- High temperature (rectal temperature >39°C)
- Systolic blood pressure <80 mmHg, where there is no i.v. fluid or if the patient does not respond to i.v. fluid administration.

### WARNING!

Severe/complicated malaria is a medical emergency requiring dedicated attention from the most qualified health staff. In most areas, women and children under 5 are the most susceptible group.

## Management

### *Uncomplicated malaria*

#### Medicine treatment: 1<sup>st</sup> treatment of choice

Artenisinin-based combination therapy (ACT): Artesunate + sulfadoxine-pyrimethamine tablets. Artesunate (AS) 50 mg tablets and SP (sulfadoxine 500 mg + pyrimethamine 25 mg) tablets. SP is given in a single dose on the first day in combination with artesunate. Then artesunate is given for 2 more days.

### REMEMBER!

The first treatment is provided under direct observation treatment (DOT).

### Dose schedule by age (ACT)

Age in years	Weight in kg	Protocol (3 days)			
		Day 1		Day 2	Day 3
		SP (500 mg + 25 mg tab)	AS (50 mg tab)	AS (50 mg tab)	AS (50 mg tab)
< 1	5–10	½	½	½	½
1–<3	10–14	1	1	1	1
3–<5	15–19	1	2	2	2
5–11	20–35	2	3	3	3
12+	36+	3	4	4	4

Malaria treatment is preferably based on definitive laboratory diagnosis. Where laboratory diagnosis is not available, then for all cases aged 5 and above, clinical diagnosis must be confirmed by RDT (rapid diagnostic test) and positive cases treated.

### REMEMBER!

In meso- and hyperendemic areas (south and central Somalia) for children under the age of 5, the treatment is recommended to be given based on sound clinical signs and symptoms and regardless of RDT (rapid diagnostic test) results.

#### Supportive treatment

- Treat all other additional conditions such as dehydration, high fever and anaemia as required, as described in the respective chapters in this manual.

## Follow-up

- If a patient who has taken the full course of ACT returns to the health facility with fever, suspect medicine failure.
- Do blood examination for malaria parasites where possible.
- Treat any other suspected cause of his/her fever or REFER.
- If medicine failure is concluded, give oral quinine (2nd treatment of choice) as shown in the table below.
  - Quinine tablets (each tablet containing 300 mg, recommended total dose: 10 mg/kg, 8-hourly for 7 days)

Age	Weight (kg)	Number of tablets (300 mg tab) 7 day protocol						
		D1	D2	D3	D4	D5	D6	D7
<1 year	5–6	¼	¼	¼	¼	¼	¼	¼
1–4 years	11–14	½	½	½	½	½	½	½
5–7 years	19–24	1	1	1	1	1	1	1
8–10 years	25–35	1 ¼	1 ¼	1 ¼	1 ¼	1 ¼	1 ¼	1 ¼
11–15 years	37–50	1 ½	1 ½	1 ½	1 ½	1 ½	1 ½	1 ½
Above 15 years	>50	2	2	2	2	2	2	2

## Complicated malaria

If the patient shows one or more of the signs and symptoms of severe malaria (see above), REFER immediately. Before referral:

- Give oral quinine, if the patient can swallow.
- Reduce fever by sponging and by giving paracetamol, if patient can swallow.
- Give fluids such as ORS, if patient can swallow.
- Where there is possible, administer 5% glucose.
- Record all your findings and medicines given in a referral slip and REFER.

Where immediate referral is not possible and intravenous (i.v.) administration is possible, give quinine i.v. as follows:

- Loading dose: Quinine salt 20 mg/kg by infusion in 500 ml 5% dextrose (if not available, physiological saline may be used) over 4 hours.
- Maintenance doses: 12 hours after the loading dose, give quinine salt 10 mg/kg in dextrose saline over 4 hours.

Repeat the same dose of quinine salt (i.e. 10mg/kg) every 8 hours until the patient can take oral medication. If referral is still not possible, continue treatment with quinine salt 10 mg/kg i.v. in dextrose over 8-hourly (if i.v. is not possible, give quinine i.m. in the same doses). Transfer to oral therapy as soon as the patient can swallow for a total of 7 days.

### *Treatment of convulsions*

- Lie the patient on his left side, upper leg flexed.
- Keep upper airway clear by removing any secretions or vomit.
- Then give intravenous diazepam 5 mg/ml:
  - Adults: 0.15 mg/kg, maximum 10 mg by slow i.v. injection (over 2–3 minutes); if injection is not possible, give 0.5–1.0 mg/kg rectally.
  - Children: 0.5 mg rectally by means of syringe without needle.
  - If still has fits after 10 minutes, repeat same dose.

### *Treatment of hyperpyrexia*

- Cold sponging, tepid wet towels
- Paracetamol as needed.

### *Treatment of hypoglycaemia*

- Give 40% or 50% glucose, 50 ml (0.1 mg/kg for children) by intravenous bolus injection.
- Follow with an intravenous infusion of 5%.
- Continue to monitor the patient where possible by blood testing.

#### **REMEMBER!**

Hypoglycaemia may recur even after intravenous bolus dose of 50% glucose.

### *Complementary measures*

- Fluid balance: record inputs and outputs of fluids.
- Guard against excessive hydration if not sure of the integrity of the renal function. Do not exceed 2000–2500 ml/day in adults

and 40–50 ml/kg in children, except in severely dehydrated patients.

- Ensure adequate nutrition (nasogastric feeding if necessary).
- If the anaemia is severe enough to require blood transfusion, REFER.
- Check the lungs (auscultation) for pulmonary oedema.
- Check for respiratory infection, which requires antibiotic therapy.
- Record urine output, to detect anuria (renal failure). This will require fluid restriction.

### **Prevention**

- Insecticide-treated nets (ITNs).
- Intermittent preventive treatment (IPT) in high transmission areas (recommended only in southern and central zones): at least two courses of doses of 3 tablets of SP during second and third trimester of pregnancy. Minimum of 4 weeks to be observed between the two doses. A third dose in case of pregnancy with HIV/AIDS preferably between 28 to 32 weeks is recommended.
- Effective case management of malarial illness.
- In known cases of sulfonamide hypersensitivity quinine may be given.

#### **REMEMBER!**

There is no clinical evidence that sulfadoxine-pyrimethamine is hazardous to the fetus. The combination does not pose either any significant risk to breastfeeding infants.

- Attend antenatal clinic (for pregnant women).
- Eliminate mosquito breeding sites around home.
- Avoid mosquito bites, i.e. using mosquito bed nets, coils.
- Wear long sleeves, long trousers and socks if outside between dusk and dawn.
- Ensure good compliance with prophylaxis/treatment.
- Contact the health centre if you suspect you have malaria.

## Schistosomiasis

### Description

Schistosomiasis is a chronic disease caused by trematodes of the genus *Schistosoma*, which infect the large bowel (intestinal schistosomiasis) or the urinary bladder (urinary schistosomiasis). In Somalia, only urinary schistosomiasis caused by *Schistosoma haematobium* is found. It is endemic in the areas between the two rivers, Shabelle and Jubba. The disease is transmitted by the penetration of cercariae into the human skin during contact with infected water. The adult parasite harbours in the urinary bladder. It produces hundreds of eggs per day many of which pass out in the urine while the remainder are deposited around the small capillaries of the urinary bladder causing tissue damage.

### Signs and symptoms

- At the site of penetration there is dermatitis with itching papules and local oedema (cercarial dermatitis).
- During maturation of the parasite, the patient may experience abdominal pain, and transient generalized urticaria (Katayama syndrome). There is also an eosinophilia.
- When the disease is established there is haematuria.

#### Late complications

- Obstruction to and dilation of the ureter (hydronephrosis) and hydronephrosis possibly leading to kidney failure;
- Calcification of the bladder which may lead to pyelonephrosis (infection of kidneys);
- Cancer of the bladder.

### Management

Praziquantel 600 mg tablets: 40 mg/kg as a single dose.

### Prevention

- Avoid contact with contaminated water.
- Health education.

## Taeniasis

### Description

Taeniasis is an infection of the small intestine by *Taenia saginata* or *Taenia solium*. Taeniasis in Somalia is caused by *Taenia saginata* (beef tapeworm). People get infected by eating raw or only lightly cooked beef infected with the cysticera.

## Signs and symptoms

Most patients remain asymptomatic, however, some might suffer:

- Loss of weight.
- Abdominal discomfort.
- Pruritus ani (itching around the anus).
- Segments of the parasite may be passed with stools.

## Management

- Niclosamide (PO):
  - Adults 2 g (1 g, then 1 g one hour later).
  - Child: 30 mg/kg as a single dose.

Note: Niclosamide is not included in the primary health care essential medicine list. Such patients should therefore be referred.

## Prevention

- Health education
- Correct cooking of meat
- Correct disposal of faeces

# Trichuriasis

## Description

Trichuriasis is a nematode infection of the large intestine. Trichuriasis is caused by *Trichuris trichuria* (whipworm) and is usually asymptomatic. The mode of transmission is by eating contaminated soil or food. Therefore it is commonest in children.

## Signs and symptoms

- Light infections are usually asymptomatic.
- In heavy infections there might be:
  - Abdominal discomfort
  - Bloody diarrhoea (without fever)
  - Loss of weight or stunting of growth
  - Anaemia
  - Rectal prolapse.

## Management

- Mebendazole 100 mg tablets: Adults and children: 100 mg twice daily for 3 days.

## Prevention:

- Proper disposal of faeces
- Personal hygiene
- Health education

# Chapter 9

## Respiratory infections

- Asthma
- Bronchitis (acute and chronic)
- Common cold
- Otitis (externa, interna, acute and chronic)
- Tonsillitis
- Pneumonia
- Sinusitis, acute
- Tuberculosis

# Asthma

## Description

This consists of attacks of reversible narrowing of the small airways, causing difficulty in breathing, with expiratory wheezing. At first it is due to spasm, and then to mucosal swelling. In long and severe attacks (status asthmaticus) the bronchi are blocked with plugs as well. Asthma is often due to allergy and this type is more common in young people. The disease can be provoked by exercise, cold weather, smoking, infection or psychological causes.

## Signs and symptoms

- Expiratory wheezing (rhonchi)
- Cough
- Expiratory dyspnoea “difficulty in expiration”
- Whistling or hissing sounds (sibilants) “heard in the lungs through a stethoscope”
- The temperature is often normal.

## Management

- Uncomplicated asthma
  - Salbutamol orally (4 mg tablets) as required:
    - Adults: 0.3 mg/kg/day, in three divided doses
    - Children 1–9 years: ¼ tablet 8-hourly
    - Children 10 years or more: 2 tablets 8-hourly as required
  - Maintain treatment for 5 days, and then decrease gradually.

- Status asthmaticus, REFER, if not possible:
  - Let the patient sit in orthopnoeic position “in a sitting position”;
  - Reassurance and hydration;
  - Give adrenaline 1% solution (epinephrine):
    - Children under 1 year: 0.1 ml i.m.
    - Children 1–5 years: 0.2 ml i.m.
    - Children 6–15 years: 0.5 ml i.m.
    - >15 years: 1.0 ml i.m.
  - Repeat same dose after 30 minutes, if deemed necessary. Do not give more than 3 injections per day.
  - Then treat as in uncomplicated asthma.

# Bronchitis, acute

## Description

Acute inflammation of the tracheobronchial tree (the tubes leading to the lungs, through which air passes when a person breathes) generally self-limiting and with eventual complete healing and return of function. Though commonly mild, bronchitis may be serious in weak, debilitated patients and in those with chronic lung or heart disease.

## Signs and symptoms

- Often preceded by symptoms of upper respiratory infections (URI)
- Cough, dry first, then productive
- Mild fever
- Wheezing or musical noise sounds (rhonchi) heard in the lungs through a stethoscope
- No marked dyspnoea “lack of air”

## Management

- General
  - Rest until fever subsides
  - Abundant fluid intake.
- Analgesics
  - Paracetamol 500 mg tablets:
    - Adults and children over 12 years: 1–2 tablets 6-hourly;
    - Children 8–12 years: 1 tablet 6-hourly;
    - Children 3–7 years: ½ tablet 6-hourly;
    - Children 1–2 years: ¼ tablet 6-hourly;
  - Acetylsalicylic acid 300 mg tablet:
    - Adults and children over 16 years: 1–3 tablets 6-hourly.
- Antibiotics: in patients who may have superinfections (with purulent sputum, or persistent high fever) or with poor basic health (malnutrition, measles, anaemia, cardiac disease, elderly), or dyspnoeic.
- cotrimoxazole 480mg (sulfamethoxazole + trimethoprim) tablets.
  - Adults and children over 12 years: 2 tablets 12-hourly for 5 days
  - Children under 12 years old: 30 mg/kg 12-hourly for 5 days.

### REMEMBER!

Acetylsalicylic acid is contraindicated in patients with a history of peptic ulcer.

## Bronchitis, chronic

### Description

Chronic inflammation of the bronchial mucosa of irritant (tobacco) or allergic

(asthma) origin, progressing towards chronic respiratory failure.

### Signs and symptoms

- Morning cough, clear sputum, bronchial rales (soft crackling sounds heard in the lungs through a stethoscope)
- Exclude tuberculosis.

### Management

- Discourage cigarette smoking.
- NO ANTIBIOTICS.

## Common cold

### Description

Common cold is a viral infection of the nasopharyngeal mucosa. Colds are frequent and seasonal.

### Signs and symptoms

- Runny nose
- Often with mild fever
- Coughing and sneezing.

### Management

- NO antibiotics
- General measures
  - Rest
  - Lots of fluids
  - Keep the patient warm
- For those patients with fever give analgesic
  - Paracetamol (500 mg tablets) as required:
    - Adults and children over 12 years: 1–2 tablets 6-hourly;

- Children 8–12 years: 1 tablet 6-hourly;
- Children 3–7 years: ½ tablet 6-hourly;
- Children 1–2 years: ¼ tablet 6-hourly;
- Acetylsalicylic acid (aspirin: 300 mg tablets) as required;
- Adults and children over 16 years old: 1–3 tablets 6-hourly;
- Alternatively ibuprofen can be used.

### REMEMBER!

Analgesics should not be given for more than 3 days. Prolonged fever may indicate other more serious conditions which require further investigation.

### REMEMBER!

Aspirin is contraindicated in:

- Children under 16 years (danger of Reye's syndrome)
- Patients with a history of gastrointestinal pain or ulceration.
- Patients with a history of allergy to aspirin
- Pregnant women

Aspirin must not be taken on an empty stomach.

## Otitis externa

### Description

An acute inflammation of the meatus of the external ear. The cause might be due to the presence of a foreign body.

### Signs and symptoms

- Pain, provoked especially by the traction of the pinna
- Redness of the outer ear canal

- There may be a discharge
- Eardrum, if examined appears normal.

### Management

- Remove foreign body if present in the ear.
- Advise the patient to keep the ear dry and avoid scratching or poking anything into the ear canal.
- If discharge, clean with normal saline.
- Apply gentian 0.5% violet with cotton bud or similar for 3–5 days.
- Analgesic (see common cold).
- If discharge unilateral and foul smelling REFER (danger of cholesteatoma).

## Otitis media, acute

### Description

An acute inflammation of the middle ear. Usually bacterial but can also be of viral origin. It is usually a complication of upper respiratory infection (URI). It is most common in young children, particularly from age 3 months to 3 years, caused by secondary tracking of the infection from the nasopharynx (nose/throat) via the Eustachian tube.

### Signs and symptoms

- Fever, which may reach above 40°C
- Severe pain and agitation
- Nausea, vomiting and diarrhoea may occur in young children
- Deafness
- Otorrhea (pus) may occur due to perforation of the eardrum.

## Management

- General management:
  - Clean the ear daily (never probe into the ear)
  - Treat fever and pain with analgesics (see common cold)
- Phenoxyethylpenicillin (penicillin v; 250 mg tablets):
  - Adults and children over 12 years: 2 tablets 6-hourly for 10 days
  - Children:
    - 5–10 kg (or up to 1 year): ¼ tablet 6 hourly for 10 days.
    - 10–30 kg (1–5 years): ½ tablet 6-hourly for 10 days.
    - >30 kg (or 6–12 years): 1 tablet 6-hourly for 10 days.
- For penicillin allergic patients:  
Give erythromycin 250 mg tablets before meals:
  - Adults and children over 8 years: 1–2 tablets 6-hourly for 10 days.
  - Children 5–10 kg (or up to 1 year): ¼ tablet 6-hourly for 10 days.
  - Children: 10–15 kg (or up to 2 years): ½ tablet 6-hourly for 10 days.
  - Children over 15 kg (2–8 years): 1 tablet 6-hourly for 10 days.

## Follow-up

- No response, REFER especially very young children. If immediate REFERRAL is not possible start giving amoxycillin 15 mg/kg 8-hourly and REFER.

## Otitis media, chronic

### Description

A chronic infection of the middle ear with perforation of the eardrum (tympanic membrane).

### Signs and symptoms

- Otorrhea (chronic discharge) for 2 weeks or more
- Hearing loss.

### Management

- Wash with normal saline once daily.
- If fever or pain, give analgesics (see common cold).
- NO antibiotics.
- If painful swelling behind the ear or no improvement after 4 weeks' treatment, REFER.

## Tonsillitis

### Description

Tonsillitis is an infection and inflammation of the tonsils.

### Signs and symptoms

- Fever
- Sore throat
- Adenopathy (enlargement of the tonsils)
- White exudates on the throat.

## Management

- Phenoxyethylpenicillin (penicillin v; 250 mg tablets):
  - Adults and children over 12 years: 2 tablets 6-hourly for 10 days.
  - Children:
    - 5–10 kg (or up to 1 year):  
¼ tablet 6-hourly for 10 days.
    - 10–30 kg (1–5 years):  
½ tablet 6-hourly for 10 days.
    - >30 kg (or 6–12 years):  
1 tablet 6-hourly for 10 days.
- For penicillin allergic patients:  
Give erythromycin 250 mg tablets before meals:
  - Adults and children over 8 years: 1–2 tablets 6-hourly for 10 days.
  - Children 5–10 kg (or up to 1 year): ¼ tablet 6-hourly for 10 days.
  - Children: 10–15 kg (or up to 2 years): ½ tablet 6-hourly for 10 days.
  - Children over 15 kg (2–8 years): 1 tab 6-hourly for 10 days.
- Analgesia (see common cold).

## Caution

- In severe cases, especially in cases of quinsy, REFER.

## Pneumonia

### Description

Pneumonia is a major cause of death, particularly in young children. However death can be prevented by correct diagnosis and management. Young infants die more quickly than older children. Management of

these infants is therefore different from that of older children. If infants under 2 months have pneumonia they should always be referred after initial treatment. There is no ordinary pneumonia for infants—it is all severe or very severe. In children over 2 months and adults mild pneumonia can be managed without referral.

### Pneumonia in children

Classify children according to the severity of the illness into:

- no pneumonia—fever and cough
- mild pneumonia—fever, cough and rapid breathing
- severe pneumonia—fever, cough, rapid breathing and chest wall recession
- very severe pneumonia—severe pneumonia with danger signs.

To diagnose pneumonia, the key sign to check is the **breathing rate**. If it is more than the following, then a diagnosis of pneumonia should be made.

- 60 or more breaths per minute if under 2 months
- 50 or more breaths per minute if 2 months to 1 year
- 40 or more breaths per minute if 1 year to 2 years.

Since infants might have unspecific signs and symptoms look for the following danger signs. If any one of them is present, the infant has very severe pneumonia.

### *Danger signs*

- Failure to feed
- Convulsions
- Abnormally sleepy or difficult to wake
- Stridor in calm child
- Grunting
- Apnoea.

For older children you need to assess the severity. The key sign for this is to look for **rib retraction**. If present the child should be referred as above. If there is no rib retraction, then the child can be managed at the health centre.

### *Management of pneumonia in infants*

- In infants with suspected pneumonia, REFER immediately.
- Before referral, give a stat dose of benzyl penicillin.
- Keep the child warm.
- Ensure adequate hydration.
- Continue feeding.

### *Management of pneumonia in older children*

- In older children with rib retraction, REFER immediately.
- For others with no danger signs:
  - Give cotrimoxazole 480 mg (sulfamethoxazole + trimethoprim) for 5 days.
  - Treat fever, if present.
  - If over 12 months treat wheezing, if present, with salbutamol (see asthma).
  - Advise the mother on home care management:

#### **Feed the child**

- Continue to feed the child during illness.
- Increase feeding after illness.

- Clear nose if it interferes with feeding.

#### **Increase fluids**

- Offer the child extra fluids to drink.
- Increase breast-feeding.
- Watch for danger signs and REFER if they occur.
- Advise mother to return for review in 2 days, or earlier if the child is getting worse.

### **REMEMBER!**

Most children with cough of difficult breathing who do not have any danger sign or signs of pneumonia have a simple cough or cold. If coughing for more than 30 days, REFER.

## **Pneumonia in adults (and older children)**

Pneumonia in adults and older children, if it starts with a sudden onset, is usually caused by pneumococcus. If it does not respond to treatment then you must consider tuberculosis or opportunistic infection due to HIV.

### *Signs and symptoms*

- High fever (>39°C)
- Cough
- Respiratory distress
- Chest pain
- Tachypnoea
- Examination shows dullness to percussion, diminished breath sounds, crepitations and sometimes bronchial breath sounds.

### *Management*

- In severe pneumonia in adults and older children, start giving benzyl penicillin injection 2 million IU i.m. and REFER.
- In less severe pneumonia in adults and older children give tablet phenoxymethyl penicillin 500 mg, 8-hourly.
- For penicillin allergic patients:  
Give erythromycin 250 mg tablets, 2 tablets 6-hourly.
- Paracetamol 500 mg, 1–2 tablets orally 6 hourly as required,

If the condition does not respond to treatment:

- Consider tuberculosis, REFER.
- Consider opportunistic infection due to HIV, REFER.

## Sinusitis, acute

### Description

Sinuses are hollows in the bone that open into the nose. Sinusitis is an inflammation of these hollows particularly those above or below the eyes. It is often a complication of viral upper respiratory tract infections.

### Signs and symptoms

- Headache
- Pain/tenderness of involved sinus
- Thick purulent, yellowish mucoid discharge from nose (catarrh)
- Fever.

### Management

- Analgesics (see common cold).
- Antibiotics:
  - Phenoxymethylpenicillin (penicillin v; 250 mg tablets):
    - Adults and children (>12 years): 2 tabs 6-hourly for 10 days.
    - Children:
      - 5–10 kg (or up to 1 year): ¼ tablet 6-hourly for 10 days.
      - 10–30 kg (1–5 years): ½ tablet 6-hourly for 10 days.
      - >30 kg (or 6–12 years): 1 tablet 6-hourly for 10 days.
  - For penicillin allergic patients:  
Give cotrimoxazole 480 mg (sulfamethoxazole + trimethoprim) tablets.
    - Adults and children over 12 years old): 2 tabs 12-hourly for 5 days.
    - Children under 12 years old: 30 mg/kg 12-hourly for 5 days.  
Alternatively give erythromycin (see Otitis media for dosage).
- Poor response after 5 days, REFER.

#### REMEMBER!

Acetylsalicylic acid is contraindicated in patients with a history of peptic ulcer.

## Tuberculosis

### Description

Tuberculosis (TB) is a serious public health, social and economic problem. TB is caused by *Mycobacterium tuberculosis*. TB bacteria can strike the lungs (pulmonary TB) or any other parts of the body, such as the

glands of the neck, abdomen, joints and bones (extrapulmonary). However in most patients it affects the lungs. TB is a chronic (long lasting), contagious (easily spread) disease that anyone can get. TB most often affects people between 15 and 35 years of age, especially those who are weak, poorly nourished, or with lowered resistance or immunity (e.g. HIV infection). TB is curable, yet thousands of people needlessly die from this disease. Worldwide TB kills close to 2 million people each year. The DOTS (directly observed therapy, short course) strategy has been proven to cure more than 85% of cases in Somalia. The treatment of TB may be complicated by the presence of HIV infection. In some African countries more than 50% of TB cases are among HIV positive patients.

## Signs and symptoms

- Chronic cough (more than 2 to 3 weeks) which is not responsive to antibiotics
- Haemoptysis (coughing blood or blood stained sputum)
- Loss of weight and appetite
- Low grade fever
- Night sweats, even when the weather is cold
- Tiredness
- Enlarged cervical lymph nodes (especially children).

## Management

TB treatment not only saves lives, but also prevents the spread of infection and development of drug-resistant TB. Successful TB treatment requires 6–8 months of a combination of medicines taken daily.

Remembering to take the medicines for 6 to 8 months can be a problem. This is why the DOT strategy was introduced. DOT means that every dose of treatment taken is witnessed to ensure it is swallowed. Care providers should sympathetically explain the importance of completing the treatment.

### REMEMBER!

The relationship between the care provider and the patient is a major determinant of whether the patient will complete the treatment or not.

Treatment of TB should not be started until a firm diagnosis has been made. Priority to treat is given to smear-positive cases, then to smear-negative and extrapulmonary cases.

Fixed dose combination (FDC)		
Medicine	Dose form	Strength/tablet
Isoniazid + rifampicin (HR)	Tablet	75 mg + 150 mg
Isoniazid + rifampicin + pyrazinamide + ethambutol (HRZE)	Tablet	75 mg + 150 mg + 400 mg + 275 mg

There are four types of treatment regimen (3 categories).

### Category 1 (Short course regime)

New smear-positive patients; new smear-negative pulmonary TB with extensive parenchymal involvement; severe concomitant HIV disease or severe forms of extrapulmonary TB.

TB treatment regimen for category 1		
Weight of patient (Pre-treatment weight)	Initial phase Daily for 2 months	Continuation phase Daily for 4 months
	HRZE	HR
30–39 kg	2	2
40–54 kg	3	3
55–70 kg	4	4
>70 kg	5	5

### Category 2 (Retreatment regime)

Previously treated sputum smear-positive PTB:

- relapse
- treatment after interruption
- treatment failure.

TB treatment regimen for category 2				
Weight of patient (Pre-treatment weight)	Initial phase Daily for		Continuation phase	
	3 months	2 months	Daily for 5 months	
	HRZE	S 1 g vial	HR	E 400 mg
30–39 kg	2	0.5	2	1.5
40–54 kg	3	0.75	3	2
55–70 kg	4	1	4	3
>70 kg	5	1	5	3

S: streptomycin

E: ethambutol

### Category 3 (Standard regime)

New smear-negative PTB (other than in Category 1) and less severe forms of extrapulmonary TB. Treatment is the same as category 1.

### Category 4 (Individualized regime)

Chronic and multidrug-resistant (MDR) TB cases (still sputum-positive after supervised re-treatment). This group needs specially designed treatment and care and should be referred to a specialized TB centre.

## REMEMBER!

TB medicines may have side effects. Dangerous ones include skin rashes and itching, skin and/or eyes turn yellow, repeated vomiting, deafness, dizziness and eyesight problems. If you suspect any one of these symptoms, STOP treatment and send the patient to a doctor.

How to monitor TB patient by sputum examination		
Category 1 (6 month regimen)	Category 2 (8 month regimen)	Category 3 (6 month regimen)
2 <sup>nd</sup> month	3 <sup>rd</sup> month	End 2 <sup>nd</sup> month
5 <sup>th</sup> month	5 <sup>th</sup> month	
6 <sup>th</sup> month	8 <sup>th</sup> month	

Action in case of interruption of treatment			
Interruption for less than one month:			
<ul style="list-style-type: none"> <li>Trace patient</li> <li>Solve the cause of interruption</li> <li>Continue treatment and prolong it to compensate for missed doses</li> </ul>			
Interruption for one to two months			
Action 1		Action 2	
<ul style="list-style-type: none"> <li>Trace patient</li> <li>Solve the cause of interruption</li> <li>Do 3 sputum smears.</li> </ul> While waiting, continue treatment	If smears negative or extra-pulmonary	Continue treatment and prolong it to compensate for missed doses	
	If one or more smears positive	Treatment received: <5 months	Continue treatment and prolong it to compensate for missed doses
>5 months		Category 1: Start category 2 Category 2: Refer for community-based services (may evolve to chronic)	
Interruption for two months or more (defaulter)			
<ul style="list-style-type: none"> <li>Do 3 sputum smears</li> <li>Solve the cause of interruption, if possible</li> <li>No treatment while waiting for results</li> </ul>	Negative smears or extra-pulmonary	Clinical decision on individual basis whether to re-treat or continue treatment, or no further treatment.	
	One or more smears positive	Category 1	Start Category 1
		Category 2	Refer for community-based services (may evolve to chronic)

## Treatment regimens in special groups

*Pregnant women:* It is important to ask a woman before she starts anti-TB chemotherapy if she is pregnant. Most anti-TB medicines are safe for use in pregnant women. The exception is streptomycin, which is ototoxic to the fetus, should not be used in pregnancy and can be replaced by ethambutol. It is important to explain to pregnant women that successful treatment of TB with the recommended standardized regimen is important for a successful outcome of pregnancy.

*Breastfeeding women:* Breastfeeding women with TB should receive a full course of anti-TB chemotherapy. Chemotherapy prevents the transmission of tubercle bacilli to the baby. All TB medicines are compatible with breastfeeding.

## Household contacts

It is very important to check all household members of TB patients to see if they have active TB or not. If they have active TB, they must be treated. Children under 6 years who do not have active TB may need preventive chemotherapy (isoniazid INH for 6 months). Please consult the TB centre.

## HIV/TB

TB is one of the most common opportunistic infections among people living with HIV/AIDS. All TB patients need to be provided with HIV counselling and testing as appropriate. Please consult the concerned health facilities.

## Prevention

- Any patient suspected to have tuberculosis, should be referred to the nearest tuberculosis centre.
- BCG under EPI should be given to every newborn baby.
- Improve housing and nutritional status.
- Trace contacts (including at school or work if appropriate).

### REMEMBER!

TB spreads to other people when someone with TB coughs or sneezes.

# Chapter 10

## **Syndromic management of sexually transmitted infections**

- Genital ulcer in men and women
- Lower abdominal pain in women
- Urethral discharge in men
- Vaginal discharge

A fundamental problem in the management of most sexually transmitted infections is the difficulty in making an accurate diagnosis. Thus, in areas with limited laboratory resources sexually transmitted infections are identified and treated together in the form of signs and symptoms (syndromes). In health facilities where laboratory diagnosis is possible, treat as shown in the table provided at the end of this chapter.

All patients with sexually transmitted infections should be counselled on:

- compliance with treatment;
- prevention of the complications of sexually transmitted infections;
- risk reduction for acquiring sexually transmitted infections;
- promotion and provision of condoms and demonstration of their use;
- tracing and management of sexual contacts.

## Genital ulcer in men and women

### Description

Loss of continuity of skin producing one or more ulcerative lesions on the genitalia. The three commonest causes in Africa are:

- Chancroid (*Haemophilus ducreyi*);
- Syphilis (*Treponema pallidum*);
- Genital herpes (herpes simplex 2 virus).

Classical herpes lesions can be recognized by their appearance, a painful cluster of vesicles that then develop into small punched out ulcers. The patient often gives a history of

past episodes of similar lesions. Otherwise you should assume that the ulcer might be chancroid or syphilis, and treat for both. The ulcer in chancroid is painful and in syphilis it is painless.

### Signs and symptoms

- One or more ulcerative lesions in the genitalia
- Genital ulcers may be painful or painless
- Ulcers are frequently accompanied by inguinal lymphadenopathy

### Management

- Counsel on compliance and risk reduction.
- Provide and promote the use of condoms.
- Notify partner and treat both with:
  - Benzathine benzylpenicillin i.m. 2.4 million IU immediately (half into each buttock). Alternative regimens for penicillin-allergic non-pregnant patients: doxycycline, 100 mg orally, twice daily for 14 days or tetracycline, 500 mg orally, 4 times daily for 14 days. Alternative regimens for penicillin-allergic/pregnant: erythromycin, 500 mg orally, 4 times daily for 14 days.

+

- Ciprofloxacin, 500 mg orally, twice daily for 3 days (or erythromycin base, 500 mg orally, 4 times daily for 7 days; or azithromycin, 1 g orally, as a single dose). Alternative regimen: ceftriaxone, 250mg by intramuscular injection, as a single dose.

Note: ciprofloxacin is contraindicated in pregnancy and is not recommended for use in children and adolescents.

- +
  - Acyclovir, 200 mg orally, 5 times daily for 7 days (or acyclovir, 400 mg orally, 3 times daily for 7 days or valaciclovir, 1 g orally, twice daily for 7 days or famciclovir, 250 mg orally, 3 times daily for 7 days).
- Ask to return after 1 week.

### Referral

- No response after 7 days.

## Lower abdominal pain in women

### Description

Lower abdominal pain or pelvic inflammatory disease (PID) is a general name for pelvic infections in women (e.g. salpingitis, endometritis, parametritis, oophoritis, pelvic peritonitis) caused by microorganisms, which generally ascend from the lower genital tract and invade the endometrium, the fallopian tubes, the ovaries and the peritoneum. The most common cause for PID is infection of the tubes or uterus with the following organisms:

- *Neisseria gonorrhoeae*
- *Chlamydia trachomatis*
- Anaerobic organisms.

Trauma to the endocervical canal from an intrauterine device may facilitate the ascent of these organisms into the endometrial cavity.

### Signs and symptoms

- Abdominal pain

- Pain during sexual intercourse (dyspareunia)
- Vaginal discharge
- Menometrorrhagia
- Dysuria
- Fever
- Sometimes nausea and vomiting
- Pelvic tenderness is often prominent on bimanual examination of the cervix.

### REMEMBER!

Untreated PID may have long-term sequelae (infertility etc.) It should be considered as a possible diagnosis in all sexually active women complaining of lower abdominal pain.

### Management

- If an intrauterine device is in place, it should be removed.
- Counsel on compliance and risk reduction.
- Provide and promote the use of condoms.
- Notify partner and treat both with:
  - Ciprofloxacin, 500 mg orally, as a single dose (or ceftriaxone, 125 mg by intramuscular injection, as a single dose or cefixime, 400 mg orally, as a single dose or spectinomycin, 2 g by intramuscular injection, as a single dose.

#### Note:

- Ciprofloxacin is contraindicated in pregnancy and is not recommended for use in children and adolescents.
- There are variations in the anti-gonococcal activity of individual quinolones, and it is important to use only the most active.

- +
  - Doxycycline 100 mg orally twice daily, or tetracycline, 500 mg orally, 4 times daily for 14 days (In pregnant women, give instead erythromycin 500 mg twice daily for 14 days).

- +
  - Metronidazole 400–500 mg orally, twice daily for 14 days.

Note: Patients taking metronidazole should be cautioned to avoid alcohol.

### REMEMBER!

Ask the patient to come back after 72 hours and REFER IMMEDIATELY if the condition has not improved.

Since the diagnosis of PID is difficult and untreated PID can have long-term sequelae to the patient, hospitalization of patients with suspected PID should be seriously considered when:

- the diagnosis is uncertain;
- surgical emergencies such as appendicitis and ectopic pregnancy cannot be excluded;
- a pelvic abscess is suspected;
- severe illness precludes management on an outpatient regimen; or
- the patient has failed to respond to outpatient therapy.

## Urethral discharge in men

### Description

Presence of a discharge in the anterior urethra, sometimes accompanied by dysuria or discomfort, is a urethral discharge.

Sometimes if the patient has given himself some treatment or has recently urinated, there may be no discharge to be seen. However the history of dysuria or uncomfortable urination may indicate it has been present. The commonest causes of urethral discharge are:

- *Neisseria gonorrhoeae*
- *Chlamydia trachomatis*.

### Signs and symptoms

- Small or large amounts of mucus or pus at the end of the penis
- Staining of the underwear
- Burning/pain on passing urine.

### Management

- Counsel on compliance and risk reduction.
- Provide and promote the use of condoms.
- Notify partner and treat patient and partner with:
  - Ciprofloxacin, 500 mg orally, as a single dose (or ceftriaxone, 125 mg by intramuscular injection, as a single dose or cefixime, 400 mg orally, as a single dose or spectinomycin, 2 g by intramuscular injection, as a single dose).

Note:

- Ciprofloxacin is contraindicated in pregnancy and is not recommended for use in children and adolescents.
- There are variations in the anti-gonococcal activity of individual quinolones, and it is important to use only the most active.

+

- Doxycycline 100 mg orally twice daily for 7 days (or azithromycin, 1 g orally, in a single dose).

Alternative regimen:

- Amoxicillin, 500 mg orally, 3 times a day for 7 days or erythromycin, 500 mg orally, 4 times a day for 7 days or tetracycline, 500 mg orally, 4 times a day for 7 days.

Note:

- Doxycycline and other tetracyclines are contraindicated during pregnancy and lactation.
- Current evidence indicates that 1 g single-dose therapy of azithromycin is efficacious for chlamydial infection.
- There is evidence that extending the duration of treatment beyond 7 days does not improve the cure rate in uncomplicated chlamydial infection.
- Erythromycin should not be taken on an empty stomach.
- Ask to return in 1 week.

### REMEMBER!

Patients should be advised to return if symptoms persist 1 week after starting treatment.

## Vaginal discharge

### Description

Sexually transmitted disease (STD)-related vaginal discharge is defined as a change in colour, odour and/or an increase in the

amount of vaginal secretion attributable to vaginal or cervical infection. Vaginal discharge may be accompanied by pruritus, genital swelling, dysuria, and lower abdominal or back pain. The discharge may be caused by trichomonas or candidiasis, but it is impossible to rule out gonorrhoea and chlamydia. The discharge may be purulent or offensive. Occasionally it can be caused by a forgotten tampon.

### Signs and symptoms

- Excessive vaginal secretion often purulent or offensive
- Staining of underwear
- Itching or redness of the vulva
- Burning or pain on passing urine
- Lower abdominal pain.

### Management

If the patient's sexual partner(s) has symptoms then it is very likely that the patient is infected with gonorrhoea or chlamydia. Otherwise to avoid treating all women with discharge for all four problems (gonorrhoea, *Chlamydia*, *Candida* and *Trichomonas*) it is necessary to carry out some risk assessment. If the woman fulfils any two of the following criteria she is considered to be a high risk and should be treated for all:

- Under 21 years old
- Unmarried
- Has more than one sexual partner; or
- Has had a new sexual partner in the last two months.

### In addition

- Counsel on compliance and risk reduction.

- Provide and promote the use of condoms.
- Notify partner and treat them both with:
  - Ciprofloxacin, 500 mg orally, as a single dose (or ceftriaxone, 125 mg by intramuscular injection, as a single dose or cefixime, 400 mg orally, as a single dose or spectinomycin, 2 g by intramuscular injection, as a single dose).

Note:

- Ciprofloxacin is contraindicated in pregnancy and is not recommended for use in children and adolescents.
- There are variations in the anti-gonococcal activity of individual quinolones, and it is important to use only the most active.

+

- Doxycycline 100 mg orally twice daily for 7 days; (or azithromycin, 1 g orally, in a single dose)

*Alternative regimen:*

- Amoxicillin, 500 mg orally, 3 times a day for 7 days or erythromycin, 500 mg orally, 4 times a day for 7 days or tetracycline, 500 mg orally, 4 times a day for 7 days.

Note:

- Doxycycline and other tetracyclines are contraindicated during pregnancy and lactation.
- Current evidence indicates that 1 g single-dose therapy of azithromycin is efficacious for chlamydial infection.
- There is evidence that extending the duration of treatment beyond 7 days does not improve the cure rate in uncomplicated chlamydial infection.
- Erythromycin should not be taken on an empty stomach-

+

- Metronidazole 2 g as a single dose OR 400 mg 12 hourly for 7 days.
- If candidiasis is suspected add:
- Nystatin pessaries, 100 000 IU, two inserted nightly for 2 weeks.
  - If still no improvement, REFER.

**Summary treatment guideline for areas with possibilities of laboratory diagnosis**

Sexually transmitted diseases	Signs and symptoms		Diagnosis	Treatment
Chlamydial infection ( <i>Lymphogranuloma venereum</i> )	<ul style="list-style-type: none"> <li>• Small painless papules on the penis or vulva</li> <li>• Papules are followed by buboes in the groin which ultimately breakdown forming many fistulae</li> </ul>		Microscopic diagnosis	<p>Doxycycline, 100 mg twice daily for 14 days</p> <p><b>Pregnancy/children &lt;8 years</b></p> <p>Erythromycin 500 mg four times daily for 14 days</p> <p>Fluctuant lymph nodes should be aspirated through healthy skin</p> <p>Alternative regimen: tetracycline, 500 mg orally, 4 times daily for 14 days</p> <p>Tetracyclines are contraindicated in pregnancy</p>
Genital herpes	<ul style="list-style-type: none"> <li>• Multiple, painful, shallow ulcers, which clear in two weeks</li> <li>• Ulcers may be accompanied by watery vaginal discharge</li> </ul>		Medical history Clinical presentation Identification of the virus through culture	<p>Keep lesions clean</p> <p>Apply affected areas with gentian violet</p> <p>Avoid sexual contact while lesions are present</p> <p>Acyclovir, 200 mg orally, 5 times daily for 7 days (or acyclovir, 400 mg orally, 3 times daily for 7 days or valaciclovir, 1 g orally, twice daily for 7 days or famciclovir, 250 mg orally, 3 times daily for 7 days)</p>

**Summary treatment guideline for areas with possibilities of laboratory diagnosis**

Sexually transmitted diseases	Signs and symptoms		Diagnosis	Treatment
Gonorrhoea	<p>Women:</p> <ul style="list-style-type: none"> <li>• Purulent vaginal discharge</li> <li>• Pain on passing urine</li> </ul> <p>Men:</p> <ul style="list-style-type: none"> <li>• Pain on passing urine</li> <li>• Purulent urethral discharge</li> <li>• May present with painful swollen scrotum</li> </ul>		Bacteriological examination	<p>Ciprofloxacin, 500 mg orally, as a single dose (or ceftriaxone, 125 mg by intramuscular injection, as a single dose or cefixime, 400 mg orally, as a single dose or spectinomycin, 2 g by intramuscular injection, as a single dose.</p> <p>Note: ciprofloxacin is contraindicated in pregnancy and is not recommended for use in children and adolescents. There are variations in the anti-gonococcal activity of individual quinolones, and it is important to use only the most active.</p> <p><i>Ophthalmia neonatorum:</i>            Infants with confirmed <i>ophthalmia neonatorum</i> should receive instillation of tetracycline eye ointment 1% into the eyes and then REFER.            Recommended regimen for infants born to mothers with gonococcal infection: ceftriaxone 50 mg/kg by intramuscular injection, as a single dose, to a maximum of 125 mg.</p>

**Summary treatment guideline for areas with possibilities of laboratory diagnosis**

Sexually transmitted diseases	Signs and symptoms		Diagnosis	Treatment
Trichomoniasis	<p>Women: Frothy (bubbly), foul, smelling, greenish vaginal discharge</p> <p>Men may also have urethral discharge</p>		Microscopic examination	<p>Metronidazole 2 g, one single oral dose or 500 mg 12-hourly for 7 days</p> <p><b>In pregnant women (1<sup>st</sup> trimester)</b> symptomatic treatment with clotrimazole can be prescribed</p>
Candidiasis (yeast infection)	<ul style="list-style-type: none"> <li>• Curd-like whitish vaginal discharge</li> <li>• Vaginal and/or vulval itching</li> </ul>		<p>Clinical diagnosis by symptoms</p> <p>Microscopic examination of vaginal smears</p>	<p>Miconazole, 500 mg intravaginally, as a single dose or clotrimazole, 500 mg intravaginally, as a single dose or fluconazole, 150 mg orally, as a single dose</p> <p>Alternative regimen: Nystatin pessaries 100 000 IU, two inserted nightly for 2 weeks</p> <p>Treat partner similarly for 7 days</p>
Chancroid	<ul style="list-style-type: none"> <li>• Painful ulcers on the external genitalia</li> <li>• Enlarged inguinal lymph nodes</li> </ul>		<p>Clinical diagnosis by symptoms and signs</p> <p>Microscopic examination</p>	<p>Ciprofloxacin, 500 mg orally, twice daily for 3 days (or erythromycin base, 500 mg orally, 4 times daily for 7 days; or azithromycin, 1 g orally, as a single dose).</p> <p>Alternative regimen: ceftriaxone, 250 mg by intramuscular injection, as a single dose</p> <p>Fluctuant lymph nodes may need to be aspirated through intact skin</p>

**Summary treatment guideline for areas with possibilities of laboratory diagnosis**

Sexually transmitted diseases	Signs and symptoms		Diagnosis	Treatment
Syphilis	<p>Early syphilis: Painless ulcers on the external genitalia of women or men</p> <p>Several months later: non-itchy body rash.</p> <p>Late syphilis: May be asymptomatic. After many years, there may be deficiency in muscle coordination; paralysis; numbness; gradual blindness; and dementia.</p>		<p>Microscopic diagnosis of the spirochete Serological diagnosis (becomes positive two weeks after the appearance of the primary infection)</p>	<p><b>Early stage:</b> Benzathine benzyl penicillin 2.4 million IU in a single dose, injected i.m. one half into each buttock. Alternatively procaine benzylpenicillin, 1.2 million IU i.m. daily for 2 weeks</p> <p><b>Late stage:</b> Benzathine benzylpenicillin 2.4 million IU i.m. once weekly for 3 consecutive weeks, or i.m. procaine benzylpenicillin, 1.2 million IU daily for 2 weeks</p>

# Chapter 11

## **Skin conditions**

- Abscess
- Boils
- Eczema
- Herpes zoster
- Impetigo
- Ringworm
- Scabies
- Skin ulcer

## Abscess

### Description

An abscess is an infection that forms a sac of pus under the skin. Sometimes it results from a puncture wound, or an injection given with a dirty needle. An abscess cavity is not accessible to antibiotics. Treatment is thus surgical only.

### Signs and symptoms

- A firm, hot and painful swelling, which has developed in a few days and has a soft centre which fluctuates (feels fluid).

### Management

- Disinfect the skin surface with chlorhexidine.
- Make a cut in the top of the abscess using a sterile scalpel.
- Open the abscess further with a forceps.
- Do not use the scalpel for opening further, since a nerve or artery may be cut.
- Drain the abscess of pus and put the tip of a sterile gauze swab into the abscess cavity.
- Apply cold compress for a few minutes then cover the wound with a dressing.
- Remove the gauze after 1 day.

#### REMEMBER!

All other abscesses in deeper parts of the body, such as in breasts, muscle, root of tooth or neck should be REFERRED

## Boils

### Description

A boil is a bacterial infection and usually starts in places where hair grows. When the infection localizes, pus accumulates and an abscess develops.

### Signs and symptoms

- Pain, redness and swelling
- Pustule in the site of a hair follicle.

### Management

- Put hot packs (compresses) over the boil several times a day.
- Let the boil break and drain itself. NEVER SQUEEZE the boil since this may cause the infection to spread to other parts of the body.
- If the infection spreads to cause swollen nodes and fever give antibiotics (see under Scabies).
- For the treatment of pain:
  - Paracetamol (500 mg tablets):
    - Adults and children over 12 years: 1–2 tablets 6 hourly.
    - Children 8–12 years: 1 tablet 6 hourly.
    - Children: 3–7 years: ½ tablet 6 hourly.
    - Children: 1–2 years ¼ tablet 6 hourly.
  - Acetylsalicylic acid (ASA, aspirin: 300 mg tablets):
    - Adults: 1–3 tablets 4–6 hourly.
    - Children (older than 12 years): 1 tablet 4–6 hourly.
- Alternatively ibuprofen can be used.

## Eczema

### Description

Eczema (dermatitis) is an acute or chronic inflammation of the skin. It can be caused by contact between human skin with certain chemicals, such as nickel, cement and rubber. This is called contact dermatitis and is due to specific sensitization of the skin. Long-term contact with other substances having an irritant effect can also cause eczema (irritant dermatitis). The other forms of eczema most commonly encountered can be divided into:

#### *Atopic eczema*

This type is most common in children. In babies it is localized on the face, but in older children on elbows, wrists and knees. Children with atopic eczema may also have asthma.

#### *Seborrhoeic eczema*

This is an acute or subacute dermatitis common in adults. It is common in areas of the body with much sebaceous activity, such as the scalp, behind the ears, the face - particularly around the nose, the eyebrows and mouth, the front of the breast bone (sternum), and between the shoulder blades (scapulae).

Eczema frequently has a chronic course. Most children grow out of it after some years. In chronic eczema the skin is dry, thickened and hyperpigmented.

### Management

- The main principle of treatment is to avoid the skin drying out.
- Cold compresses will help acute irritant rashes.
- Patients should be advised to apply vegetable oils or petroleum jelly to dry irritant rashes (not machine or engine oils).
- Avoid the use of soap on the skin.
- Avoid wearing abrasive clothing (woollens etc.)
- Paint the sores with gentian violet.
- In chronic cases: Use benzoic acid 6% + salicylic acid 3% ointment twice daily.
- Avoid scratching and cut fingernails regularly, especially those of small children.
- In case of itching give chlorpheniramine 4 mg tablets:
  - Adults and children over 12 years: 1 tablet 6-hourly as required.
  - Children 5–12 years: ½ tablet repeated if necessary 6-hourly.
  - Children 1–5 years: ¼ tablet repeated if necessary 6-hourly.
  - If there is a superinfection treat with antibiotics (see under Scabies).

If the condition does not improve, REFER.

## Herpes zoster (shingles)

### Description

A line or patch of very painful blisters that appear all of a sudden on one side

(unilateral) of the body confined to an area served by a nerve. It is most common on the back, chest, neck, or face. The blisters last 2 to 3 weeks then heal spontaneously although scars may remain. The disease usually affects people who have had chickenpox before. The virus remains in the central nervous system. Herpes zoster is not a dangerous disease, but could be a sign of other serious conditions such as AIDS and cancer. Young people with severe herpes zoster are usually HIV positive.

## Management

- Clean the lesions with antiseptic.
- Give analgesics: see section on Boils.
- If there is bacterial superinfection give antibiotics: see section on Scabies.
- If analgesics do not control the pain or if the eye is affected, REFER.

## Impetigo

### Description

Impetigo is a superficial but highly contagious infection of the skin, usually caused by *streptococci* or *Staphylococci aureus*, and most often seen in infants or schoolchildren. Hot weather, malnutrition and poor hygiene contribute to it.

### Symptoms and signs

- It affects mainly exposed parts of the body (face, nose, arms, legs, etc.)
- Typical golden-yellow crusts.

## Management

- Clean the crusts away with soap and water or an antiseptic solution.
- Dry the skin.
- Apply gentian violet solution 0.5%.
- Advise the patient to wash their hands frequently and not to touch the lesions.
- If no response or the patient is severely ill, has fever or has swollen glands, give oral antibiotics (see under Scabies)
- If there is no improvement, REFER.

## Ringworm

### Description

Ringworm is a fungal infection of the skin, commonly found in children. Although ringworm sores heal spontaneously as a child grows older, this may take a long time. The best way to prevent ringworm is careful and regular personal hygiene (soap and water).

### Signs and symptoms

- Pale, round and scaly patches found on the scalp
- On the body the patches are round with thickened edges and scales in the centre of the patch.

### Management

- Wash the skin thoroughly with soap and water.
- Then apply Whitefield's (benzoic acid 6% + salicylic acid 3%) ointment to the sores.
- Wash clothes daily in hot water during the treatment.

- For better access to the sores, shave the hair on the scalp.
- Inform the parent that ringworms heal slowly.
- In severe cases, REFER.

## Scabies

### Description

Scabies is a parasitic skin disease caused by a mite, *Sarcoptes scabies*. The female mite enters the skin and makes a small tunnel or burrow. The disease is characterized by severe itching with typical distribution. The disease is spread by direct close body contact.

### Signs and symptoms

- Skin lesions itch severely, especially at night.
- Secondary infection is very common due to scratching.
- The whole family is often affected.
- Typical distribution: Anterior axillary fold, nipples, lower abdomen in women, belt line (umbilicus), wrists and elbows, between the fingers, external genitalia, thighs and buttocks.

**SEVERE ITCHING**  
 +  
**TYPICAL DISTRIBUTION**  
 =  
**SCABIES**

### Management

- Wash the whole body with a mild soap and dry.
- Apply benzyl benzoate emulsion to whole body (from the neck downwards, not the face or scalp):
  - Children and adults: 25 % emulsion.
  - Infants less than 6 months: 12.5% emulsion (take 10 ml of the 25% solution and add 10 ml of water).
- Allow to dry, then put on clothes.
- Wash off the next morning with soap and water.
- Repeat the process for 3 days.
- Wash all clothes and bedding in boiling water and dry in the sun.
- Give antibiotics to those with severe secondary infection:
  - Phenoxyethylpenicillin (penicillin v; 250 mg tablets):
    - Adults: 2 tablets 6-hourly for 10 days.
    - Children:
      - 5–10 kg: ¼ tablet 6-hourly for 10 days.
      - 10–30 kg: ½ tablet 6-hourly for 10 days.
      - >30 kg: 1 tablet 6-hourly for 10 days.

### Prevention

- Regular bathing with soap
- Washing of clothes
- Health education
- Always treat the whole family.

## Skin ulcer

### Description

A skin ulcer is a chronic break in the skin that may be long lasting because of difficulties in healing. Skin ulcers are rare in small children, but more common in older children and adults. Ulcers appear more frequently on the lower limbs. Sometimes there may be an underlying cause such as tuberculosis, leprosy, diabetes or varicose veins. In these cases often poor blood circulation delays healing. If a varicose ulcer is near a vein it can subsequently erode the vein causing profuse bleeding.

### Signs and symptoms

- An ulcer maybe painful or painless.
- The healing skin around an ulcer of the leg is often dark blue, shiny and very thin.
- With varicose ulcers, the foot is often swollen.
- Ulcers can be of any size.
- Sometimes an ulcer can be infected and discharge pus.

### Management

- Clean the ulcer with antiseptic.
- Keep the foot up, as high and as often as possible.
- If the ulcer is discharging pus, apply dressings with normal saline. These dressings need to be changed 2-3 times daily.
- On the leg a firm elastic bandage from the toes to above the ulcer can reduce swelling and help healing.

- If local treatment fails give:
  - Phenoxymethylpenicillin (penicillin v; 250 mg tablets):
    - Adults: 2 tablets 6-hourly for 10 days
    - Children:
      - 5–10 kg give 62.5 mg 6-hourly for 10 days
      - 10–30 kg give 125 mg 6-hourly for 10 days
      - >30 kg give 250 mg 6-hourly for 10 days.
  - For penicillin allergic patients:  
Give erythromycin tablets before meals:
    - Children 5–10 kg:  
62.5 mg 6-hourly for 10 days
    - Children: 10–15 kg:  
125 mg 6-hourly for 10 days
    - Adults and children over 15 kg:  
250 mg 6-hourly for 10 days.
- For pain give analgesia – see section on Boils.
- If you suspect an underlying disease, REFER the patient

### Prevention

- Correct hygiene.
- Treat ulcers at an early stage.

# Chapter 12

## **Viral infections**

- HIV/AIDS
- Measles
- Poliomyelitis
- Viral hepatitis

## HIV/AIDS is a notifiable disease

# HIV/AIDS

### Description

AIDS—Acquired immune deficiency syndrome—is a disease caused by the human immunodeficiency virus (HIV), which kills or impairs cells of the immune system and progressively destroys the body's ability to fight infections and certain cancers. Today 40 million people around the world are infected with HIV. Although the prevalence of HIV infection in Somalia is low (about 0.9%), it is estimated that 40 000–60 000 Somalis are living with HIV/AIDS. Presently there is no cure against HIV virus. Clinical care of patients with HIV/AIDS includes diagnosis, counselling, prevention and treatment of opportunistic infections, and where possible the use of antiretroviral therapy (ART).

### Modes of transmission

The HIV virus is transmitted from person to person through:

- Exchange of HIV-infected body fluids such as semen, vaginal fluid and blood during unprotected sexual contact with a person infected with the virus;
- Transfusion of blood infected with HIV virus;
- Use of HIV-contaminated injection needles, and sharp infected instruments for tonsillectomy, circumcision etc.
- From an infected mother to her child either during pregnancy, at birth or during breastfeeding;

- Accidentally, although rarely, in persons working with biological samples infected with the HIV virus.

### REMEMBER!

HIV cannot be transmitted through shaking hands, hugging, kissing, sharing cups, eating and cooking utensils or through the air. The virus is also not transmitted by insect bites such as mosquitoes, lice, bedbugs.

### Phases of HIV infection

Three phases may be identified during the course of HIV infection.

#### *Seroconversion*

This phase occurs 2 weeks to 3 weeks following contamination. During this period the virus replicates rapidly in the body. The acute seroconversion illness usually presents as flu-like (fever, body aches, sore throat and enlarged glands).

#### *Asymptomatic phase*

During this period, which can last for many years the person can remain asymptomatic, but can still transmit HIV to sexual partners. The person might not even know that he/she has HIV infection.

#### *Symptomatic HIV infection, including AIDS*

In this phase the patient's immune system starts to decrease and the person begins to show signs and symptoms related to HIV infection including malaise, fevers, night sweats, and diarrhoea. The patient might experience skin and mucous problems and recurrent bacterial infections. The latest

stage of the disease is characterized by the development of severe opportunistic infections defining AIDS and low CD4 cell count.

### **Diagnosis of HIV at the PHC level (no laboratory diagnosis)**

The diagnosis of HIV infection requires two positive HIV tests. If HIV testing is not available, it is still important to know when to consider HIV-related illness and refer the suspected patients for HIV testing. The table opposite includes clinical signs of possible HIV infection:

- If HIV status is unknown, advise to be tested for HIV infection
- If patient has signs in bold in the blue box, these signs indicate HIV clinical stage 3 or 4. Patient is likely eligible for ART. HIV testing is urgent

- Repeated infections
- Herpes zoster
- Skin conditions including prurigo, seborrhoea
- Lymphadenopathy (PGL)—painless swelling in neck and armpit

- **Kaposi lesions (painless dark or purple lumps on skin or palate)**
- **Severe bacterial infection—pneumonia or muscle infection**
- **Tuberculosis—pulmonary or extrapulmonary**
- **Oral thrush or oral hairy leukoplakia**
- **Gum/mouth ulcers**
- **Oesophageal thrush**
- **Weight loss more than 10% without other explanation**
- **More than 1 month:**
  - **Diarrhoea (unexplained)**
  - **Vaginal candidiasis**
  - **Unexplained fever**
  - **Herpes simplex ulceration (genital or oral)**

Other indications suggesting possible infection:

- Other sexually transmitted infections
- A spouse or partner or child
  - known to be HIV positive
  - has HIV or HIV-related illness
- Unexplained death of young partner
- Injecting drug use
- High risk occupation
- Sexually active person with multiple partners living in high HIV-burden area

## Counselling

If you suspect someone to have HIV/AIDS REFER immediately and explain to the client where to go for HIV counselling and testing.

### *Before referral*

- Explain how HIV is transmitted (unprotected sex, blood transfusions, infected syringes and razor blades, mother to child transmission etc).
- Explain how HIV is NOT transmitted.
- Explain HIV testing, that it is voluntary and the patient has the right to refuse.
- Reassure that test results are kept confidential.
- Counsel on safer sex including correct and consistent use of condoms.
- Discuss the advantages of knowing HIV status.
- Arrange to see the client after the test.

### **REMEMBER!**

HIV/AIDS is a sensitive issue. People should be counselled privately and compassionately.

### *Post-test counselling*

- If HIV-negative, advise on safer sex practices, abstinence etc.
- If HIV-positive:
  - Provide post-test information and support.
  - Advise on advantages of knowing HIV status (prevention of re-infection, early access to treatment, choices about future pregnancies, etc).
  - Explore the personal and community support systems.

- Explain how a person with HIV can protect himself/herself from becoming sick by maintaining a “healthy lifestyle”; by eating healthy food, avoiding or decreasing tobacco, taking regular exercise etc.
- Advise to seek prompt treatment for any infections (cough, fever, skin infections or diarrhoea).
- For sero-positive mothers, discuss issues regarding:
  - the risks of getting pregnant and its implications for the child and the health of the mother with HIV;
  - the benefit of exclusive breastfeeding versus the risk;
  - routine vaccination of children with HIV;
- Encourage regular follow-up if positive.

### **REMEMBER!**

Patients and family members should receive education on HIV infection and be advised how to handle blood and other body fluids from the patient.

## Management of HIV-related infection

### *Chronic diarrhoea*

Chronic diarrhoea is defined as 3 or more loose motions a day, intermittent or continuous, lasting more than 2 weeks.

In the majority of cases, no cause may be found and treatment is thus largely symptomatic. For the treatment of diarrhoea refer to the relevant chapter in this manual.

In patients who do not respond to treatment REFER.

Prevention of diarrhoea consists of attention to personal hygiene (hand-washing), drinking boiled water, and eating ONLY thoroughly cooked meat and vegetables.

#### *Persistent fever*

A recurrent or persistent fever is defined as elevation of temperature ( $>37.5^{\circ}\text{C}$ ) for duration of 2 or more weeks.

- Give analgesics in full dose, i.e. paracetamol 1g every 6 hours.
- If no response, treat as malaria according to national recommendations.
- If no response give, give cotrimoxazole 480 mg (sulfamethoxazole + trimethoprim) 2 tablets twice daily for 5 days.
- If no response or if the patient has altered mental state, stiff neck or deep rapid breathing, REFER immediately.

#### *Lymphadenopathy*

- If it is due to local or regional infection, treat as indicated.
- If non-itchy skin rash/evidence of resistant genital ulcer consider syphilis: give benzathine penicillin 2.4 million IU weekly  $\times$  3 doses.
  - If allergic to penicillin give doxycycline 100 mg tablets twice daily for 2 weeks;
  - For pregnant women give erythromycin 500 mg tablets four times daily for 2 weeks;
- If the patient has also fever, weight loss, unilateral fluctuant nodes in increasing size, consider tuberculosis, lymphoma or Kaposi's sarcoma, REFER.

- Persistent generalized lymphadenopathy, REFER.

#### *Respiratory infections*

Present as cough (acute, persistent or worsening) and/or dyspnoea, which may be accompanied by chest pain.

Pneumonia and pulmonary tuberculosis are the most common causes of lower respiratory tract infections. Consider TB if there is cough for more than 2 weeks, weight loss, haemoptysis, sweats etc

Cough without dyspnoea or tachypnoea and associated with runny nose is usually indicative of upper respiratory tract infection of viral origin.

#### **Adults**

- Give cotrimoxazole 480 mg (sulfamethoxazole + trimethoprim) 2 tablets twice daily for 5 days.
- If no response, or receiving cotrimoxazole prophylaxis, give amoxicillin 500 mg tablets three times daily for 5 days.
- If no response, REFER.
- If there is severe dyspnoea or respiratory distress or there is a suspicion of TB, REFER.

#### **Children**

- Give cotrimoxazole (sulfamethoxazole + trimethoprim) 24 mg/kg 12-hourly for 5 days.
- If no improvement after 48 hours of treatment for severe pneumonia, treat as pneumocystis pneumonia (PCP), REFER.

- If there is an upper respiratory tract infection (URTI) without fever, advise mother on HOME CARE.

### *Oral lesions (thrush)*

Many different conditions involving the oral cavity are encountered in patients with symptomatic HIV infection and these include *Candida albicans*, the most common cause of oral thrush. It is characterized by white sloughs covering many areas of superficial ulceration on the gums, palate and tongue. In severe cases, the lesions extend into the lower pharynx and oesophagus to cause nausea, dysphagia, and epigastric pain.

- Nystatin: one tablet 500 000 IU x 4 daily (sucked or chewed). Therapy should be continued for at least 48 hours after symptoms have resolved. If nystatin oral tablets are not available, vaginal tablets or gentian violet can be prescribed.
- Gentian violet: local application of gentian violet 1% aqueous solution twice daily for 1 week.
- For oral thrush which does not respond to first line antifungal, or when it is associated with dysphagia, REFER if alternative drugs are not available (e.g miconazole gum patch, fluconazole)
- Since other causes may be involved such as herpes simplex virus infection, if no improvement within 7 days, REFER.

### *Central nervous system disorders*

Patients with HIV infection may present with a broad range of mental and neurological disorders such as confusion, psychosis, dementia, depression, peripheral neuropathy, etc. These could be due to the HIV itself,

concomitant malaria, meningitis, other infections, hypoxia, metabolic causes or even medicine toxicity. If mental or neurological disturbance is suspected, REFER for correct diagnosis and prompt treatment.

Many patients with HIV will experience reactions such as anxiety, which can itself cause mental and physical symptoms. Such patients are best treated with reassurance, counselling, home care and social support.

### *HIV-associated skin diseases*

Many patients with HIV infection (80%–90%) develop dermatological conditions, which may be very disabling, disfiguring and even life threatening. They may be caused by bacterial, viral (i.e. herpes zoster lesions), fungal (i.e. oral thrush), tumours (i.e. Kaposi's sarcoma) and medicine reactions (i.e. Stevens-Johnson syndrome). For the treatment of these disorders refer to relevant chapters in this manual. For very severe cases and those which do not respond to treatment, REFER:

### *Failure to thrive (FTT)*

- Severe malnutrition is a common feature of end stage HIV disease. It is very important to rule out associated TB. If TB is suspected, REFER.
- Identify any other associated problems such as persistent diarrhoea, oral thrush, and respiratory conditions and treat accordingly.
- If able to feed and not severely malnourished, treat as recommended in the chapter on malnutrition.
- Review after 2–4 weeks. If not improving, REFER.

### *Pain relief*

For the management of pain relief, refer to the relevant section in this manual. In severe cases that do not respond to full doses of ordinary analgesics, REFER.

### *Prevention of opportunistic infections:*

#### *cotrimoxazole prophylaxis*

Giving cotrimoxazole daily to HIV infected patients prevents the occurrence of a number of opportunistic infections, and reduces mortality. It does not replace antiretroviral treatment but should be part of the standard HIV care for adults and children.

- In adults with symptomatic HIV infection, give cotrimoxazole double strength (960 mg) or two single strength (480 mg) tablets daily.
- Cotrimoxazole prophylaxis is also recommended for all children born to an HIV-infected mother, starting at 6 weeks of age, until infection can be excluded and in HIV-infected children clinically symptomatic, REFER.

## **Medicine treatment of HIV/AIDS**

HIV has no cure. Antiretroviral medicines (ARV) suppress viral replication, improve symptoms, and prolong life. Effective therapy requires combination of three or four medicines simultaneously to be taken every day for the rest of life. Still the medicines may cease to work after some time, especially if the adherence to treatment is not good. In order to simplify treatment, facilitate storage and distribution, and improve patient compliance to treatment, WHO

recommends fixed-dosage combination (FDC). The decision about which medicines to make available in a particular country or area, depends on a number of different factors. These include the availability, price of medicines, the numbers of pills per dose, the side-effects, and laboratory monitoring requirements. Most ARV medicines have various adverse effects and patients need careful and continuous monitoring by trained health professionals.

Current recommended treatment protocols in Somalia			
Patient group	Currently recommended treatment protocols	Use in women of child bearing age or who are pregnant	Comments
Adults and adolescents and children >3 years and/or >10 kg	d4T+3TC+NVP (First line standard)	Yes	
	d4T+3TC+EFZ (First line non-standard (Option A))	No	Particularly for patients with TB co-infection and those unable to tolerate nevirapine.
	AZT+3TC+NVP (First line non-standard (Option B1))	Yes	Particularly for patients with peripheral neuropathy at initiation of therapy or following treatment with the stavudine-containing standard first-line regimen
	AZT+3TC+EFR (First line non-standard (Option B2))	No	
Children <3 years and/or <10 kg	AZT+3TC+NVP		
Post-exposure prophylaxis	AZT+3TC for 28 days		

- d4T (NRTI) alternative name stavudine
- ZDV (NRTI) alternative names zidovudine or AZT
- EFZ (NNRTI) alternative name efavirenz
- NVP (NNRTI) alternative name nevirapine
- 3TC (NRTI) alternative name lamivudine

### REMEMBER!

HIV/AIDS HAS NO CURE. Current treatment improves condition but is life-long and may have side-effects.

## Prevention of HIV infection

Within the health care services, prevention means NEVER using unsterilized needles, syringes, razor blades, scalpels etc, and never using unscreened blood for transfusion. The main preventive method however is to promote safe sexual practices. Safe sexual practices mean:

- Abstinence from sex, if possible
- Faithful and ONLY one partner (non-HIV infected)
- Prompt treatment of sexually transmitted infections.
- Consistent use of condoms.

## Health worker safety

Health workers should consider EVERY person to be potentially infected with HIV. Thus all health workers should observe the following precautions while handling biological materials from patients:

- Thoroughly wash hands with soap and water before and after all procedures.
- Protective gloves should be worn during procedures at risk of blood exposure and when handling body fluids.

## MEASLES is a notifiable disease

### Measles

#### Description

An acute infectious disease caused by a paramyxovirus. It occurs in children, usually between 6 months and 3 years who have not been immunized.

Measles is very infectious for 7 days before and for 2 days after appearance of the rash.

#### Signs and symptoms

- High fever (present before the rash)
- Conjunctivitis
- Running nose, cough and sore mouth
- Blotchy rash starting from the head and neck down the body
- Diarrhoea.

#### Complications

Early complications	Late complications
Laryngitis	Keratoconjunctivitis
Bronchopneumonia	Malnutrition
Otitis media	Deafness from chronic otitis media
Febrile fits	Meningitis and encephalitis
Stomatitis	Activation of latent tuberculosis

- If a health worker has a cut or wound, an occlusive dressing should be applied and protective gloves worn.
- When significant contact with the patient's body fluids is anticipated, a suitable waterproof apron should be worn.
- Laboratory staff should not pipette by mouth.
- There should be careful and proper handling of needles and other sharp instruments. Reusable needles and syringes should be:
  - Kept prior to sterilization in water, preferably containing disinfectant.
  - Cleaned with water, and then
  - Fully sterilized using an autoclave, or if not available by prolonged boiling (for at least 30 minutes).

## Management

### *In uncomplicated cases*

- NO antibiotics.
- Wash eyes with clean water.
- Treat sores in and around mouth with gentian violet paint and encourage oral hygiene.
- Tepid sponging and analgesics for fever:
  - Paracetamol (500 mg tablets) as required:
    - Adults and children over 12 years: 1–2 tablets 4–6 hourly.
    - Children 8–12 years: 1 tablet 4–6 hourly.
    - Children 3–7 years: ½ tablet 4–6 hourly.
    - Children 1–2 years ¼ tablet 4–6 hourly.
  - Acetylsalicylic acid (ASA, aspirin: 300 mg tablets) as required with or after food:
    - Adults: 1–3 tablet 4–6 hourly
    - Children (older than 12 years): 1 tablet 4–6 hourly
  - Alternatively give ibuprofen.
- Maintain nutritional intake (continue breastfeeding).
- Give vitamin A:
  - Children > 1 year: 200 000 units stat on day 1, 2 and 8.
  - Children < 1 year: 100 000 units stat on day 1, 2 and 8.
- In the case of bronchitis or otitis media, give antibiotics:
  - Amoxicillin 250 mg tablets):
    - Adults: 2 tablets 8-hourly for 10 days.
    - Children:
      - 5–10 kg, give ¼ tablet 8-hourly for 10 days.

- 10–30 kg, give ½ tablet 8-hourly for 10 days.
- >30 kg, give 1 tablet 8-hourly for 10 days.
- For penicillin allergic patients give: Erythromycin tablets before meals:
  - Children 5–10 kg: 62.5 mg 6-hourly for 10 days.
  - Children 10–15 kg: 125 mg 6-hourly for 10 days.
  - Adults and children over 15 kg: 250 mg tabs 6-hourly for 10 days.
- Observe closely for complications such as croup, unresponsive bronchitis or pneumonia, malnutrition and severe dehydration.
- In complicated cases, REFER.

## Prevention

- Vaccination with measles vaccine at 9 months.
- Quarantine measures (to avoid spread of infection).

**POLIOMYELITIS is a notifiable disease**

## Poliomyelitis

### Description

An acute viral infection, which causes weakness or flaccid paralysis of certain muscles, especially the legs. Transmission is faeco-oral.

## Signs and symptoms

- Febrile, flu-like illness
- Asymmetric weakness or paralysis of muscle groups.

## Management

- NO SPECIFIC TREATMENT.
- Bed rest; activity in the first two weeks may increase paralysis.
- Do not give any injections during early illness (risk of paralysis).
- Treatment of the fever.
- Nursing care for paralytic cases and physiotherapy once signs have stabilized.

## Prevention

- Vaccination
- Quarantine measures (to avoid spread of infection).

**VIRAL HEPATITIS is a notifiable disease**

## Viral hepatitis

### Description

Viral hepatitis is a systemic disease that predominantly harms the liver. There is usually fever, with marked loss of appetite at the onset followed by jaundice. However, many cases might remain asymptomatic. There are three main types of viral hepatitis termed as A, B, C. All three types may have a similar clinical disease pattern but are due to completely different viral agents.

Type A is spread by oral faecal transmission. This disease is usually mild in children but more serious in older people.

Type B is usually sexually transmitted and can be rapidly fatal.

Type C occurs mainly in injecting drug users and generally takes a chronic course finally resulting in chronic liver failure or hepatoma.

### Signs and symptoms (mainly types A and B)

- Acute loss of appetite
- Sometimes pain on the right side of the abdomen, below the ribs
- May have fever
- After few days the eyes may turn yellow “jaundice”
- Sight and smell of food may cause vomiting
- Urine turns dark yellow (like tea) and stools become whitish.

### Management

- NO MEDICINE IS USEFUL. ANTIBIOTICS SHOULD NOT BE GIVEN.
- Advise rest and ensure adequate intake of glucose or other liquids.
- Good diet—especially fruits and vegetables.
- NO ALCOHOL for at least three months.
- In serious cases, REFER

## **Part 2**

**Training manual on  
rational management  
and use of medicines at  
the primary health care  
level**

# Chapter 1

## Health centre administration

- Planning management

No matter where you are working or what you are working with, you cannot do your work efficiently without first organizing it. This chapter will teach you how you can organize your daily activities, so that you do not end up one day in a managerial crisis.

### References:

1. *The Malawi prescribers companion*. Malawi, Ministry of Health, 1993.
2. United States of America Management Sciences for Health in collaboration with WHO. *Managing drug supply. The selection, procurement, distribution, and use of pharmaceuticals*. Second edition. Kumarin Press, 1997.

## Planning

### Learning objectives

At the end of the session, participants will be able to:

- Plan their work more effectively
- Assess the needs and priorities of their health centres
- Develop plans of action which can lead them to their targets
- Develop good relationships with their patients and between themselves.

Location: Class room/health centre

### Planning

Planning is a process where one thinks ahead of time how one will execute a particular job at some point in the future. For example, if I want to order medicines for my clinic there are a few things I ought to know before just ordering the medicines. These include the type of diseases common in my area, the yearly/monthly incidence of those diseases etc. In this way I am planning.

The process of planning consists of four main steps:

#### **Step 1: Where are you now?**

You assess your needs and priorities

#### **Step 2: Where do you want to go?**

You set up a target/s

#### **Step 3: How do you get there?**

You draw up a plan of action

#### **Step 4: How do you know you have got there?**

You develop a monitoring system to evaluate your progress

### Step 1: Where are you now?

First define:

- Your catchment area
- Your catchment population
- Community characteristics
- Major health problems and priorities
- Human and financial resources

#### *Catchment area*

Every health centre serves people from a certain area. This area has its own characteristics, such as mountains, rivers, roads, towns, villages, farms, schools, markets, etc. As a health worker, it is of a paramount importance that you know quite well the characteristics of your catchment area. This knowledge will help you draw a map, which could be vital for your daily activities in the centre.

#### *Catchment population*

Knowing the number of people in your area will help you plan in terms of medicines, vaccinations, deliveries etc. Although it might not be possible to get accurate statistics in many parts of the country, still it is important that you work hard to get a rough estimate of the number of people living in your area. Using the data in your centre from earlier years, you can break the catchment population into age groups. This will give you a rough idea of the age distribution of your patients

#### *Population structure*

For the success of your work and good relations with the people in the area, it is important that you are well aware of the

characteristics of the people in the area such as their occupation, beliefs, customs etc. Such knowledge will not only help your relationship with the people in the area but will also help you understand their health problems and risk factors.

### *Health problems*

It is very important you routinely register all the people who come into your clinic and document their health complaints accurately in accordance with your local or national morbidity register if one exists. Analyse the data regularly, for example every three months, to get a grasp of the health situation in the area. In this way, you will get a good idea of the most common diseases in the area, which need your attention and preparation. In this way you will also become aware of what types of health problems you can expect at different times of the year.

### **Step 2: Where do you want to go?**

At this stage you know your area, the characteristics of your population and the common diseases in your area. Now you need to define the goal or target you want to achieve at a certain time in the future. *Your goal must be realistic, measurable and achievable within a specific time-frame.* All the members of the staff should be well aware of this and work towards it. They should be conditioned towards this goal by displaying the message as well as your progress in your health centre.

### **Example of a target:**

To fully immunize 80% of children under 1 year old before the end of the next year. This is a clear, measurable target that has a defined time-frame and can be achieved.

### **Step 3: How do you get there?**

Here you draw up a plan of action that will take you to your goal. Think of travelling from Mogadishu to Hargeisa. The type of transportation you take will depend, for example, on your pocket, desire, speed and safety. Similarly you should think of the following factors to prepare your health centre to achieve a certain goal:

- Resources: List all the necessary resources in terms of equipment, supplies, financing, transport etc.
- Job description: Allocate tasks among the staff
- Time-frame: Set realistic dates by which the activities have to be executed
- Community involvement: discuss your plan with the community early on
- Staff motivation: involve all the staff in the clinic from the start.

### **REMEMBER!**

Prioritize your work. It is better to do one job well, than to have a number of jobs half completed.

### **Step 4: How do you know you have got there?**

It is very easy to forget your target if you do not have the means to continuously check your work. You can easily be distracted by

other events. It is possible that you might overestimate your successes without any objective evaluation. Thus it is important that you have the means to monitor your progress routinely. All the staff should be kept abreast of the progress and alerted for any setbacks. You can even develop, for example, charts or graphs, which show the progress of your work. These should be displayed on the walls of your health centre so that everyone can see what progress is being made. Different activities will have different charts or graphs, e.g., one for EPI, another one for MCH etc.

## Group work

Participants discuss with the moderator how to collect population data, develop a sketch map of an area, and draw graphs and charts of the population characteristics.

## Management

### Learning objectives

At the end of the session, participants will be able to:

- Manage time more effectively and efficiently
- Delegate responsibility
- Create teamwork
- Involve the community in every step in the plan of action

Location: Class room/health centre

### Management

Imagine yourself discovering at the end of your working day that you have not fulfilled half of your planned activities scheduled for that day despite being very busy the

whole time. Here you are not irresponsible but you are suffering from one problem—poor management! Management is executing things properly and as planned. It is not necessary that you do all the work by yourself, but you should see to it that it is done. Apart from your medical duties, as the person in-charge of the health centre you are also responsible for the day-to-day running of the health centre. Thus, you can be overwhelmed by other tasks if you are not focused and have priorities in your work. Sometimes you must delegate some of the work to other competent people.

### REMEMBER!

Management is getting things done.

To improve management at your health centre you need to develop the following characteristics.

#### *1. Arrange a decent working environment*

Although space is a major problem in most health centres in Somalia, it is still important to have an environment which helps you to execute your work effectively and protects the privacy of your patients. Most patients would like to be alone with you to discuss intimate problems or for physical examination. It is important to utilize the space available to you as effectively as possible, i.e. by dividing the rooms with screens as appropriate. Label all doors in a language the people understand.

#### *2. Plan your work regularly*

In order to plan effectively, your first priority is to make a list of all the tasks that must

be done daily, weekly and monthly at the health centre. Sit down and discuss this with the staff of the health centre. What are the most important tasks? Does everyone know what tasks they should be doing during a given period?

A staff meeting is an important venue at which to organize the work of the health centre. Such meetings should take place once a week. They should be short and brief. Minutes from all meetings should be kept. The meeting will be an opportunity to monitor progress and to discuss problems that have occurred recently, and how to solve them and avoid them recurring. These problems may be personal or related to the health services at your health centre. Although there is nothing wrong with showing another person a mistake that he/she has made, in a constructive way, try not to criticise in the presence of fellow health workers. On the contrary, praise in public for good work accomplished. In the meetings, you should decide, which problems need to be solved first; in other words, which problem has the highest priority? Then write down who will be responsible for what.

Separate meetings may be held each month where members from the community (elders, women, teachers, community leaders etc) are invited to attend. Here the community members (ensuring fair representation of all groups, especially women and other vulnerable groups) will get a chance to meet with you and your staff and discuss their wishes and concerns. For this reason it is vital to have a health centre committee where such problems can be discussed.

### *3. Delegate responsibility*

Being responsible does not mean doing everything yourself. It might actually be seen as irresponsible if you fail to complete work due to lack of time, while other competent staff, with time, are available. Delegate as much and as often as possible to your staff. However check that things are being done properly while being supportive and encouraging. Try to develop teamwork at your health clinic. All the staff in the clinic have a part to play in working towards one goal. When one person is not available, there should be another one willing to take his/her place. In this way you also win the confidence and the support of the community you are serving.

#### **REMEMBER!**

Praise in public, criticise in private.

### **Group exercise**

Participants discuss with the moderator the process of delegating responsibility, when to praise or criticise staff and how to manage time more effectively.

# Chapter 2

## Management of medicines

- Ordering and receiving of medicines
- Storage and stock management of medicines
- Good dispensing practices

### References:

1. *The Malawi prescriber's companion*. Malawi, Ministry of Health, 1993.
2. United States of America Management Sciences for Health in collaboration with WHO. *Managing drug supply. The selection, procurement, distribution, and use of pharmaceuticals*. Second edition. Kumarin Press, 1997.

## Ordering and receiving medicines

### Learning objectives

At the end of the session, participants will be able to:

- Determine the average monthly consumption and regular inventory
- List the important steps in receiving medicines
- Be familiar with proper ways of filling requisitions as well as delivery notes
- Understand the appropriate actions needed to dispose of damaged or expired medicines

Location: Classroom/health centre

### Ordering of medicines

Once the required medicines are selected, proper medicine order forms must be filled in to request the medicines. It is very important that proper calculations have been made to order the required amount of medicines for a specified period.

#### *Order forms*

The format of the order forms may vary according to the level of the health care facility. In general some or all of the following terms are likely to be found on the order forms:

- Item or stock number: This is a number used to identify a specific item in terms of its description and often unit of issue.
- Description: Medicine name, size and the dosage form (e.g. label, mixture, injections, etc).

- Unit: The pack size of an item indicates how many tablets are in each unit (e.g. 1000, 500, 250, or 100 tablets), or how many injections are in each unit (e.g. one ampoule) or how many doses of eye ointment are in each unit (e.g. one tube 3.5 g). The unit is usually a course of treatment or a month's supply.
- Monthly consumption: This is the average number of units of an item, which are used over a period of one month (based on several months' consumption).
- Minimum stock level: This is the number of units which must be in stock in order to last until the next delivery plus the safety stock which is the number of units needed to cover an unforeseen delay before an expected delivery. When the amount of an item left in your medicine store has reached the minimum stock level, it is time to order a new supply.
- Order quantity: This is the number of units required to be ordered to build up the stock to the minimum stock level plus the average monthly consumption.
- Amount ordered: This is the amount of units ordered, which is normally the same as the order quantity.
- Amount issued: This is the number of units that is actually issued.
- Amount in stock: This is the number of units in stock at the health unit at the time of placing the order.

### Delivery of medicines

There are two main delivery systems:

- kit system
- indent system.

### *Kit system*

This is favoured by some organizations, e.g. UNICEF. A standard kit is regularly sent to each health facility based on their perceived needs.

#### Advantages

- Rational selection of a limited range of essential medicines
- Simplified supply and storage management
- Easy to prepare and deliver particularly in an emergency
- Reduced risk of theft
- More rational prescribing

#### Disadvantages

- Less flexible than the indent system
- Difficulty to suit to regional variability in morbidity, which may lead to substantial wastage of certain medicines
- Possibilities of stock-outs and surpluses

A kit-based system is a temporary solution and a more flexible system should be instituted as soon as it becomes possible to define medicines needs more precisely.

### *Indent system*

Each health unit requests at regular periods the amount of medicines that they feel they require for that period.

#### Advantages

- Less wastage
- Supply matches demand.

#### Disadvantages

- More difficult to organize
- Requires approval of officer-in-charge

- Requires tight diagnosis and medicine control usage (prescribing) to avoid over-prescribing.

### *Indent procedure*

- Check that the quantity delivered corresponds to the quantity supplied as indicated on the delivery note.
- Check each item and tick it off. Each medicine should be checked for:
  - Packaging
  - Label
  - Expiry date
  - General appearance

Any item that has damaged packaging, is unlabelled, or has passed its expiry date or is of doubtful appearance should be returned to the supplier as soon as possible for destruction.

### *Delivery note*

This must be signed by the person in charge of the warehouse, e.g. assistant pharmacist and it should be countersigned and dated by the health staff receiving the consignment of medicines. One copy of the delivery note should be kept by the recipient while another copy should be sent back to the supplier.

## **Receipt of medicines**

When medicine supplies arrive they should carefully be checked for:

- Identity: Make sure the items fit exactly the same description as those that were ordered.
- Quantity: Ensure that the number of units of each item supplied is as indicated on the order form.

- Condition: Check each item carefully for damage or signs of deterioration.

The person in-charge should only sign the receipt of the order once he/she is satisfied with each of the above controls. Any discrepancies should be noted in writing on the order form copy and followed up.

### Group exercise

- Participants should discuss the relative merits of the indent and kit system in relation to their particular needs.
- Participants should discuss the reasons for the accurate completion of delivery and requisition notes.

## Storage and stock management of medicines

### Learning objectives

At the end of the session, participants will be able to:

- Appreciate the importance of storing medicines properly
- State the practice and principles of stock management

Location: Classroom/health centre

### Storage of medicines

Medicines should be stored securely to prevent theft and suitably to prevent deterioration.

Stocks of medicines should be always kept:

- In a locked cupboard or room.
- On shelves which are regularly cleaned to eliminate dust
- In a dry, cool place away from light

### *Storage of special preparations*

- Tablets should be kept in air tight tins or screw-top jars
- Injectables should be protected from light, otherwise some of them will deteriorate
- Syrups should always be kept in glass-bottles not tins
- Some medicines and most vaccines and sera need to be kept exclusively in a refrigerator, which is kept in good working order and is always maintained at a temperature of less than 8°C.

### *Medicine deterioration*

The health centre staff should always be on the look-out for physical signs of medicine deterioration such as changes in consistency, colour and/or smell. For example a strong vinegar-like smell is associated with the decomposition of aspirin tablets.

### REMEMBER!

Medicines that show signs of deterioration should under no circumstances be given to patients, as they may be dangerous.

### *Arrangement of medicines*

Medicines must all have their assigned storage place. They can be arranged in different ways:

- In alphabetical order according to their generic names
- In dosage form and alphabetic order
- By therapeutic groups

Arrangement by therapeutic groups is the most practical at a health centre. It allows a missing item to be replaced by another of the same therapeutic class. This also

ensures that the health-staff learn about the therapeutic indications of the medicines, which facilitates ordering of fresh supplies.

#### *Storage hazards*

- **Do not** keep medicines for oral (internal) use with medicines for external and topical application. They should be separate.
- **Do not** store medicines with poisonous substances and chemicals (e.g. insecticides, kerosene, petrol, spirit). This might lead to contamination resulting in serious poisoning or even death.

#### *Identification*

Make sure that all items have proper labels, which are easy to read.

### **REMEMBER!**

Keep all labels clean and easy to read.

#### *Ordering for use*

Medicines which were received first should be used first. This first-in-first-out procedure ensures that medicines do not sit and expire on the shelf. The first-in-first-out procedure is easily practised by placing the most recently received medicines behind the medicines already sitting on the shelf.

#### *Expiry date*

A red mark can be marked on items nearest to their expiry date and they should be placed in front so that they can be used first. You can also notify your supervisor if you have a large number of items nearing their expiry date so that they can be given to other needy units.

## **Stock management**

Once the medicines have been stored in an orderly way it is necessary to know the quantities of each medicine remaining in the store at any point in time.

To achieve this, we need to always do the following:

- Keep a proper register of patients seen and medicines prescribed (Patient register)
- Record the stock levels of the medicines when received and issued (Stock card)

These two sources will enable us to calculate certain data that will be used for drawing up the requisition for fresh supplies of medicines.

#### *Patient register*

Keeping a patient register in your unit is vital and has the following advantages:

- Provides your health centre with information on the number of patients seen, i.e. the work load.
- Records the frequency of occurrence of various key diseases.
- Shows you the trends of outbreaks of disease so that you can prepare for them.
- Records the medicine usage and therefore gives information on the quantity and types of medicines to request.
- Permits the measurement of patterns of prescribing (prescribing indicators), what percentage of people receive antibiotics, antimalarials, etc.
- Gives information to your supervisors so they can help you to become an even better prescriber (prescriber training).

- Gives you information to form the basis for planning health surveys.

### Stock cards

A stock card should be made for each medicine and should, if possible, be on a stiff board (see figure).

Medicine <i>Paracetamol tabs 500 mg</i> (a) Average monthly consumption:..... (b) Safety stock (stock level below this requires you to order) .....				
Date	From and for	Received	Issued	Stock level
1.11.05				1000 (1)
15.11.05	WHO Warehouse	3000		4000 (2)
22.11.05	Juba H.C.		800	3200 (3)
30.11.05	Inventory			3200 (4)

When making a stock card, make an inventory of the medicine and mark the quantity in stock on the first line (1) of the Stock Level column, i.e. inventory 1000 tabs.

Then as each order comes in write the quantity delivered under the received column i.e.

15.11.05 Received 3000 tablets.

Work out the new balance = (stock received + stock in hand) line (2) of the card.

On 22.11.05 800 tablets of paracetamol were issued, Mark 800 in the issued column and work out the remaining stock level = (previous stock level – medicines issued) line (3) of the card.

Thus each movement is entered on the card and each time the stock level is calculated. Periodically an inventory (4) should be taken and in theory this should correspond to the calculated stock level.

### Average monthly consumption

From the stock card we can determine the number of medicines etc that have been issued over the month. This figure can be averaged for 3 months or at the end of the year for 12 months, i.e. monthly average for the year = total number of medicines issued over the year divided by 12.

### Safety stock

#### REMEMBER!

This is the minimum below which the stock cannot be allowed to fall if it is not to run out

In other words the quantity of medicine needed for the interval between placing the order and delivery. This interval is called the Delivery Lead Time. For example if the lead time is 14 days and the average monthly consumption is 3000 tablets, the safety stock will be:

$$\frac{3000 \times 14}{30 \text{ days}} = 1400$$

Thus whenever a new order is placed, there must still be at least 1400 tablets in stock to make sure of not running out of stock before the new order is delivered. However if deliveries from the Central Medical Store (CMS) are unreliable, for one reason or another, it might be necessary to make the safety stock = the amount of medicines consumed in the normal maximum time of delivery from the CMS  $\times$  1.5 or even  $\times$  2, in other words 2100 or 2800 tablets.

### *Inventory*

At regular intervals (e.g. monthly) a stock count should be taken of what is in the store. The quantity counted should equal the quantity expected as written on the stock card. If the figures are not equal note it in RED.

The reason for such a discrepancy may be:

- Expired medicines
- Missing medicines
- Card not properly completed
- Incorrect amount of medicine supplied

### **Group exercise**

- Participants should be given a demonstration of the correct and incorrect methods of storing medicines.

### **REMEMBER!**

Good stock management does not just mean keeping a card. The information entered on that card must at all times be correct and the quantities on the shelves must correspond to the quantities written on the card.

## **Good dispensing practices**

### **Learning objectives**

At the end of the session, participants will be able to:

- Learn the process of good dispensing practices
- Understand the consequences of poor dispensing practice

Location: Classroom/health centre

### **Dispensing**

Dispensing refers to the process of preparing and giving out medicine to a named person on the basis of a prescription. Good dispensing practices ensure that an effective form of the correct medicine is delivered to the right patient, in the prescribed dosage and quantity, with clear instructions and in a package that maintains the potency of the medicine.

The process of dispensing may be divided into:

1. Reading and understanding the prescription
2. Collecting the correct medicine
3. Counting or pouring out the correct amount of the medicine
4. Packing and labelling of the medicine
5. Giving the medicine to the patient and explaining how it is used.

### *Reading and understanding*

- Make sure that it is genuine. Patients might write their own unauthorized prescriptions for medicines.
- Make sure that you understand what is

written on the prescription. If you can not read the writing, check with some one else.

- Make sure you clearly understand the dose asked for and check that it is correct. Again if you are uncertain, ASK!

### REMEMBER!

Never guess what is written on a prescription. If you are uncertain, ASK!

#### *Collecting the correct medicine*

- Make a habit to **always** read the label. Looking for medicines by looking at their colour, size, or shape can be dangerous.
- Read the generic name, which is always the same no matter which company has manufactured it.
- Make sure you do not confuse similar names, for example chlorhexidine, chlorpheniramine, chlorpromazine, chloroquine etc.
- Check the expiry date and quality of the medicine. For example, injections must have no particles or look cloudy. Check that the container is intact and has no cracks. Similarly check for any damage to the tablets, liquids and ointments.

#### *Counting out the medicine*

- Calculate accurately the amount of medicine you should supply to the patient.
- After counting, measure the total quantity supplied to the patient. Counting tablets and capsules by hand is not recommended. Ideally a so-called counting tray can be used or any clean smooth surface and a clean knife.

#### *Packaging and labelling*

- After you have counted and measured the right amount, pack and label the medicine using, for example, plastic dispensing envelopes, paper envelopes etc. When you choose a method of packing, consider the length of time the patient will be taking the medicine.

### REMEMBER!

Dispensing medicines in a piece of paper or in a dirty container or directly into the patient's hand is INAPPROPRIATE PRACTICE.

- After you have packed the medicine, label it clearly and correctly. Patients have often forgotten verbal instructions by the time they have reached home. Attach a written (or preferably pictorial label) to the dispensing container.
- Labels should not be abbreviated and should preferably be written in the patient's language.

#### *Giving the medicine to the patient, and explaining how it is used*

Information for patients—explain clearly so that the patient understands your instructions. Ask them to repeat the dosage regime and the duration of treatment.

- How much medicine is to be taken: The patient should know how much to take because, for example, some people may believe that taking more medicine will mean a quicker recovery.
- How often to take the medicine: The patient should know clearly how many times he should take the medicine and in

association or not with food, milk or other medicines.

**Duration:** For some medicines, such as antibiotics and antitubercular medicines, it is very important that patients follow the doctor's prescription and complete the course of treatment. They should not stop when they feel better. Patients must clearly understand how often to take the medicine, in what quantity and for how long. The length of treatment may need to be many days, weeks or months. The consequences of not following the doctor's instructions should be clearly explained to the patient.

### **Group exercises**

The group may visit a pharmacy or a medical store and observe the whole process of dispensing a medicine to a patient and then write their own comments on whether they think the medicine was dispensed in the correct way.

# Chapter 3

## **Rational use of medicines**

- Essential medicines concept
- Rational use of medicines
- Use and misuse of injections and infusions
- Non-medicine treatment
- Making a diagnosis
- Rational use of tuberculosis medicines

## Essential medicines concept

### Learning objectives

At the end of the session, participants will be able to:

- Define what “essential medicines” means.
- List the components of the essential medicines concept.
- Appreciate the generic concept and its advantages.
- Compose a national/local essential medicines list.

Location: Classroom/health centre

### Essential medicines

Essential medicines are those medicines that are the most needed for the health care of the majority of the population in a given locality and therefore should be available at all times in adequate amounts, and in proper dosage forms.

There are thousands of different medicines available today in the world market. Every year, more products are put into the market. Of these, only a few are completely new preparations while the majority are modifications of already existing medicines with different names and labels. Most of these new products carry no major medical advantage over older ones, while they cost several times more.

WHO's latest model list of essential medicines (2005) contains about 312 medicines. However, experience has shown that a hundred or less medicines can take care of the majority of our health problems. In fact most common health needs can be met by less than 50 medicines.

## Components of the essential medicines concept

The essential medicines strategy is one adopted to make sure that a regular supply of safe, effective and affordable medicines is available in enough quantities and based on the primary health care system.

The essential medicines strategy is more than the supply of medicines. For this strategy to have the desired effect, emphasis should be placed on all aspects of:

- selection
- procurement
- shipment
- clearing
- inland shipment, and finally
- rational use

Rational use of medicines involves the whole range of the therapeutic process, which includes making the proper diagnosis, giving the right medicine in the correct regimen and finally the patient's compliance in the actual use of the medicine given. Any interruption in this process could have serious consequences for the therapeutic outcome.

### REMEMBER!

The concept of essential medicines must be followed in organizing and delivering health care.

The concept takes into account the following.

*a) Identification of the therapeutic needs*

The therapeutic needs of any locality are identified by listing the most common disease conditions that occur in the community which need remedy or prevention by the use of medicines. Against each of these disease conditions, the medicines of choice which will effectively treat or prevent the disease are listed, i.e. Standard Treatment Guidelines.

*b) Selection of essential medicines*

The selection of essential medicines is based on the morbidity pattern identified in the country and recommendations made by WHO and other health-related organizations.

The following criteria are used for the selection of medicines.

- level of use, i.e. relevance to the capacity of key health staff
- medical importance, efficiency and safety
- cost
- stability in local storage conditions (shelf life)

**IMPORTANT!**

All decisions to select a particular medicine should be based on good scientific evidence and not just on the personal opinion of a local specialist based on anecdotal evidence.

*c) Use of generic names*

Medicines should be listed by their generic names rather than their trade (proprietary) names, e.g. paracetamol not Panadol. The advantages of this are

- It assures clarity by giving information on the group of medicines and thus avoids confusion arising out of many different trade or brand name for the same generic medicine.
- Medicines of equal quality are usually cheaper when purchased by their generic names rather than their trade or brand names.
- Use of a generic name is a valuable aid to memory. Health workers have to learn one name only.
- The generic name is the internationally recognized non-proprietary name (INN) for any medicine or pharmaceutical substance. It is not dependent on who makes or sells it. Thus it can be easily recognized.

*d) Essential medicine lists*

The essential medicines list is a guiding model and indicates priority in medicine needs. The list is drawn up locally and updated periodically according to the level of health care. Estimation of quantities needed is based on epidemiological data, i.e. number of treatment episodes multiplied by the number of doses needed for a cure.

*e) Medicine supply management system*

This is the system by means of which the medicine supply is managed and the documents involved in recording the movement of medicines. It requires a system

of monitoring and evaluation. Records should be kept of:

- disease patterns (morbidity index)
- supplies (stock control)
- use of medicines (patient register).

#### *f) Training*

Training should be an integral part of any essential medicine programme. This includes medical students, physicians, nurses, other healthcare professionals as well as health authorities at all levels. Every one who is involved in the implementation of such a programme should be made to understand properly the essence of essential medicines and the long-term health benefits to the whole community or nation. Training on essential medicines should never be a one-time event, but rather a continuous process at all levels.

### **Group exercise**

- Participants develop a list of conditions in order of priority in their area and agree on the appropriate treatment for each condition.
- Participants discuss and update their own PHC essential medicine lists, if available, and indicate which medicines they consider the most vital.

## **Rational use of medicines**

### **Learning objectives**

At the end of the session, participants will be able to:

- Define what is meant by the rational use of medicines
- Recognize the criteria for the rational/correct use of medicines
- List the causes for irrational prescribing
- List and describe types of irrational prescribing
- Discuss and agree on ways of improving the prescribing of medicines especially antibiotics, TB medicines and antimalarials

Location: Classroom/health centre

### **Rational prescribing**

Rational use of medicines is the process of giving patients **medications** appropriate to each patient's clinical needs, in **sufficient doses** that meet their own requirements, for **an adequate period of time** and at **the lowest cost** to them and to their community.

This means deciding on the correct treatment for an individual patient based on good scientific reasons. It involves making an accurate **diagnosis**, selecting the **most appropriate medicine** from those available, prescribing this medicine in **adequate doses** for a **sufficient length of time** according to the **standard treatment guideline**. Furthermore it involves monitoring the effect of the medicine both on the patient and on the illness.

In summary, the criteria for assessing rational use include:

- Appropriate indication
- Appropriate medicine
  - Effective
  - Safe
  - Affordable
- Appropriate administration
  - Dosage
  - Route
  - Duration
- Appropriate patient
- Appropriate patient evaluation

Most illnesses respond to treatment using simple inexpensive medicines. Sometimes no medicines are needed. The unnecessary use of expensive medicines means some patients go without treatment when they are sick because there is not enough money to buy all the medicines required.

## Patterns of irrational medicine use

Common examples of irrational medicine use include:

- **Extravagant prescribing**  
The use of an expensive medicine when a less expensive one would be an effective and safe, e.g. the use of ampicillin, where phenoxymethylpenicillin could be used.
- **Over-prescribing**
  - The use of medicines when no medicine therapy is indicated, e.g. antibiotics for viral upper respiratory infections.
  - The use of larger doses than are necessary to treat a condition, e.g. a high dose of antibiotics when a lower dose would just be as effective.

- Giving medicines for a longer period than is necessary to complete a cure, e.g. giving benzyl benzoate for more than 48 hours.
- **Incorrect prescribing**
  - The use of the wrong medicine for a specific condition requiring medicine therapy, e.g. tetracycline in childhood diarrhea requiring ORS.
  - Prescribing a medicine without making a diagnosis.
  - The use of correct medicines with incorrect administration, dosages and duration, e.g. the use of intravenous metronidazole, when suppositories or oral formulations would be appropriate.
- **Unnecessary prescribing**  
Prescribing of multiple medicines with a view that something will work, e.g. it is common observation that a patient with fever is prescribed an antipyretic, an antimalarial and an antibiotic.
- **Prescribing of medicines with doubtful/unproven efficacy**
  - The use of diethylstilbesterol to prevent miscarriage.
  - The use of antidiarrhoeal mixtures such as kaolin and pectin.
- **Dangerous prescribing**
  - The use of certain analgesics which contain dipyrone, despite its potential to cause fatal blood disorders, agranulocytosis.
  - The use of diethylstilbestrol despite the fact that it can cause cervical and vaginal cancer in daughters of women who used the medicine during pregnancy.

### • **Under-prescribing**

- Failure to provide available, safe and effective medicines, e.g. failure to vaccinate against measles or tetanus.
- Giving too low a dose of the medicine or giving it for too short a period, e.g. as commonly seen with antibiotics and antimalarials, which leads to medicine resistance and/or poor response.

Examples of commonly encountered inappropriate prescribing practices include:

- Overuse of antibiotics and antidiarrhoeals for non-specific childhood diarrhoea
- Indiscriminate use of injections
- Multiple medicine prescriptions
- Use of antibiotics for treating minor acute respiratory infections
- Anabolic steroids for growth and appetite stimulation
- Tonics and multivitamins for malnutrition.

## **Factors underlying irrational use of medicines**

There are many different factors, which affect the irrational use of medicines. In addition, different cultures view medicines in different ways, and this can affect the way medicines are used.

The major factors are:

### **Patients**

- Patient's poor knowledge of his/her m
- Misleading beliefs
- Patient demands/expectations

### **Prescribers**

- Lack of education and training
- Inappropriate role models
- Lack of objective medicine information

- Heavy patient load
- Patient or industry
- Pressure to prescribe
- Limited experience

### **Medicine supply system**

- Unreliable suppliers
- Medicine shortages
- Supply of expired medicines

### **Medicine regulation**

- Non-essential medicines available
- Non-formal prescribers
- Lack of regulation enforcement

All of these factors are affected by national and global trends and practices. For example, the use of injections is declining in many African countries because of the fear of AIDS.

## **Impact of irrational use of medicines**

The impact of irrational use of medicines can be seen in many ways:

- Reduction in the quality of medicine therapy leading to increased morbidity and mortality.
- Waste of resources leading to reduced utilization of other vital medicines and increased costs.
- Increased risk of unwanted effects, such as adverse medicine reactions and the emergence of medicine resistance, e.g. as in malaria or dysentery.
- Psychosocial impacts, such as when patients come to believe that there is "a pill for every ill". This may cause an apparent increased demand for medicines.

## Strategies to improve medicine use

- **Educational approaches**, which seek to inform or persuade prescribers, dispensers, and patients to use medicines in a proper way, e.g. regular trainings, production of medicine bulletins and clinical supervision.
- **Managerial approaches**, which structure or guide decisions through the use of specific processes, forms, packages or monetary incentives, e.g. essential medicine lists, medicine procurement review, regular supervision of prescribing habits and other methods of audit.
- **Financial approaches**, which reward rational prescribing and deter polypharmacy, e.g. performance-related pay, user charges.
- **Regulatory approaches**, which restrict availability of certain problem medicines, e.g. requiring generic prescribing, banning certain medicines.

## How to select the best strategy to improve medicine use

Before you select a strategy to improve prescribing, you need to know the problem. You think you have a problem of irrational medicine use. To find out you need data. This data may be quantitative, for example, how often injections are given in your clinic, or qualitative, for example, why your prescribers are using injections. In other words quantitative data tell you what is happening and qualitative data why it is happening. Unless you know why something is happening you cannot choose the right strategy to change it. Indicators (see Chapter

4) are examples of quantitative data, but to get qualitative data you need to ask people or observe them. Once you know what and why something is happening then you can decide on a suitable strategy.

In any decision to change medicine policy, it is important to consider first its local acceptability, costs involved, short and long-term medical and financial gains, possible constraints, and how to monitor its successes and failures.

## Summary

Rational prescribing involves:

- Getting a comprehensive history and doing a good examination so that an accurate diagnosis can be made.
- Selecting the best medicine and prescribing it in an adequate dose. In medicine selection, consider effectiveness, safety, cost and availability.
- Advising the patient to complete the standard course of treatment and checking that your instructions are understood.

## Group exercise

- Participants discuss how to improve prescribing for antimalarials, antituberculosis medicines and antibiotics.
- Participants divide into groups and each group designs a project to investigate a medicine problem, i.e. misuse of antibiotics, overuse of injections, etc. Then each group proposes a strategy to deal with the problem.

# Use and misuse of injections and infusions

## Learning objectives

At the end of the session, participants will be able to:

- Explain reasons why injections are misused
- Describe the dangers of the overuse of injections
- Observe proper procedure when giving injections
- Discuss and adopt strategies to reduce the use of injections and infusions.

Location: Classroom/health centre

## Misuse of injections

There are many ways to give medicines to a patient. These include giving them by mouth, applying them topically or by giving injections. Each way has its indications, advantages and disadvantages. However injections are frequently misused for the following reasons.

- Patients demand them because they believe they will give the best cure
- The health worker gives them to satisfy the patients
- The health worker gives them for financial reward
- The health worker believes they will give the best cure
- The health worker is unsure of the diagnosis but wants to be seen to be doing something.

Two injections which are frequently abused are:

### Chloroquine

Chloroquine injections are often given at the start of treatment for malaria in the mistaken belief that it will act more quickly. This has been proved to be wrong. Blood levels rise more quickly (within 30 minutes) with oral treatment than with injections. In the case of injections, most of the chloroquine remains in the tissues.

Chloroquine injections are bad because:

- they can cause cardiac arrest, especially in children;
- they can cause abscess;
- they are expensive.

### REMEMBER!

Chloroquine has been removed from the Somalia essential medicines list because of high *Plasmodium falciparum* resistance. If malaria is suspected or diagnosed, use other anti-malarial medicines as described under the treatment of malaria in this manual.

### Procaine penicillin

This is the most abused injection and is unnecessarily and incorrectly administered for almost every kind of complaint. In one study in one developing country 95% of the patients visiting a private practitioner were given procaine penicillin. Often it is only given for short periods in some cases one day only. The result is the development of penicillin-resistant organisms.

## Dangers of injections

- Damage to the sciatic nerve— intramuscular injection should **not** be given into the buttock but into the anterior lateral side of the mid thigh.
- There is always a risk of injecting i.m. medicines into a blood vessel with serious results (always pull back on the syringe before injecting).
- If the syringe and needle are not properly sterilized there is a risk of transmitting **hepatitis** and **HIV**. When available, use disposable syringes and needles. If these are not available be sure to follow the sterilization procedure described below.

**HIV/AIDS** has no known cure. Health workers have a duty to control the spread of this disease by making sure that they use sterile syringes and needles if they have to give injections.

### REMEMBER!

Always use sterile syringes and needles if you have to give injections.

When you prescribe anything ask the following questions:

- Does the patient need any medicines?
- If yes, can the patient be managed with an oral preparation?
- If no, then the patient may need an injectable medicine using sterile syringes and needles.

## Important steps to be taken when giving injections

### *Sterilization of the syringe and needle*

- The syringe has two parts. Take it apart and boil both sections and the needles for **20 minutes** starting from when the water starts to boil.
- After boiling, put the needles and syringes together without touching them with your hands. Use sterile forceps.

### *Giving the injection*

- Draw up the correct amount of medicine required into the syringe and expel any air. Take precautions not to contaminate the needles or the syringe.
- Choose the injection site and clean it with soap and water, alcohol, surgical spirit or whatever is available.
- Insert the needle and draw back to make sure you are not in a blood vessel. Inject the medicine.
- Remove the needle and gently clean the skin again.
- After injecting, rinse the syringe and needle at once. Push water through the needle and then take the syringe apart and wash it. Boil again for 20 minutes before using again.

### Group exercise

- The participants discuss with the facilitators other commonly misused injections.
- The participants draw up a plan of action to monitor and limit the use of infections in their health facility.

## Non-medicine treatment

### Learning objectives

At the end of the session, participants will be able to:

- Identify conditions which do not require medicine treatment
- Manage conditions which do not require medicine treatment

Location: Classroom/health centre

### Management of conditions, which do not require the use of medicines

Many of the complaints for which people seek medical treatment do not require medicines. Outpatient records show a number of ill-defined terms, which are not true diagnoses. Examples are abdominal pains, dizziness, headache and chest pains. These are often reactions to stress. Worries can cause disease-like symptoms. People worry about their family, jobs, money, house, animals and other things. Different people react differently to stress. For example, a father taking care of 10 children and another 10 dependents may develop a headache because he has no money to buy them food.

### Making a diagnosis

A health worker can usually diagnose organic diseases better than psychosomatic conditions. In common medical practice, the management of organic diseases like malaria, pneumonia and dysentery is clear and easy to follow.

What happens when a health worker is faced with psychosomatic symptoms?

The following points should lead the health worker to a correct diagnosis.

#### *History-taking*

- Take a complete history. Let the patient tell his own story. You will learn something by the way he tells it.

#### **REMEMBER!**

Listen and be patient.

- Remember your patient needs **privacy** to tell you something that he doesn't want other people to overhear. e.g. Think of a cashier who has stolen the villagers' money. He is now worried that the villagers are after him. He develops a symptom of dizziness and he cannot sit in his office. Unless you listen to him in private, he will not explain his real worries. It is often worth asking the patient what he/she thinks is wrong.

#### *Physical examination*

After listening to the history do the following:

- Check the pulse, blood pressure and temperature
- Look for anaemia
- Perform an appropriate physical examination. Give particular attention to the system relevant to the patient's symptoms to make sure that you don't miss anything.

- If the problem is psychosomatic it is probable that no abnormality will be detected.

### *Laboratory investigation*

- Avoid expensive complicated laboratory tests. Do not even suggest them. These might reinforce the patient's feeling about his illness.
- Simple inexpensive tests like stool microscopy for ova, haemoglobin investigation and testing urine for pus cells, albumin and sugar can be performed to confirm your suspicion that there is no organic disease.

## **Treatment**

Most health workers think that they are too busy to talk to the patients. Talking and letting the patient talk is an important part of treatment especially in patients with psychosomatic disorders. Remember, one hour spent with one such patient during one visit may save you 10 hours listening to the same complaints day after day. Therefore use layman's language to explain your negative findings. You will be surprised to learn that patients prefer to be told that they are healthy.

Before prescribing a medicine, ask yourself:

- Does the patient need a medicine?
- Does the patient need a medicine to relieve symptoms and to treat the underlying condition or are you giving them medication to make them feel that something is being done? In that case you may be treating yourself and your own insecurities rather than the patient.

- Is the medicine the most suitable for the patient and the condition?
- Does the medicine have any side-effects? If so its risks may outweigh its possible benefits.

Prescribing gives the impression that something is being done while, in reality, nothing objective is achieved. It may neither relieve the symptoms nor treat the underlying cause. Giving a medicine might in certain situations be unnecessary and incorrect. Much more might be achieved simply by trying to educate the patient or the family and to explain the real cause/s of the symptoms.

### **REMEMBER!**

Do not prescribe a medicine for the sake of prescribing.

If you decide a medicine is needed, ask yourself "is the medicine the most suitable for the patient and the condition". If you feel you must give a placebo (inactive substance), give one that does no harm e.g. iron or folic acid rather than, say, aspirin, which might give the patient a gastric ulcer.

In some circumstances, giving a medicine is neither suitable for the patient nor will it help the condition. Actually, it may have a negative effect. Often the most important method of dealing with the problem is patience and community education. For example:

- In uncomplicated protein-energy malnutrition (PEM), all the patient needs is more food rich with protein.
- In hepatitis A, which is mainly spread

through contaminated food and drink, health education on the need to improve water supply and sanitation is required.

If you decide to give a medicine, you should ask yourself:

- Does the medicine have any side effects?
- Does any possible benefit outweigh the possible risks of the medicine?
- Does any possible benefit of the medicine justify its cost to the patient or to the health service?

All medicines have side-effects. These effects must be taken into consideration before a medicine is prescribed. In protein-energy malnutrition (PEM) and hepatitis A, the patient may be better off without medicines. In both conditions the liver is damaged. Since the liver metabolizes most medicines, the risk of giving them to patients with liver disease might outweigh the possible benefits.

Individual health education and community education are the best means to manage these conditions. Take more time to talk to your patient to convince him/her that a medicine is not required. Talk to the community so that they recognize the problems and take preventive measures.

### **REMEMBER!**

The best “medicine” for the patient may be the health worker’s advice.

## **Group exercise**

- Participants discuss other common conditions, which do not require medicines and how to manage them.
- Moderator asks participants to present cases for which medicines were not used and the outcome was good.

## **Making a diagnosis**

### **Learning objectives**

At the end of the session, participants will be able to:

- State the reasons behind a detailed and systematic history taking
- Conduct a thorough physical examination
- Identify the necessary equipment/s needed to do this
- Select appropriate laboratory tests to be performed.

Location: Classroom/health centre

### **Making a proper diagnosis**

A proper and accurate diagnosis is necessary before the correct treatment can be given. A wrong diagnosis can be responsible for:

- the patient not being cured
- wastage of medicines and money
- longer queues at the health unit because patients have to come again for the same complaints
- loss of confidence in the health unit and the national health care system
- a further spread of communicable diseases.

Examples of wastage of medicines are:

- When every patient with pain is given aspirin together with a number of other medicines in the hope that one will cure the complaint;
- When fever is treated with an antimalarial, an antibiotic and/or an analgesic;
- When cough syrup is given without ascertaining the reason for the cough.

### **The practice of multiple prescribing is wasteful and often results in the patient not being treated properly.**

To make a proper diagnosis go through the following steps.

- Be sure your patient is relaxed and comfortable.
- Try to establish a feeling of empathy.
- Get a good history from the patient.
- Do a thorough examination.
- If you have a laboratory only do the relevant tests to confirm your tentative diagnosis.
- Record your findings on an OPD/MCH card and your diagnosis and treatment in the Patient Register.

### **History-taking**

Taking a good history from the patient is the most important step in making an accurate diagnosis. It can:

- suggest certain diagnostic possibilities
- exclude other diagnostic possibilities
- give direction for further investigation
- provide the only evidence on which to make a diagnosis.

Your questions should be directed towards these aims. They will be relevant and meaningful if you:

- have adequate knowledge of human body in health and disease;
- can relate common complaints (symptoms) such as headache, fever, backache, joint pains etc. to the disease patterns in your area;
- can interpret the patient's words based on your knowledge of the social and cultural circumstances of the area. Patients usually have their own terms to describe their sufferings. It is up to you to interpret their symptoms properly.

#### **REMEMBER!**

Avoid short cuts by treating symptoms.

### **Important points to remember when taking a history:**

- Allow the patients enough time to describe their problems.
- Have patience, tolerance, understanding and sympathy.
- Show interest in your patient.
- Do not ask leading questions.
- Do not rush to examine the patient.
- Look for non-verbal communication. Use your ears, eyes, nose and hands.

All too often the health worker uses the stethoscope before the patient has completed the history of his complaint. In this situation the stethoscope is used to plug the ears! For example, a patient may tell you he has a cough but unless you give him time to tell you that he has had it for three weeks and has started to cough blood you may

miss the diagnosis of tuberculosis, which may not be picked up by a stethoscope.

## Examination

The traditional method of conducting a physical examination is by:

- inspection
- palpation
- percussion
- auscultation

There are a number of points to remember.

- Do not take short cuts.
- Make sure the patient is properly undressed.
- Try to get the patient relaxed.
- Be gentle.
- Start palpation well away from the tender areas.
- Look for common conditions in your area.
- Privacy is important.

Common signs in children and adults		
Signs	Child	Adult
Raised temperature	++	++
Anaemia	++	++
Swollen tonsils with pus	++	+
Ear discharge	++	+
Skin rash	++	+
Oedema	++	++
Jaundice	+	+
Poor nutritional status	++	+
Dehydration	++	+
Abdominal tenderness	++	+
Urethral discharge	-	+
Palpable abdominal mass	+	+
Neck stiffness	++	+
Enlarged lymph nodes	+	+
Red eyes	+	+
Convulsions	+	+
Irritability	++	+

- not common + common ++ most common

Basic equipment required for the health unit

- Examination bed
- Clinical thermometer
- Stethoscope
- Blood pressure machine
- Spatula or a spoon
- Auroscope
- Torch or adequate source of light
- Weighing scales for adults and children
- Measuring tape
- Screen or private room
- Gloves (of various sizes)

- OPD cards
- Forms and patient register
- Chair and table
- Foetal stethoscope
- Soap, water and towels
- Syringes and needles and sterilizing equipment
- Glass slides
- Sterile containers for bloods, urine etc.

Note: Most of this equipment can be improvised.

If immunizations are conducted in your clinic you will need also:

- A paraffin refrigerator
- Cool boxes.

### Laboratory tests

As an aid to making a proper diagnosis, simple laboratory procedures may be performed. These may include:

- stool microscopy for cysts and ova.
- urine microscopy for RBCs, WBCs, casts, ova etc.
- urine for albumin and sugar
- thick blood film for malaria parasites
- blood for haemoglobin
- sputum for acid-fast bacilli
- urethral/cervical/vaginal smear for gonorrhoea
- skin scrapings for fungus.

Laboratory investigation is expensive. *In many cases you can rely on your clinical skills.*

However, tuberculosis is an exception:

### REMEMBER!

All patients with a chronic cough for more than three weeks, especially with weight loss and night sweats should have three early morning sputums examined for acid-fast bacilli and be HIV tested. Do not rely completely on the laboratory. They can be wrong. Follow your clinical judgment. A good clinician can do more for his/her patients, than a laboratory ever can.

### Diagnosis

The findings from the history, examination and laboratory tests must be recorded on the OPD card together with a differential diagnosis. You may be sure of the diagnosis and act accordingly but keep an open mind. You may be wrong. Ensure you have a record when the patient returns for follow up or with a new problem.

### Group exercise

Participants carry out role-play of given clinical situations.

- They will be asked to take a full history.
- They will then decide on what they feel is the differential diagnosis from that history.
- They will then be asked to demonstrate how they would examine a patient with that history and describe to the group what they are looking for.
- Facilitators can play the role of a “bad clinician” and a good clinician, then discuss the two role-plays.

## Rational use of tuberculosis medicines

### Learning objectives

At the end of the session, participants will be able to:

- Identify reasons why tuberculosis medicines need strict supervision.
- Propose ways of ensuring that patients comply with tuberculosis treatment

Location: Classroom/health centre

### Treatment of tuberculosis

The combination of medicines recommended by WHO is called short-course chemotherapy and is 95% effective. If used properly, these medicines would make it possible to virtually eliminate tuberculosis as a public health threat.

#### *The problems of drug resistance*

Unfortunately the problem with tuberculosis medicines is that they must be taken for a long time — at least 6 months. Frequently, once the coughing ends and other symptoms go away, tuberculosis patients lose the incentive to continue taking their medicines.

When tuberculosis treatment is inadequate or incomplete, the bacilli in the person's lungs can survive and multiply again. This will cause a relapse. Some of the bacteria may become drug-resistant and cause a more dangerous form of tuberculosis, i.e. drug-resistant tuberculosis. These cases are very difficult to treat and will infect others with their drug-resistant bacteria. Then the

usual medicines will not work. There are many people infected with drug-resistant strains of tuberculosis in the world today and the numbers are increasing because of inadequate tuberculosis treatment.

#### *The key to controlling tuberculosis*

The key to controlling tuberculosis is to make sure that patients take all their medicines regularly. The best way to do this is for health workers to watch the patients actually swallow their medicines. This is the key to stopping tuberculosis at the source. This is called directly observed treatment, short-course (DOTS).

Unfortunately instructing all the world's health workers to "be sure that your tuberculosis patients take their medicines is not as simple as it seems. Many tuberculosis patients are poor and live in remote villages, so it can be difficult to motivate health workers to verify that their tuberculosis patients are completing treatment and a high percentage of people are cured. Health workers themselves need supervision and encouragement. Many patients in Somalia may be nomads.

### Main objectives of tuberculosis treatment

#### • The patient is cured

If treatment is taken properly the patients will lose their infectivity within 2 weeks, be symptom free in 4 weeks and will have more than a 95% chance of being successfully cured. If treatment is not provided, most patients who are sick with tuberculosis will die within 5 years. Compliance is very difficult to achieve if the medicines are not supplied

free of charge.

- **The spread of the disease is stopped**

The top priority is to treat sputum-positive patients because they are the ones that infect the community. The properly treated patient is no longer infectious and cannot pass the disease on to others. It is estimated that if the sputum positive patient is not treated and remains infectious he or she will infect, on average, 10 to 20 other people in a year's time.

## **How multidrug-resistant tuberculosis is prevented**

When a patient is successfully treated it is virtually impossible for that person to develop multidrug-resistant tuberculosis and spread these bacilli to others. DOTS is the key to stopping tuberculosis epidemics. Health workers must watch their patients swallow each dose of their medicines. Supervision is usually daily of the first 2 months and ideally should continue for the whole 6 months of the treatment.

## **How compliance has been enhanced in tuberculosis programmes**

- Patients have been asked to pay a refundable deposit.
- Community elders or trusted relatives are required to sign an undertaking for the patients.

## **Group exercise**

Participants should discuss ways to ensure compliance in their patients who are taking tuberculosis medicines.

# Chapter 4

## Medicine supervision guideline

- How to investigate medicine use in health facilities

### References

1. WHO. Action Programme on Essential Medicines: How to investigate medicine use in health facilities. WHO/DAP/93.1
2. United States of America Management Sciences for Health in collaboration with WHO. *Managing drug supply. The selection, procurement, distribution, and use of pharmaceuticals*. Second edition. Kumarin Press, 1997.

## How to investigate medicine use in health facilities

### Learning objectives

At the end of the session, participants will be able to:

- Plan a study using indicators
- Understand sampling procedures
- Collect data and fill the forms
- Analyse data and report back
- Display the results in the form of graphs and charts

Location: Classroom/health centres/medical stores/private pharmacies<sup>5</sup>

### Medicine use indicators

The WHO conference on the rational use of drugs held in Nairobi, Kenya in 1985 marked the beginning of efforts to improve the use of medicines, particularly in developing countries. In 1993, the WHO Action Programme on Essential Drugs (WHO/DAP) published the manual “How to investigate drug use in health facilities.” The manual presents twelve core indicators to gather pertinent data on the medicine use situation in health facilities. This standard set of medicine-use indicators can be used to assess the problems of clinically or economically inappropriate medicine use, to make comparisons between groups or to measure changes over time, as a supervisory tool to identify individual prescribers or health facilities with especially poor patterns of medicine use, and to measure the effect of interventions. The techniques for using the indicators have been thoroughly tested,

and can be implemented in a standard way by individuals without special training or access to many resources.

Types of indicators used to investigate health facilities are grouped into:

1. Prescribing indicators
2. Patient care indicators
3. Health facility indicators
4. Medicine store indicators

The forms for recording these indicators are to be found at the end of this chapter.

### Prescribing indicators

These measure the appropriate use of medicines. WHO suggests the following basic prescribing indicators:

1. *Average number of medicines per encounter.* This measures the degree of polypharmacy.
2. *Percentage of medicines prescribed by generic name.* This measures the tendency to prescribe by generic name.
3. *Percentage of encounters with an antibiotic prescribed.*
4. *Percentage of encounters with an injection prescribed.*

These indicators are easy to measure either retrospectively or prospectively. How to use them is described later but for detailed descriptions you should read “How to investigate drug use in health facilities” available from WHO.

## Patient care indicators

These measure key aspects of what patients experience at health facilities, and how well they have been prepared to deal with the medicines that have been prescribed and dispensed.

1. *Average consulting time:* This measures the time that medical personnel spend with patients in the process of consultation and prescribing
2. *Average dispensing time:* This measures the time that personnel dispensing medicines spend with the patients
3. *Percentage of medicines actually dispensed:* This measures the degree to which the health facilities are able to provide the medicines which were prescribed.
4. *Percentage of medicines adequately labelled:* This measures the degree to which dispensers record essential information on the medicine packages they dispense.
5. *Patients' knowledge of correct dosage:* This measures the effectiveness of the information given to the patients on the dosage level of the medicines they receive.

These indicators are more difficult to collect and are done prospectively (i.e. at the time the patient visits the health facility). You will have to train the data collectors. Reference should be made to the WHO publication "How to investigate drug use in health facilities".

## Facility and medicine store indicators

These indicators measure how well health facilities or medicine stores are being run. They can be of great help to managers to check on the performances of their health facilities and dispensaries. The indicators are applicable at all levels and can be modified and adjusted where possible to local circumstances.

### Facility indicators

1. *Is there a map visible on the wall showing the catchment area?*
2. *Is there a good estimate of the population and its age structure in the catchment area?*
3. *Is there an action plan including timetable towards set targets?*
4. *Is there a system to monitor the health facility performance (i.e. graphs and charts on the walls)?*
5. *Is teamwork practised in the health facility (i.e. staff meetings, group discussions, delegation of responsibilities)?*
6. *Does the staff regularly meet with the community to get them involved in the work plans?*
7. *Is a copy of a Standard Treatment Guideline available in the facility?*
8. *How many of a basket of medicines are available in the health facility?*

### Medicine store indicators

1. *Are there completed requisition forms in the facility?*
2. *Are medicines properly stored in the health facility (i.e. cleanliness, ventilation, temperature, exposure to sunlight?)*

3. Are stock cards used for movement of medicines in or out of the medicine store?
4. Is the information recorded on the stockcards for a basket of medicines the same as the quantity of stock in the store?
5. Are medicines stored in the store according to FIFO?
6. Are there any expired medicines in the store?

## How to collect prescribing indicators

### *Sources of data*

Any collection of data requires careful planning. Where are the sources of your data? This may be the consulting room, the dispensary, the medical stores, the administrative offices or even the patient's home. If you want to look at prescribing in your health facility you will need to find out where the treatments are recorded. Is it on the OPD cards or on prescription forms or in the pharmacy log books. Are your records complete? Perhaps injections are recorded in a separate place. It is easier to look at past (retrospective) data. Over what period will you take your sample? How many prescriptions will you examine?

### *Sampling and sample size*

The way you select your sample is important. For example if you are studying the prescriptions of a clinic, you cannot just come and select the last or first one hundred prescriptions since these samples may not be representative. This is called **convenience sampling** and should only be used as a last resort. The best way to select your study

sample is by **random sampling**, i.e. picking by chance.

The size of the sample you want to include in your survey/study is also important. The larger the size of the sample you are studying the higher the likelihood you get reliable results. According to WHO the minimum number of samples per facility should be thirty. It might take a long time to look at all the prescriptions issued over a given period, so to simplify the procedure you first need to decide how many to sample.

### **REMEMBER!**

The larger the sample size, the more accurate the results are.

### *Data analysis and reporting*

When you have selected your study sample analyse each prescription and fill in the prescribing Indicator Form (a copy is found at the end of this chapter). You will need to know which medicine names are generic and which are trade. You will have to decide what is an antibiotic? (Is metronidazole an antibiotic, etc?) Do you include creams and eye ointments? Do medicine combinations count as one or several medicines? Once you have decided this, then be consistent. The WHO publication "How to investigate medicine use in health facilities" will advise you on these choices.

Once you have recorded all the sample prescriptions then calculate the indicators. It should be easy if you have looked at 100 prescriptions. Are the results what you expected or do they come as a shock?

Are they reasonable or is there need for improvement? If you are looking at several prescribers, is there a big variation between them? In which case who are the poor prescribers?

Do an analysis of the results and make comments. Feed the results back to your prescribers. Remember to praise as well as criticize. If there is evidence of poor prescribing, try to find the reasons for this. It may be pressure of work, lack of medicines, patient pressure, etc. Only if you know the reason for irrational medicine use can you hope to develop a successful strategy to improve it.

### **Group exercise**

The group divides into 3–4 subgroups and each group designs a study to investigate the use of one antibiotic, injection or antimalarial medicine in several nearby primary health care health facilities. Each group must select 30 prescriptions randomly and analyse and calculate the prescribing indicators. Each group should present their results, which should be recorded on a flip chart. Participants should discuss any differences in their results, the reasons for this and what strategies could be used to improve the prescribing.

**PRESCRIBING INDICATOR FORM**

Health facility \_\_\_\_\_ Date \_\_\_\_\_

Investigator \_\_\_\_\_

Seq. No.	Date of Rx	Age	# Medicines	# Generics		Antibiotic (0/1)*	Injection (0/1)*	# on EML	Diagnosis
1									
2									
3									
4									
5									
5									
6									
7									
8									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
<b>Total</b>									
<b>Average</b>									
<b>%</b>				% of total medicines		% of total medicines	% of total medicines	% of total medicines	

\*0=No; 1=Yes

### PATIENT CARE INDICATOR FORM

Health facility \_\_\_\_\_ Date \_\_\_\_\_

Investigator \_\_\_\_\_

No.	Dispensing time (secs)	# Medicines prescribed	# Medicines dispensed		# Adequately labelled (0/1)*	Knows dosage (0/1)*
1						
2						
3						
4						
5						
5						
6						
7						
8						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
Average						
%					% of medicines adequately labelled	% of patients know dosage correctly

\*0=No; 1=Yes

## HEALTH FACILITY INDICATOR FORM

Health facility \_\_\_\_\_ Date \_\_\_\_\_

Investigator \_\_\_\_\_

No.	Visible map (0/1)*	Population estimated (0/1)*	Action plan (0/1)*		Monit- oring system (0/1)*	Team work practised (0/1)*	Community involved (0/1)*	Copy of STG (0/1)*	Availability of key medicines (0/1)*
1									
2									
3									
4									
5									
5									
6									
7									
8									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
(%)	% with visible map	% with population estimate	% with action plan		% with monitoring system	% with teamwork practised	% with community involved	% having a copy of STG	% having key medicines

\*0=No; 1=Yes

STG: Standard treatment guidelines

### MEDICINE STORE INDICATOR FORM

Medicine store \_\_\_\_\_ Date \_\_\_\_\_

Investigator \_\_\_\_\_

Seq. No.	Completed requisition forms available (0/1)*	Are medicines properly stored (0/1)*	Are stock cards used (0/1)*		Is information on stockcards correct (0/1)*	FIFO system practised (0/1)*	Any expired medicines in the store (0/1)*	Store management handbook available (0/1)*
1								
2								
3								
4								
5								
5								
6								
7								
8								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
(%)	% with completed requ. forms	% stored medicines properly	% used stockcards		% completed stockcards correctly	% practise FIFO	% with no expired medicines	% having store management handbook

\*0=No; 1=Yes

# Annex 1

## **Somalia essential medicines list 2006**

**A\*=Health centre close to referral**

**B\*=Health centre away from referral**

Medicine name	Health centre		Hospitals
	A*	B*	
Acetylsalicylic acid tablet, 300 mg	X	X	X
Aluminium hydroxide tablet, 500 mg	X	X	X
Aminophylline inj, 25 mg/ml			X
Aminophylline tablet, 100 mg			X
Amitryptilline tablet, 25 mg			X
Amoxycillin tablet, 250 mg	X	X	X
Ampicillin powder injection, 1 g vial			X
Artesunate tablet, 50 mg	X	X	X
Ascorbic acid tablet, 50 mg	X	X	X
Atenolol tablet 40 mg			X
Benzathine benzylpenicillin injection, 2.4 MIU, 5 ml vial		X	X
Benzoic acid + salicylic acid, ointment, 6%+3%, 500 g	X	X	X
Benzyl benzoate lotion, 25%, 1 L	X	X	X
Benzylpenicillin injection, 5 MIU	X	X	X
Butylscopolamine bromide tablet, 10 mg		X	X
Butylscopolamine bromide, injection 20 mg/ml, 1 ml			X
Cetrimide + chlorhexidine	X	X	X
Chloramphenicol capsule, 250 mg			X
Chloramphenicol powder injection, 1 g			X

Chlorhexidine 5% solution for dilution		X	X
Chlorpheniramine tablets, 4 mg	X	X	X
Chlorpromazine injection, 25 mg/ml, 2 ml			X
Chlorpromazine tablet, 100 mg			X
Clofazimine capsule, 100 mg			X
Cloxacillin capsule, 500 mg			X
Dapsone tablet, 100 mg			X
Dexamethasone injection. 4 mg/ml, 1 ml			X
Dextrose injection, 5%, 500 ml		X	X
Dextrose injection, 50%, 20 ml			X
Diazepam injection, 5 mg/ml, 2 ml		X	X
Diethylcarbamazine tablet, 50 mg			X
Digoxin tablet, 0.25 mg			X
Doxycycline tablet, 100 mg		X	X
Epinephrine (adrenaline) inj, 1 mg/ml, 1 ampoule		X	X
Ergometrine inj, 0.2mg/ml ampoule		X	X
Erythromycin tablet, 250 mg		X	X
Ethambutol tablet, 400 mg			X
Ferrous salt + folic acid, tablet equivalent to 60 mg iron + 0.40 mg folic acid	X	X	X
Folic acid tablet, 5 mg	X	X	X
Furosemide injection, 10 mg/ml, 2 ml			X
Furosemide tablet, 40 mg			X
Gentamycin injection, 40 mg/ml, 2 ml			X

Glibenclamide tablet, 5 mg			X
Griseofulvin tablet, 125 mg			X
Hydralazine injection, 20 mg/ml amp		X	X
Hydrochlorothiazide tablet, 25 mg		X	X
Hydrocortisone acetate ointment, 1%, 15 g			X
Hydrocortisone powder injection, 100 mg			X
Ibuprofen tablet, 400 mg	X	X	X
Insulin medium-acting 100 IU/ml, 10 vials			X
Insulin short-acting 100 IU/ml, 10 ml vials			X
Ketamine injection, 50 mg/ml			X
Lidocaine 2%, 20 ml + adrenaline injection, 2.2 ml			X
Lidocaine gel 2%, 30 g tube			X
Lidocaine injection, 1%			X
Magnesium sulfate injection, 500 mg/ml, in 10-ml ampoule		X	X
Mebendazole tabs, 100 mg, 500 mg	X	X	X
Meglumine antimoniate, injection, 30%, equivalent to approximately 8.1% antimony, in 5-ml ampoule			X
Methyldopa tablets, 250 mg			X
Methylrosanilinium chloride (gentian violet), 0,5 % solution	X	X	X
Metronidazole injection, 5 mg/ml, 100 ml			X
Metronidazole tablet, 250 mg	X	X	X
Niclosamide tablet, 500 mg			X

Nicotinamide tablets, 50 mg			X
Nystatin pessaries, 100 000 IU (vaginal)	X	X	X
Oral rehydration salt (ORS)	X	X	X
Oxytocin injection, 10 IU/ml, 1 ml		X	X
Paracetamol tablet, 100 mg	X	X	X
Paracetamol tablet, 500 mg	X	X	X
Pethidine injection, 50 mg/ml			X
Pethidine tablet, 50 mg		X	X
Phenobarbital tablet, 50 mg			X
Phenoxyethylpenicillin tablet, 250 mg	X	X	X
Polyvidone iodine solution, 10%, 5 L	X	X	X
Polygeline 3,5%, 500 ml			X
Praziquantel tablet, 600 mg	X	X	X
Prednisolone tablet, 5 mg			X
Probenecid tablet, 500 mg			X
Procaine benzylpenicillin 3 million IU + benzylpenicillin 1 million IU, vials			X
Promethazine injection, 25 mg/ml, 2 ml			X
Pyrazinamide tablet, 500 mg			X
Pyridoxine (vitamin B6) tablet, 250 mg			X
Quinine injection, 300 mg/ml, 2 ml vial		X	X
Quinine tablet, 300 mg		X	X
Ranitidine injection, injection, 25 mg/ml in 2-ml ampoule			X

Ranitidine tablet, 150 mg (as hydrochloride)			X
Retinol (vitamin A) capsules, 100,000 units	X	X	X
Rifampicin + isoniazid (150 mg/100 mg) tabs			X
Rifampicin + isoniazid (150 mg/150 mg) tabs			X
Rifampicin tablet, 300 mg			X
Rifater (Rifampicin 120 mg+ isoniazid 50 mg + pyrazinamide 300–400 mg) tablet			X
Ringer lactate sol (bottle), 500 ml		X	X
Salbutamol tablet, 4 mg	X	X	X
Silver sulfadiazine 1% topical cream, 500 g	X	X	X
Sodium chloride sol. 0.9%, 500 ML		X	X
Spirolactone tablet, 25 mg			X
Streptomycin 1 g vial			X
Sulfadoxine/pyrimethamine tablet (500 mg + 25 mg)			X
Sulfamethoxazole + trimethoprim tablet (100 mg + 20 mg)	X	X	X
Sulfamethoxazole + trimethoprim tablet (400 + 80 mg)	X	X	X
Tetracycline 1% eye ointment, 5 g	X	X	X
Thiamine (vitamin B1) hydrochloride, tablet 50 mg			X
Zinc sulfate	X	X	X

## Medicines for special programmes in Somalia

### Antituberculosis medicines

- Rifampicin + isoniazid tablet, (150 mg/150 mg)
- Rifampicin + isoniazid tablet (150 mg/100 mg)
- Rifater tablet, (rifampicin 120 mg + isoniazid 50 mg + pyrazinamide 300–400 mg)
- Ethambutol tablet, 400 mg
- Pyrazinamide tablet, 400 mg
- Pyrazinamide tablet, 500 mg
- Streptomycin injection, 1 g vial

### Vaccines for universal immunization

- BCG vaccine
- Diphtheria vaccine
- Hepatitis vaccine
- Measles vaccine
- Pertussis vaccine
- Poliomyelitis vaccine
- Tetanus vaccine
- Rabies vaccine

### Drugs for leprosy

- Clofazimine capsule, 50 mg, 100 mg
- Dapsone tablet, 25 mg, 50 mg, 100 mg
- Rifampicin capsule or tablet, 150 mg, 300 mg

### Drugs for sexually transmitted diseases

- Erythromycin tablet, 250 mg
- Benzathine benzylpenicillin inj, 2.4 million IU
- Amoxicillin tablet, 250 mg
- Probenecid tablet, 500 mg
- Augmentin tablet, 375 mg\*

- Doxycycline tablet, 100 mg
- Metronidazole tablet, 250 mg
- Nystatin pessaries, 100 000 IU
- Tetracycline 1% eye ointment, 5 g
- Sulfamethoxazole + trimethoprim tablet, (400 mg + 80 mg)
- Ceftriaxone, powder for injection, 250 mg (as sodium salt) in vial
- Norfloxacin tablet, 400 mg\*\*
- Clotrimazole pessary, 500 mg
- Spectinomycin tablet, 2\*
- Ciprofloxacin tablet, 500 mg\*

### Drugs for leishmaniasis

- Meglumine antimoniate, injection, 30%, equivalent to approximately 8.1% antimony, in 5-ml ampoule;
- Pentamidine powder for injection, 200 mg, 300 mg (isethionate) in vial

\*Not included in the Somalia Essential Medicines List.

\*\* Not included in the WHO or in the Somalia Essential Medicines List.