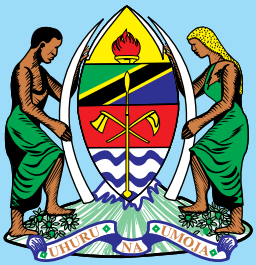
THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF HEALTH AND SOCIAL WELFARE



STANDARD TREATMENT GUIDELINES (STG) AND THE NATIONAL ESSENTIAL MEDICINES LIST (NEMLIT) FOR MAINLAND TANZANIA

THIRD EDITION
2007

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FOREWORD

The Standard Treatment Guidelines (STG) and the National Essential Medicine List for Tanzania (NEMLIT) was first published in 1991. The second edition was published in 1997. This third edition incorporates the essential current medical knowledge and new developments in medicines. It has incorporated major changes in the care and treatment of disease conditions such as Tuberculosis and Leprosy, Malaria and HIV/AIDS due to new scientific updates.

The STG+NEMLIT aims at providing health workers with a set of treatment protocols covering common disease conditions found in Tanzania so that prescribing practices can be rationalized. This will simplify the management of medicines supply and achieve better rational therapeutics which is the cardinal aim of the health care system.

This manual is meant to be a guide for quick reference and its recommendations are valid for most presentations of the conditions therein covered. Nevertheless, clinical judgment and experience will always prevail for adjustment of treatment in individual cases when necessary. Care has been taken in the process of reviewing this edition to ensure that the manual is acceptable and useful to users. In this respect, I am sure that this manual will enhance rational prescriptionbing so as to improve provision of quality health care and proper management of resources.

The NEMLIT attached to the STG retains its purpose of identifying medicines which are considered essential for the treatment of common disease conditions in Tanzania. The medicine list is in line with the World Health Organization (WHO) recommendations under Tanzania conditions.

It is the Ministry's policy that all public and private health workers in Tanzania will strictly adhere to these Standard Treatment Guidelines and that prescribing, purchasing, labelling and dispensing of medicines should be by generic names as much as possible.

It is my hope that all health workers in Tanzania will find this manual a useful tool in their routine activities.

Hon. Prof. David H. Mwakyusa (MP)
MINISTER FOR HEALTH AND SOCIAL WELFARE

ACKNOWLEDGEMENT

The review of the STG and NEMLIT has been successfully undertaken as a result of collaboration between health professionals namely doctors, pharmacists, laboratory technologists and others from the public and private sectors.

The Ministry would like to thank all those who have contributed greatly to the development of this version in one way or another. While it is not possible to mention all who participated in the review of this manual, the Ministry would like to acknowledge the following:

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Wilson Mukama
PERMANENT SECRETARY

ABREVIATIONS AND SYMBOLS

BCG	=	Bacillus Calmette – Guerin Vaccines
BP	=	Blood Pressure
CCF	=	Congestive Cardiac Failure
CNS	=	Central Nervous System
CVP	=	Central Venous Pressure
DC	=	Direct Curent
Dpm	=	Drops Per Minute
DTLC	=	District Tb and Leprosy Coordinator
FBC	=	Full Blood Count
g	=	Gramme
HIV	=	Human Immunodeficiency Virus
HTLV	=	Human T-Cell Leukemia/Lymphonia Virus
i.m (I.M)	=	Intramuscular
i.v (I.V)	=	Intravenous
l(L)	=	litre
mmHg	=	Millimeters of Mercury
MU	=	Mega Unit
ns	=	Nanosecond
O	=	Oral
PEM	=	protein energy malnutrition
PHC	=	Primary Health Care
PID	=	Pelvic Inflammatory Disease
PR	=	Prosthion
PIH	=	pregnancy induced hypertension
SC	=	Subcutaneous
SLE	=	Systemic Lupus Erythematous
Tab	=	Tablet
TT	=	Tetanus Toxoid
µg	=	Microgram
ARI	=	Acute Respiratory Infection
STD	=	Sexually Transmitted Diseases
SSS	=	Salt Sugar Solution
APH	=	Antepartum Haemorrhage
UTI	=	Urinary Tract Infection
NS	=	Normal Saline
D&C	=	Dilation and Curettage
ATS	=	Anti Tetanus Serum
AE	=	Acute Epiglottis
RR	=	Reversal Reaction

1. GASTRO INTESTINAL DISEASE CONDITIONS

1.1 Parasitic Diseases

1.1.1 Amoebiasis

Clinical features: Amoebiasis is caused by a protozoan parasite *Entamoeba histolytica*. It is usually transmitted from person to person through faecal contamination of food or hands, but may also be transmitted vial anal sexual contact. Amoebic dysentery occurs when the parasites invade the intestinal wall and abscesses may develop in the liver or, less frequently, in the lung or brain as a result of haematogenous spread. Skin lesions may also occur. Pregnant women and individuals who are malnourished or immunocompromised are most vulnerable to systemic infection.

Treatment guidelines

Intestinal amoebiasis

Drug of choice	**Metronidazole (O)**
Adult	750-800mg 8 hourly with food for 5 days
Children	10mg/kg weight per day
Indicative	
1-3 years	200-250mg 8 hourly for 5 days
3-7 years	200-250mg 6 hourly for 5 days
7-10 years	400-500mg 8 hourly for 5 days
Above 10 years as for adult	

Second choice	**Tinidazole (O)**
Adult	2g daily as a single dose for 3 consecutive days
Children	50 mg/kg body weight in three divided doses for 3 consecutive days
Adults	**Secnidazole (O)** 2g as a single dose

Amoebic liver abscesses

Drug of choice	**Metronidazole (O)**
Adult	400-500mg, 8 hourly for 10 days. Repeat course after 2 weeks if necessary
Children	
1-3 years	100-200mg 8 hourly for 10 days
3-7 years	100-200mg 6 hourly, for 10 days
7-10 years	200-400mg 8 hourly, for 10 days

NOTE: Metronidazole should be taken with food. The course may be repeated after two weeks if necessary,

Aspiration of the abscess may be necessary if it is easily accessible. Always consider the possibility of a pyogenic abscess.

CAUTION

- Patients on metronidazole, Secnidazole and Tinidazole should not take alcohol
- Metronidazole, Secnidazole and Tinidazole are contraindicated in the first trimester of pregnancy

1.1.2 Ascariasis (caused by round worms)

Clinical features: It is an infection caused by *Ascaris lumbricoides*. The main clinical features are abdominal discomfort or colic, rarely they may cause intestinal obstruction, obstructive jaundice and malnutrition.

Treatment guidelines

Drug of choice	**Mebendazole (O)**
Adult and Children above 2 years	100mg 12 hourly for 3 days **Or** 500mg as a single dose **Or** **Albendazole 400mg as a single dose (O)**
Second choice	**Levamisole (O)**
Adult	120-150 mg as a single dose
Children below 2 years	3 mg/kg body weight as single dose **Or** 2.5 mg/kg body weight as single dose, repeated after 7 days

1.1.3 Ancylostomiasis (caused by hookworm)

Clinical features: Ancylostomiasis (hookworm disease) is caused by infestation of the small intestine with *Ancylostoma duodenale* or *Necator americanus*. It is one of the main causes of anaemia in the tropics which is also the major clinical feature.

The majority of patients are asymptomatic. However, in hookworm disease the major clinical manifestations are iron deficiency anaemia and hypoalbuminaemia.

Treatment guidelines

Drug of choice	**Mebendazole (O)**
Adult and Children over 2 years	100mg 12 hourly for 3 days **Or** 500mg as a single dose **Or** **Albendazole 400mg (O)** as a single dose

NOTE: Both Albendazole and Mebendazole must be chewed. If ova persist, give second course after 3 – 4 weeks
CAUTION Albendazole is contraindicated in the first trimester of pregnancy and children below 2 years

1.1.4 Cestodiasis (caused by tapeworms)

Clinical features: Man gets tapeworms by eating raw or undercooked beef infected with cysticercus bovis, the larval stage of *Taenia saginata* (beef tapeworm) or undercooked food containing *Cystercercus cellulosae*, the larval stage of *Taenia solium* (pork tapeworm). Other less common cestodes includes *Diphyllobohrium latum* (poorly cooked fish) and *Hymenolepsis nana* (fecael oral contamination by both human and animals especially dogs).

Most tape worm infections are symptomless and the commonest way of presentation is the appearance of proglottides or segments in the stool. There may be mild epigastric discomfort, nausea, weight loss and diarrhoea.

Treatment guidelines

Drug of choice	**Niclosamide (O)**
Adult:	2g as a single dose. Chew tablets on an empty stomach
Children:	30mg/kg body weight starts on an empty stomach.

For *Taenia solium*, *Taenia saginata* and *Diphyllobothrium latum*

Adults and children over 6 years:	2g as a single dose after a light breakfast, followed by a purgative after 2 hours.
Children 2-6 years:	1g as a single dose after a light meal, followed by a purgative after 2 hours.
Children under 2 years	500mg as a single dose after a light meal, followed by a purgative after 2 hours.

For *Hymenolepsis nana*

Adult and children over 6 years	2g as a single dose on the first day, then 1g daily for 6 days
Children under 2 years	500mg on the first day as a single dose then 250mg daily for 6 days.
Children 2-6 years	1g on the first day as a single dose then 500mg once daily for 6 days.

Counselling: Tablets should be chewed thoroughly before washing down with water.

NOTE: Praziquantel has similar efficacy on Tinea infestation
CAUTION: Contraindicated in the first trimester of pregnancy

1.1.5 Filariasis

Clinical features: Filariasis is a group of disorders produced by infection with nematodes. These worms invade the lympatics, subcutaneous, and deep tissues producing reactions ranging from acute inflammation to chronic scarring. In Tanzania the most important species is *Wuchereria bancrofti, Brugia malayi, Onchocerca volvulus* and occasionally *Loa loa*. The main clinical features are fever, acute lymphadenitis, orchitis, headache and urticaria in the acute phase. It might precipitate an asthma attack in predisposed individuals. In chronic infection the main features are elephantiasis of the limbs, scrotal elephantiasis and hydrocoel. *Loa loa* causes a typical allergic inflammatory skin lesion (calabar swelling). Occasionally, the adult worm may be seen crossing the eye subconjunctivally.

Treatment guidelines

Medicine of choice	**Ivermectin (O)** 150mcg/kg (0.15mg/kg) body weight as a single dose. Treat again at intervals of 6 to 12 months, depending on symptoms or until the adult worms die out. **Or** **Diethylcarbamazine (DEC) (O)** 1mg/kg body weight. Increase the dose gradually by 1mg/kg body at an interval of 3 days to maximum of 6mg/kg body weight. Duration of treatment is 21 days.

NOTE: Medicines will usually arrest progretion of the clinical features, but will not reverse them. Surgical interventions may be necessary.

CAUTION: Treatment with DEC should be closely supervised since allergic reactions are common and may be severe

1.1.6 Giardiasis

Clinical features:
It is an infection of the upper small intestine caused by the flagellate protozoan *Giardia lamblia (or G. intestinalis*). Infection with this flagellate is mainly asymptomatic. However when symptoms occur, they include acute and/or chronic diarrhoea, without blood or pus. In few cases malabsorption syndrome may occur.

Treatment guidelines

Medicine of choice	
Adult	**Metronidazole (O)** 2g orally once daily for 3 days **Or** 400-500mg orally 8 hourly for five days 10mg/kg body weight 8 hourly for 7 days
Second choice	**Tinidazole (O)**
Adult	2g orally as a single dose
Children	50-75mg/kg body weight as a single dose.
	Or
Adult	**Secnidazole 2g (O) as a single dose**

CAUTION

- Patients on metronidazole, Secnidazole and Tinidazole should not take alcohol
- Metronidazole, Secnidazole and Tinidazole are contraindicated in the first trimester of pregnancy

1.1.7 Strongyloidiasis

Clinical features: It is an intestinal infection caused by *Strongyloides stercoralis*. The intestinal infection is usually asymptomatic but patients may have vague symptoms such as abdominal pain, nausea, flatulence, vomiting, diarrhoea and even epigastric pain. Heavier infections are more likely to produce symptoms. In immuno compromised patients (e.g HIV/AIDS and prolonged use of steroids) disseminated infections may occur leading to enterocolitis and gram negative bacteremia.

Treatment guidelines

Medicine of choice	**Thiabendazole (O)**
Adults:	25mg/kg body weight (max.1.5g) 12 hourly for 3 days. Tablets must be chewed
Children	Same as for adults

CAUTION: Not to be given to pregnant women

Thiabendazole treatment in immuno-compromised patients is not always effective, hence repeated or prolonged courses of thiabendazole from 5-14 days may be required.

OR

Ivermectin 200mg/kg (o) once daily for two days

1.1.8 Typhoid and paratyphoid

Clinical features:

These acute systemic diseases result form infection by *Salmonella typhi* and *S.paratyphi*, A and B respectively. The clinical manifestation and duration of illness vary markedly from one patient to another. The major clinical features are fever, severe headache, drowsiness

and muscle pains (myalgia). The course of paratyphoid tend be to shorter and less severe compared to typhoid.

Diagnosis

-An elevated white blood cell count
-A blood culture during the first week of the fever can show *s.typhi* bacteria
-Blood platelet count shows decreased platlets
-An ELISA test on urine may show Vi antigen specific for *s.typhi* bacteria

Treatment guidelines

Medicine of choice	**Ciprofloxacin (O)**
Adult and children over 15 years	500mg 12 hourly for 10 days
Alternatively	**Chloramphenicol (O)**
Adult	500mg 6 hourly for 14 days
Childen above 1 years	12.5mg/kg body weight six hourly for 14 days
Below 1 year	120mg/kg body weight 12 hourly for 14 days

CAUTION: Ciprofloxacin is contraindicated in children below 15 years and pregnant women. Chloramphenicol is contraindicated in the third trimester of pregnancy. Chloramphenicol may cause aplastic anaemia which is irreversible.

1.2 Schistosomiasis

Clinical features: Schistosomiasis is caused by the fluke schistosome. The common species found in Tanzania are *S. haematobium* and *S. mansoni.* The main clinical feature for *S.haematobium* infection is a painless, terminal haematuria. For *S. mansoni* there may be abdominal pain and frequent blood stained stool. In chronic form of *Schistosoma mansoni*, abdominal distention and vomiting of blood and liver fibrosis (Portal hypertension).

Treatment guidelines

Medicine of choice

Praziquantel (O)
40mg – 60mg/kg body weight as a single dose

Or

Three doses of 20mg/kg body weight at an interval of 4 to 6 hours for one day

NOTE: Medicines will usually arrest progression of clinical features, but will not reverse them. Surgical interventions may be necessary.

1.3 **Shigella**

Medicine of choice	**Co-trimoxazole (O)**
Adult	960mg 12 hourly for 5 days
Children 6 weeks – 5 months	120mg 12 hourly for 5 days
6 month - 5years	240 mg 12 hourly for 5 days
6-12 years	480mg 12 hourly for 5 days
Second choice	**Ciprofloxacin (O)**
Adult	500mg 8 hourly for 5 days
	Or
	Nalidixic acid (O)
	500mg 8 hourly for 5 days
Children up to 10 years	**Erythromycin (O)**
	125mg 8 hourly for 5 days
	Or
	Nalidixic acid (O)
	250mg 8 hourly for 5 days

Yersini

Medicine of choice	**Doxycycline (O)**
Adult only	200mg initially then 100mg once daily for 5 days

In severe infection give 200mg 12 hourly for 5 days

Campylobacter

Medicine of choice	**Erythromycin (O)**
Adult and Children over 8 years	250-500mg 6 hourly for 5 days
Children	10mg/kg body weight six hourly for 5 days
Up to 2 years	125mg 6 hourly for 5 days
2-8 years	250mg 6 hourly for 5 days

1.4 **Diarrhoea**

Clinical features: Clinical Features: Diarrhoea is the passage of unusually loose or watery stools, usually at least three times in 24 hours period. However, it is the consistency of the stool rather than the number that is most important. Frequent passing of formed stools is not diarrhoea. Babies fed only Breast milk often pass loose, 'pasty' stools, this is not diarrhoea. Mothers usually know when their children have diarrhoea and may provide useful working definitions in local situations.

Young children and very old patients are particularly susceptible to the effects of dehydration due to diarrhoea.

1.4.1 Clinical Types of Diarrhoeal diseases.

It is most practical to base treatment of diarrhoea on the clinical types of the illness, which can easily be determined when a patient is first examined. Laboratory studies are very useful with the exception of few conditions such as Cholera.

Four clinical types of diarrhoea can be recognized, each reflecting the basic underlying pathology and altered pathology:

- **Acute Watery Diarrhoea** (Including Cholera): which lasts several hours or days: the main danger is dehydration and malnutrition if feeding is not continued.
- **Bloody Diarrhoea**: which is also called **Dysentery**, the main dangers are damage of intestinal mucosa, sepsis, and malnutrition. Other complications including dehydration may also occur.
- **Persistent Diarrhoea**: Last for 14 days or longer, the main danger is malnutrition and serious non-intestinal infections, dehydration may also occur.
- **Dirrhoea with Severe Malnutrition** (Marasmus or Kwashiorkor): the main dangers are severe systemic infection, dehydration, heart failure, vitamin and mineral deficiency.

The basis for the management of each type is to prevent or treat dangers that each present.

1.4.2 Management of diarrhoea in children.

Over 90% of deaths from diarrhoea in under-fives would be prevented by:

- Continuing breast feeding and other feeding throughout the attack of diarrhoea (prevent malnutrition);
- Making sure mothers know when to take the child to a health facility;
- Correct assessment, treatment and continued feeding at the health facility level (See MoH & SW chart and manual);
- Treatment of invasive diarrhoea (bloody stool) with antibiotics;
- Treating or prevent dehydration and electrolyte imbalance with ORS (New osmolarity ORS)
- Reduce the duration and severity of diarrhoea and occurrence of future episodes by giving supplemental Zinc
- Referring to hospital for investigation and treatment for severe malnutrition and persistent diarrhoea (lasting>14 days)

Low Osmolarity ORS

Low osmolarity ORS (245mmol/lt) has been observed to be more effective than the Standard ORS in especially preventing dehydration.

Constitution of Low Osmolarity ORS

Ingredient	Grams/ litre	Ingredient	mmol/lt
Sodium choride	2.6	Sodium	75
Trisodium citrate dihydrate	2.9	Citrate	10
Potassium chloride	1.5	Potassium	20
Glucose, anhydrous	13.5	Glucose, unhydrous	75
		Chloride	65
Total Weight (Gram/Litre)	**20.5**	**Total osmolarity (mmol/Lt)**	**245**

Zinc

The use of Zinc during diarrhoea has been shown to reduce frequency, stool volume and recurrence of diarrhoea episode.

- **All children with diarrhoea should be given Zinc, 10-20mg every day for 10-14 days. Zinc treatment should be continued even after diarrhoea has stopped**

Use of antimicrobial and 'antidirrhoeal' drugs

Antimicrobials should **not** be used routinely. This is because, with few exceptions, it is not possible to distinguish clinically episodes that might respond to antimicrobials. Moreover, even for potentially responsive infections, selecting an effective antimicrobial requires knowledge of the likely sensitivity of the causative agent, information which is usually unavailable. I addition, use of antimicrobials adds to the cost of treatment, risk adverse reactions and enhance the development of resistant bacteria.

Antimicrobial are reliably helpful in children with bloody diarrhoea (DYSENTERY). They are also sometimes indicated in suspected Cholera with severe dehydration, and serious non-intestinal infections such as pneumonia which may occur concurrently.

Anti-protozoal drugs are rarely indicated

'Antidirrhoeal' drugs and anti-emetics have no practical benefit for all age groups but more so for children with acute or persistent diarrhoea. Some have dangerous, and sometimes fatal, side-effect. These drugs should never be given to children below 5 years.

1.4.3 **Determining the degree of dehydration and select a treatment plan**

Assessment and management are summarized on a chart, included here in a form of tables. Further information, copies of the Diarrhoea Management Chart and Diarrhoea

Training Manual can be obtained from the IMCI Unit of Reproductive and Child Health Section, Ministry of Health and Social Welfare.

Other signs may be useful in assessing severe dehydration and influence also management:

- Weight loss over a short period;
- Signs of hypovolemic shock, fast weak pulses, cold extremities, oliguria or anuria;
- Hyperventilation, deep and fast breathing indicating acidosis.
- Signs of severe malnutrition

Assessment of Dehydration/Other problems

	A	**B**	**C**
LOOK: General condition	Well, alert	Restless, irritable	Lethargic or unconscious
Eyes	Normal	Sunken	Sunken
Thirst	Drinking normally, not thirsty	Thirsty, drinks eagerly	Drinks poorly, or unable to drink
FEEL: Skin pinch	Goes back quickly	Goes back slowly	Goes back very slowly
DECIDE	**NO SIGNS OF DEHYDRATION**	Two or more signs **SOME DEHYDRATION**	Two or more signs **SEVERE DEHYDRATION**
TREAT	Use Treatment Plan A	Weigh patient if possible, use Treatment plan B	Weigh patient if possible, use Treatment plan C Urgently

Treatment plans A, B and C

Plan A: Treat Diarrhoea at Home

Counsel the mother on the 3 Rules of Home Treatment..
Give Extra Fluid, Continue Feeding (including Breast feeding), When to Return

1. GIVE EXTRA FLUID (As much as the child will take)
   TELL THE MOTHER:
   Breastfeed frequently and longer.
   If the child is exclusively breastfed give ORS or clean water in addition to breast milk.
   If the child is not exclusively breastfed give one or more of the following: ORS solution, food-based fluids (such as soup. plain porridge, .fresh fruit juice, green coconut juice 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 clinic if the diarrhoea gets worse.

- Give Zinc, 10-20mg every day for 10-14 days. Zinc treatment should be continued even after the diarrhoea has stopped

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 FLUI D TO GIVE IN ADDITION TO THE USUAL FUID INTAKE:

Up to 2 years	50 to 100 ml after each loose stool
2 years or more	100 to 200 ml after each loose stool

Tell the mother to:

- Give frequent small sips from a cup.
- If the child vomits, wait 10 minutes. Then continue but more slowly
- Continue giving extra fluid until the diarrhoea stops

2. CONTINUE FEEDING INCLUDING BREAST FEEDING
3. WHEN TO RETURN

} See "COUNSEL THE MOTHER" chart

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	Up to 4 months	4 months up to 12 months	12 months up to 2 years	2 years up to 5 years
WEIGHT	<6kg	6 - < 10 kg	10-<12 kg	12 - 19 kg
In ml	200 - 400	400 - 700	700 - 900	900 - 1400

  - Use the child's age only when you do not know the weight. The approximate amount of ORS required (in ml) can also 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
  - Give Zinc, 10-20mg every day for 10-14 days. Zinc treatment should be continued even after the diarrhoea has stopped

- **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
  - Continue breastfeeding whenever the child wants

- **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 her 2 packets as recommended in Plan A
  - Explain the 3 Rules of Home Treatment:

1. GIVE EXTRA FLUID — See plan A for recommended fluids
2. CONTINUE FEEDING INCLUDING BREAST FEEDING — and See "COUNSEL THE MOTHER" chart
3. WHEN TO RETURN

Plan C: Treat severe dehydration quickly

Follow the Arrows. If answer is "Yes", go across. If "No", go down

START HERE

Can you give intravenous (IV) fluid immediately? — YES

Start with IV 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*	5 hours
Children (12 months or above)	30 minutes*	2 ½ hour

* 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, or C to continue treatment,

NO

Is IV treatment available nearby (within 30 minutes)?

NO

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

YES

* 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.

NO

Can the child drink?

NO

Refer URGENTLY to hospital for IV or NG treatment

* Start rehydration by tube (or mouth) with ORS solution: give 20ml/kg/hours:
* 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 IV 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 giving the child ORS solution by mouth

1.5 Dysentry:

1.5.1 Bacillary Dysentery

Clinical features:

Bacillary dysentery is caused by bacilli belonging to the Shigella genus with three main pathogenic groups, namely *S.dysenteriae*, *S.flexneri* and *S.sonnei*. In Tanzania the most common bacillus is *S flexineri*. Other less common bacillus inlude *Yersinia enterolytica* and Campylobacter species.

However *S. dysenteriae* tends to cause epidemics. The main clinical features of bacillary dysentery are diarrhoea, colic abdominal pain and tenesmus. The diarrhoea contains blood and purulent exudate with little faecal matter. Fever, dehydration and weakness occur particularly if diarrhoea persists. While the above clinical features are indicative of bacillary dysentery specific diagnosis depends on culture of faeces. Antibiotics are only indicated if the patient is very ill with fever.

Management

Rehydration is important if diarrhoea persists and the patient is dehydrated. Refer to treatment for diarrhoea section 1.4.

Treatment guidelines

Antibiotics are not usually needed. Give only in severe cases in a toxic, febrile patient.

Management of Bloody Diarrhoea (DYSENTERY)

Treatment should include

– Oral Rehydration Therapy to treat or prevent dehydration and continued frequent feeding including breastfeeding.
– Use antimicrobial effective for Shigela. At the moment it is **Co-trimoxazole (O)**

Bloody diarrhoea persisting after above treatment in adults is presumed to be amoebiasis.
Persistent diarrhoea with Giardia in the stool gives Metronidazole **(O)**
Young children with bloody diarrhoea should not be routinely treated for amoebiasis

Doses for antibiotic treatment of Diarrhoea

AGE OR WEIGHT	COTRIMOXAZOLE (trimethoprim + sulphamethoxazole) (Give two times daily for 5 days)			METRONIDAZOLE Give three times daily for 5 days)	
	ADULT TABLET 80 mg trimethoprim + 400 mg sulphamethoxazole	PAEDIATRIC TABLET 20 mg trimethoprim + 100 mg suplhamethoxazole	SYRUP 40 mg trimethoprim + 200 mg suplhamethoxazole per 5 ml	TABLET 30ML/ KG/24HR 500mg tab	TABLET 30ML/ KG/24HR 250mg tab
2 months up to 12 months (4-<10kg)	1/2	2	5.0ml		
12 months up to 5 years (10 - 19 kg)	1	4	10 ml		
Adult				1	2

NOTE:

- Management of Cholera should be done using National Guidelines for the Management of Cholera. The use of antibiotic should follow the established sensitivity.
- The principles of management of diarrhoea in adult are the same as in children. As much as possible the cause for diarrhoea in adult should be established. Special care should be taken for patients who are immunodeficient e.g. in cases of HIV/AIDS. However, the most common cause for diarrhoea in adult is food poisoning which is normally self-limiting.

1.6 Cholera

Clinical features: Cholera is an acute gastrointestinal infection caused by *Vibrio cholera* organisms (*El Tor* and *V.cholera*). In Tanzania only the *El Tor* occurs. In its severe form, clinical features include profuse watery stools (rice water), vomiting, severe dehydration and muscular cramps. However, in epidemics there are many subclinical or mild cases. In suspected case notify Ministry of Health and Social Welfare (MoHSW) immediately.

For confirmation at the beginning of an outbreak, take rectal swab or stool specimen, handle properly and transport carefully to laboratory. Treat on site without referal wherever possilbe.

Incubation period: Commonly 2-4 days (range 1-7 days)

Management:

- Rehydration is the most important step; orally in moderate cases, IV (using ringer lactate) in more severe cases.

- Start antibiotics (see below) after the patient is rehydrated and vomiting has stopped, usually after 4-6 hours. Although the disease is self limiting, an effective antibiotic will reduce the volume of diarrhoea and shorten the period during which *Vibrio cholera* is excreted. Antibiotic prophylaxis may be given to all close contacts in the same dosage as for treatment.
- Start feeding 3-4 hours after oral rehydration begins. Preferably, give antibiotics (especially **Doxycycline**) with food to minimize vomiting.

1.6.1 Moderate Dehydration

Give oral rehydration, approximately 75-100ml/kg in the first four hours. Reassess after four hours; if improved, continue giving ORS, in quantity corresponding to losses (eg after each stool) or 10 to 20ml/kg. If not improved, treat as severe.

Severe dehydration	Give IV fluid Ringer's Lactate (IV) 200ml/kg immediately as follows
Age below 1 year	100ml/kg over 6 hours 30ml/kg in the first hours 70ml/kg over the next two and half hours.
Age above 1 year	100ml/kg over 3 hours 30ml/kg within half an hour 70ml/kg over the next two and half hours.

Monitor frequently; give ORS in addition to IV fluids as soon as able to drink.

Reassess after 4 hours; if improved, treat as moderate dehydration, if still severe continue with IV fluids.

Treatment

Adult and child above 12 years	**Doxycycline (O)** 300 mg as a single dose or 5mg/kg single dose
	Or
Adult	**Erythromycin (O)** 500mg 8 hourly for 5 days
Children	
	Or
Adult	**Co-trimoxazole (O)**
Children	48mg/kg/24 hrs in 2 divided doses for 3 days.

Give folic acid (O) 5mg once daily for the duration of the treatment.

NOTE: Doxycycline should not be used in pregnancy and children below 12 years

1.7 Ulcers and related condtions

Clinical features: The term peptic ulcetation and rarely in the ileum adjacent to a Meckel's diverticulum refers to an ulcer in the lower oesophagus, stomach and duodenum. In the duodenum ulcers may develop after surgical anastomosis to the stomach. They have

in common the participation of acid-pepsin in their pathogenesis. The common ulcers are duodenal and/or gastric. Peptic ulcer may present in many diferent ways. The commonest is chronic, episodic pain present in many diferent ways, and may persist for months or years. However, the ulcer may come to attention as an acute episode with bleeding or perforation, with little or no previous history. As with duodenal ulcer, epigastric pain is the commonest symptom of gastric ulcer.

1.7.1 Peptic ulcer general measures

Careful history and examination are essential. Lack of rapid symptomatic response to antacids makes peptic ulceration an unlikely diagnosis. Symptoms of many unrelated conditions mimic those of peptic ulcer. Protracted treatment without investigation to establish the diagnosis is wasteful and potentially harmful.

NOTE:

- H_2 receptor antagonists should be prescribed only for ulcers proven on endoscopy or barium meal. Where appropriate, simpler measures indicated below should be tried first.

1. "Ulcer diets" are unnecessary. Reduce spices, and avoid foods that exacerbate pain in individual patients.
2. Stop smoking and avoid alcohol.
3. Limit coffee/tea to 1 cup per day. Avoid carbonated drinks.
4. Medicines to be avoided: All non-steroidal anti-inflammatory agents (NSAIDS) aspirin/aspirin compounds, steroids.
5. Encourage relaxation and regular exercise
6. Antacids will alleviate symptoms in most cases; when given as shown below:

Magnesium trisilicate compound (O)
2 chewable tablets or 20 ml mixture as necessary up to 6 times daily.

1.7.2 Gastric ulcer

Referral to a specialist is recommended
Consider peptic ulcer general measures (above)
Endoscopic biopsy to exclude malignancy in ALL cases whenever possible.

Cimetidine (O) 400 mg 12 hourly for 6 weeks
or
Ranitidine (O) 150mg twice daily or 300mg at night for 4 to 8 weeks
or
Omeprazole (O) 20mg daily for 8 weeks
or
Famotidine (O)40mg at night for 6 weeks
or
Lansoprazole (O) 30mg once daily for 4 weeks may be continued to 8 weeks

1.7.3 **Duodenal ulcer**

Peptic ulcer general measures (above) should be considered
Initially try antacids every 2 hours

Magnesium trisilicate compound (O)
1-2 chewable tablets or 15 ml mixture 2 hourly

Cimetidine (O) 800mg at night for 4-6 weeks
Or
Ranitidine (O) 150mg twice daily or 300mg at night for 4 to 8 weeks
Or
Famotidine (O) 40mg at night for 6 weeks
Or
Omeprazole 20mg once daily for 4 weeks. In severe and recurrent cases increase to 40mg daily
Or
Lansoprazole 30mg once daily for 4 weeks

Helicobacter pylori

Patients with persistent or recurrent ulcers should be referred to a specialist for further evaluation and treatment

Treatment of *H. pylori*

Omeprazole 40mg once daily + Amoxycillin 500mg 8 hourly + Metronidazole 400mg 8 hourly for 7 days
Or
Lansoprazole 30mg once daily + Clarithromycin 250mg 12 hourly + Tinidazole 500mg once daily for 5 days

Then **Lansoprazole** 30mg once daily for one month

1.7.4 **Non-ulcer Dyspepsia**

Symptoms are identical to duodenal ulceration without night exacerbation with normal endoscopy or barium meal tests.

Explanation and reassurance are important
General measures for peptic ulcers (above) including antacids.

Try milk-free diet for possible lactose intolerance
Try anxiolytic

Diazepam (O) 2.5 mg twice daily for a maximum of 6 weeks

1.7.5 **Acute Gastritis**

Give antacids as in peptic ulcer. Advise light diet. Alleviate the cause if possible. If it is not possible to alleviate the cause e.g burns and symptoms are severe, then give:

Cimetidine (O) 400mg 12 hourly for 8 weeks
Omeprazole 20mg once daily for 4 weeks

1.7.6 Gastro-enteritis due to bacterial toxicins

Rehydrate with oral fluids in mild cases, and with I.V fluids in more severe cases. Give antiemetics if necessary (adults only).

Medicine of choice	**Promethazine (O)**
Adult	25-50mg in single or divided doses max. 75mg
Children	1mg/kg/24 in 2-3 divided doses
	Or
	Promethazine (IM) 25-50mg in single or divided doses

NOTE: Antibiotics are not required except in the special circumstances given below. Antidiarrhoeals/Antispasmodics should be avoided.

CAUTION: Cimetidine interacts with ARVs.

1.7.7 Ulcerative colitis

Clinical features: Ulcerative colitis is a chronic condition of unknown cause in which there are changes in the structure of the mucosa and submucosa of the wall of the colon, with widespread inflammation and superficial ulceration. Symptoms vary from diarrhoea in mild cases to septicaemia, dehydration and malnutrition in severe forms. Diarrhoea, with blood and mucus in the faeces, is a common sign, although the disease is confined to the rectum there may be paradoxically constipation.

Treatment guidelines

Refer to a specialist.

Localized disease – treat with topical steroids:

Prednisolone (enema) 20mg at night, or same dose via rectal catheter

CAUTION: Give steroids only in confirmed cases of Ulcerative Colitis. Exclusion of other forms of infective colitis (especially amoebic) is vital; a therapeutic trial of metronidazole should be given.

Widespread colitis:

Sulphasalazine (O) 1 gram four times a day for acute disease, reducing to 500mg four times a day for maintenance (caution in G6PD deficiency)

Plus

Prednisolone (O) 30-60mg once daily for severe, acute and extensive disease; reduce gradually according to disease severity.

	Sulphasalazine (O)
Children over 2 years	Acute attack use 40-60mg/kg body weight daily Maintenance dose 20-30mg/kg body weight daily.

NOTE: Life long follow up is required.

1.8 Other gastro-intestinal problems

1.8.1 Irritable Bowel syndrome

May present with pain, chronic diarrhoea or constipation. It is important to investigate for and exclude organic pathology

Reassurance and explanation are essential.
A high fibre diet and eating a healthy diet are the mainstay of treatment.

a) For relief of pain due to abdominal cramps,
Hyoscine butyl bromide (O) 20mg four times a day

b) For treatment of enxiety that may be making symptoms worse

Diazepam (O) 5-10 mg 8 hourly
Give short and infrequent courses only, in order to avoid dependance.

c) If constipation is prominent,
Magnesium trisilicate compound (O) or 20ml mixture 8 hourly

When diarrhoea is a frequent problem
Loperamide (O) may help; 4mg stat, followed by 2mg after each unformed stool until diarrhoea is controlled.

Explore psycho-social factors in resistant cases.
Consider referral to a clinical psychologist.
Prolonged use of anti-diarrhoeal drugs may exacerbate the condition; therefore avoid use of the medicines.

1.8.2 Malabsorption syndrome

Correction of electrolyte and nuritional deficiencies is important

1.8.3 Tropical sprue

Clinical features
Tropical sprue is a digestive problem that occurs in the tropics and subtropics, whereby the fingerlike villi in the small intestine are not able to absorb nutrients properly, especially vitamin B12 and folic acid. In people with tropical sprue, these villi are flattened, making absorption difficult. Diarrhea is the main symptom of tropical sprue. People who eat a lot of fatty foods may get more severe diarrhea than those on diets low in fat. Other symptoms include cramps, nausea, weight loss, gas and indigestion.

Treatment guidelines:
Treatment consists of 3 – 6 months of antibiotics and folic acid.

Doxycycline (O) 100mg once daily for 1 month
Plus
Folic acid (O) 5mg once daily for 6 months.

If there is evidence of vitamin B_{12} deficiency give vitamin **B_{12} (hydroxocobalamin IM)**

1mg repeat five times at weekly intervals for replacement. Maintain if required.

1.8.4 Pernicious Anaemia

Give life- long vitamin B_{12} as above every 3 months.

1.8.5 Acute pancreatitis

Acute pancreatitis is a sudden inflammation of the pancreas whereby enzymes that normally are released into the digestive tract begin to damage the pancreas itself. Digestion slows down and becomes painful, heavy acohol use and gall-stones are one of the several factors known to trigger attacks of acute pancreatitis.

Clinical features:
The most common symptom of acute pancreatitis is upper abdominal pain. Other symptoms may include nausea and vomiting, loss of appetite and abdominal bloating. In severe cases, fever, difficulty breathing, weakness and shock may develop.

Treatment
If symptoms are mild

- Stop all alcohol consumption
- Adopt liquid diet such as broth and soups; such simple foods may allow inflammation to get better.

Generally the patient with an acute pancreatitis should be hospitalized and treated with pain relievers and fluids given intravenously (into a vein). If gall-stones are the cause, the patient will be advised to have them removed.

1.8.6 Chronic pancreatitis

Chronic pancreatitis is long-term (chronic) inflammation of the pancreas that leads to permanent damage. The most common cause for such a condition is long-term excessive alcohol consumption

Clinical features:
The most common symptom is upper abdominal pain that may be accompanied by nausea, vomiting and loss of appetite. As the disease gets worse and more of the pancreas is destroyed, pain may actually become less severe. During an attack, the pain often is made worse by drinking alcohol or eating a large meal high in fats.

Because a damaged pancreas can't produce important digestive enzymes, people with chronic pancreatitis may develop problems with digesting and absorbing food and nutrients. This can lead to weight loss, vitamin deficiencies, diarrhea and greasy, foul-smelling stools.

Over time, a damaged pancreas also can fail to produce enough insulin, which results in diabetes

Treatment

Referral is recommended

Because chronic pancreatitis cannot be cured, direct the treatment towards:

a. **Relieving pain** - (medications such as acetaminophen or ibuprofen for mild pain). In some people, a narcotic pain medication may be needed and in rare cases, surgery to open blocked ducts or remove part of the pancreas may be done to relieve pain.

b. **Improving food absorption** - The patient should be recommended to follow a low-carbohydrate, high-protein diet that also restricts some types of fats. Once digestive problems are treated, patient will usually gain back weight and diarrhoea improves. Another way is by giving the patient pancreatic supplements containing digestive enzymes.

c. **Treating diabetes** - Treat Diabetes with careful attention to diet to help keep blood sugar levels stable. In some people, insulin injections and other diabetic medications are needed.

1.8.7 Disaccharides deficiency

For example, lactose intolerance

Withdrawal of offending sugar is often sufficient. Lactose deficiency means that milk and all milk products must be withdrawn.

1.8.8 Peritonitis

Mycobacterium tuberculosis species do also cause peritonitis. Peritonitis may diffuse or localised clinical features. Abdominal pain, tenderness and gadding are the main features. Fires, vomiting dehydration and items are also present.

Clinical features: Is inflammation of the peritoneum causative agents are multiple including bacterial infection secondary to gastrointestinal perforation, ascending infection from the pelvic organs contamination following penetrating injuries or spontaneous bacterial infection (especially in children).

Bacterial peritonitis is usually characterized by acute abdominal pain and tenderness, dehydration, fever, hypotension, nausea and vomiting and tachycardia.Complications include abscess formation, oliguria and shock.

Chronic peritonitis Refer TB chapter

Treatment guideline

- Surgical management following restriction is the mandatory
- Associated treatment is with antibiotics depending on causative agent
- Where cause is not known antibiotics of choice are: Ampicillin, Gentamicine and Metronidazole.

Medicine of choice

Ampicillin (IV) 1g every 6hours for 5-10 days
Plus
Gentamicin (IV) 4 mg/kg/24 hours in 3 divided doses for 5-10 days.

Metronidazole (IV) or **(O)** 400-600mg every 8 hours for 5-10 days.

1.8.9 Constipation

In constipation, bowel movements either occur less often than expected or the stool is hard, dry and difficult to pass. Most of the time, constipation is not related to an illness or digestive disorder. Instead, the problem is caused by diet, lifestyle, medications or some other factor that either is hardening the stool or is interfering with the stool's ability to pass comfortably. Some common triggers of constipation include A diet low in fibre, inadequate fluid intake, a sedentary lifestyle, ignoring the urge to defecate, travel and scheduling factors, laxative overuse or a side effect of medication.

Clinical Features

Fewer than three bowel movements per week, small, hard, dry stools that are difficult or painful to pass, need to strain excessively to have a bowel movement, frequent use of enemas, laxatives or suppositories

Treatment guidelines

- Find out the type of food taken by patient
- Exclude other organic causes of partial bowel obstruction
- Encourage high fibre diet, adequate fluid intake
- Give laxatives as required but avoid chronic use

Stimulative laxative

Bisacodyl (O) 5-10mg
Or
Bisacodyl suppository (PR) 10mg at bed-time

Osmotic laxative

Magnesium sulphate (O) 4 grams with water before breakfast, effective within 3 hours.

Lactulose solution 3.1 – 3.7g/ml

Adults	15ml, 12 hourly
Children under one year	2.5ml, 12 hourly
Children 1 – 5 years	5ml, 12 hourly
Children 5 – 10 years	10ml, 12 hourly

1.8.10 Haemorrhoids and other peri-anal conditions

Clinical features: Hemorrhoid disease is due to enlargement or thrombosis of the veins in the external or internal hemorrhoidal plexus. Common clinical feature is the

passage of bright-red blood or blood coating of the stool. There is a feeling of vague anal discomfort. Thrombosed haemorrhoids can be very painful. Prolapse is a complication.

Treatment guidelines

- Treat any identified causative condition
- Encourage high fibre diet
- Careful anal hygiene
- Saline baths
- Avoid constipation by using stool softener.

Medicine of choice **Anusol (PR) suppository** one or twice a day

Or

Bismuth subgallate with **1% hydrocortisone ointment (PR)** once or twice a day

Paracetamol (O) 500 mg every 6 hours

Second Choice **Proctosedyl suppository (PR)** or **Ointment (PR**) once or twice a day

1.9 Liver Diseases

Liver cirrhosis

This is usually caused by chronic hepatitis and alcohol abuse. It is characterised by progression and widespread death of liver cells associated with inflammation and fibrosis, with destruction of the liver architecture.

Clinical features: Include jaundice, hepato megally, asserts, features of increased oestrogen levels in men, while in women there are features of increased androgen levels. Hence loss of libido, a testicular atrophy and impotence are common among male cirrhotic. In women predominant features are breast atrophy, menstrual disturbances including amenorrhea. Features of portal hypertension like splenomegaly, distended abdominal wall, vessels and varices bleeding are common. Hepatic encephalopathy is an associated complication.

Liver fibrosis

S mansoni infection over time leads to liver fibrosis which usually preserves the liver architecture and liver function. It is a common cause of portal hypertension.

Cholestutic jaundice

Cholestasis may be due to failure of hepatocytes to generate bile flow, to obstruction to bile flow in the bile ducts in the portal tracts to obstruction to bile flow in the extrahepatic bile ducts. Intrahepatic causes of cholestasis include viral hepatitis, alcohol, primary biliary cirrhosis, Hodgikin's lymphoma and pregnancy. Extrahepatic causes which may be amenable to surgical correction include choledocholithiasis and carcinoma of the biliary tree. Parasitic infections such as Asceriasis may also cause cholestatic jaundice. The prominent features include itching, jaundice, dark urine and pale stools.

General measures

- Identify and treat the cause
- Surgical correction extruhepatic cholestis
- Stop the offending medicine

Medical treatment

- Treatment of underlying condition
- **Cholestyramine (O)** 4 -16gm/day to relieve itching

CAUTION: Cholestyramine may bind other medicines in the gut (Warfarin) which should be taken one hour before cholestyramine ingestion

1.9.1 Acute liver failure/Hepatic encephalopathy

General measures

- Identify and if possible eliminate the cause (e.g drugs, viral hepatitis, septicaemia, toxins, alcohol or upper G.I bleeding)
- Avoid use of all unnecessary drugs including diuretics and sedatives
- Provide non protein containing high calorie food (2000kCal/day)

Medicine treatment

Doxycycline (O) 100mg twice daily through nasogastric tube;

Give laxatives to provoke diarrhoea

Magnesium sulphate (O) 4g with water twice daily, until diarrhoea is induced or lactose

Carry out high bowel washout once

- Give dextrose 10% (IV infusion) 3 litres/day with 2g (26mmol) potassium chloride added to every litre bag (if renal function is satisfatory)
- Check for any infection and treat immediately
- If signs of bleeding are present give vitamin K (IV) 10mg

Add

Fresh **F**rozen **P**lasma initially

Add

Platelets if count <20 x 10g/1and patient is still bleeding

- If ethanol etiology is suspected give

Thiamine (IV) 10mg before dextrose infusion and continue daily for 3 days.

As cites of chronic liver failure

- Parecentesis diagnostic should be performed where possible
- Restrict intake of salt
- Not more than 1 litre of fluid per day
- Weight loss should be at 0.5 kg per day. Further reduction of weight per day could lead to hypovolaemia and induce liver failure.

For patients not responding to the above measures give

Spironolactone (O) 100mg once daily, increasing to 400mg daily as required.

CAUTION: No potassium supplements with these diuretics.

In case the above measures fails give **Frusemide (O)** start at 40mg daily increasing gradually

NOTE: Stop if encephalopathy or uraemia develop

2. RESPIRATORY DISEASE CONDITIONS

2.1 Acute Respiratory Infections (ARI)

2.1.1 Pneumonia

Clinical features: Pneumonia is the inflammation of the lung tissue. Pneumonia can either be primary (to the causing organism) or secondary to pathological damage in the respiratory system. The common causative organism for bacterial pneumonia are *Streptococcal pneumoniae*, *Hemophilus influenza*, *Staphylococcus aureus*, and *Mycoplasma pneumoia*, viral or parasitic e.g *Pneumocystis carinii*. The important clinical features are high fever 39°c, dry or productive cough, central cyanosis, respiratory distress, chest pain and tachypnoea.

2.1.2 ARI in Children

Clinical features for children under five years of age
The important symptoms in children are coughing or difficult breathing. Classification of pneumonia in children is based on respiratory rate which is either fast breathing or chest drawing.

Fast breathing is defined as

- Respiratory rate>60, age less than 3 months
- Respiratory rate > 50, age between 3 months and 5 years
- Chest in drawing is when the lower part of the chest moves in when the child breaths in.

Table: 5 Important clinical features of pneumonia in under-fives

AGE	SIGNS	CLASSIFICATION
Infants less than 2 months	• Severe chest in drawing Or • 60 breaths per minute or more	Severe pneumonia (all young infants with pneumonia are classified as severe)
	• No severe chest in drawing • Less than 60 breaths per minute	No pneumonia: Cough or cold
Children from 2 months to 1 year	• Chest in drawing	Severe pneumonia
	• No chest in drawing • 50 breaths per minute or more	Pneumonia
	• No chest in drawing • Less than 50 breaths per minute	No pneumonia Cough or cold
Children from 1 year to 5 year	• Chest in drawing	Severe pneumonia
	• No chest in drawing • 40 breaths per minute or more	Pneumonia
	• No chest in drawing • Less than 40 breaths per minute	No pneumonia Cough or cold

Table 6: Treatment guidelines

AGE	CLASSIFICATION	TREATMENT IN DISPENSARIES AND HEALTH CENTRES	TREATMENT IN HOSPITALS OR WHEN REFERRAL IS NOT FEASIBLE
Infants less than 2 months	Severe Pneumonia	Refer urgently to hospital after first dose of Benzyl penicillin or chloramphenical	Benzyl penicillin + Gentamicin
Children from 2 months to 5 years	Severe pneumonia	Refer urgently to hospital after first dose of Benzyl penicillin or Chloramphenicol	Benzyl penicillin or chloramphenicol
	Pneumonia	Co-trimoxazole	Co-trimoxazole Alternative Procaine Penicillin fortified or Amoxycillin
	No pneumonia: Cough or cold with honey	No antibiotics Safe cough remedy like tea with honey	No antibiotics Safe cough remedy like tea

NOTE: Co-trimoxazole is the medicine of choice for treating pneumonia in children, it should however, not be used for infants less than 1 months. Co-trimoxazole is active against important respiratory pathogens such as *S.pneumonie*, *S.aureus*, and *H.. influenzae.* Compliance is good as the drug is administered twice daily. It is considerably cheaper than procaine penicillin, and the drug can be given at home

Table: 7 Dosage schedule for treatment of pneumonia

	Co-trimoxazole	**Amoxycillin**	**Procaine penicillin**	**Benzyl penicillin**	**Gentamicin**	**Chloramphenical**
Less than 2 months (3-5kg)	0.5 ml syrup/kg 12 hourly for 5 days	25mg/kg 6 hourly for 5 days(syrup or 250 mg cap)	50,000U/kg 1daily for 5 days (i.m)	50,000U/kg 6 hourly (i.m)	25mg/kg 8hourly (i.m) (inj.10mg/ml)	25mg/kg 6 hourly (i.m) (1gr in 4ml sterile water)
	2.5ml syrup or ¼ of 480 mg tab	5ml syrup	200,000U	200,000U	1ml	0.5ml
2months up to 1year (6-9kg)	5ml syrup or ½ of 480 mg tab	10ml syrup or 1cap	400,000U	400,000U	2ml	1ml
1 year up to 3 years (10-14kg)	7.5ml syrup or 480mg tab	10ml syrup or 1cap	800,000U	600,000U	3ml	1.5ml
3 years up to 5 years (15-19kg)	7.5ml syrup or 480 mg tab	10ml syrup or 1capsule	800,000U	800,000U		2ml

NOTE:
- Avoid Co-trimoxazole in infants less than one month of age
- For the first week of life: Benzyl penicillin plus Gentamicin 12 hourly
- Do not give Chloramphenicol to premature neonates. Young infants more than 1 week of age, give chloramphenicol 12 hourly

2.1.3 Wheezing

Management guidelines

In a young infant below 3 months, wheezing is a sign of serious illness **REFER IMMEDIATELY**. Wheezing for infants between 3 and 12 months may be due to *bronchiolitics* a viral infection, **REFER**. In Children more than 1 year wheezing may be due to Asthma-**REFER** for assessment or give antiasthmatic. If the child is in distress, give a rapid – acting bronchodilator and **REFER**.

Bronchodilator in Children 1-5 years

Medicine of Choice	**If a rapid acting bronchodilator is required** **Adrenaline** 1:1000 (SC: 0.01 ml/kg body weight by subcutaneous (SC) injection up to maximum of 0.25 ml may be repeated after 20 minutes. **Oral bronchodilator (for Children 1-5 years)** **Salbutamol** (O) 0.4 mg/kg/day divided in 3-4 doses for 5 days.

2.1.4 Croup

Clinical features: Croup is acute laryngotracheobronchitis which occurs in young children (usually between 6 months to 3 years of age) and arises as a result of narrowing of the airway in the region of the larynx. The most common cause is viral infection (particularly parainfluenza viruses) but may also be due to bacterial infection. The obstruction is due to inflammation and oedema.

The symptoms include paroxysmal 'barking' cough and insipiratory stridor, fever, wheezing and tachypnoea. Such symptoms usually occur at night. Respiratory failure and pneumonia are potentially fatal complications.

Treatment guidelines

- No stridor at rest, give no antibiotics
- Stridor at rest or chest in drawing or fast breathing **REFER IMMEDIATELY** to hospital.

Mild Croup

Only stridor when upset, no moderate/severe ARI

- Likely of viral origin
- Home care – steam inhalation
- Antibiotics **NOT** required

Severe Croup (Laryngotracheobronchitis)

- Stridor in a calm child at rest
- Chest in drawing

Management Guideline

- Do not examine throat – likely bacterial origin

Treatment Guidelines

Drug of Choice	**Amoxycillin (O)**
Adult	10mg/kg body weight 3 times a day
Child up to 8 years	125 mg every 8 hours for 7 days
Second Choice	**Chloramphenicol (O)** 12.5 mg/kg body weight every 8 hours for 7 days.

2.1.5 Laryngeal Diphtheria

Clinical features: Is an infection caused by *Corynebacterium diphtheriae*. It is directly transmitted from person to person by droplets. Children between 1-5 years of age are most susceptible although non-immune adults are also at risk. Diphtheria may be asymptomatic or symptoms are characterized by grayish-white membrane, composed of dead cells, fibrin, leucocytes and red blood cells is seen as a results of inflammation due to multiplying bacteria.

Treatment guidelines

- Gently examine the child's throat – can cause airway obstruction if not carefully done.

Medicine of choice: Procaine penicillin (IM) once daily for 7 days

NOTE: Tracheotomy may be required for airways obstruction.

2.1.6 **ARI in Adult**

2.1.6.1 Community Acquired Infections

First Line management

- Chest X-ray not necessary but preferable for in-patient

First Line Treatment
Table 8 – Treatment of Community Acquired Infections

Condition	**Treatment**	**Duration**
Mild pneumonia (treated on out-patient basis)	**Amoxycillin (O)** 250 – 500 mg three times a day	5 days
Alternative	**Co-trimoxazole (O)** 960mg (2 tablets of 480mg) twice daily	5 days 5 days
Severe pneumonia (in-patient)	**Benzylpenicillin** (IV/IM) 1-3 MU every six hours (may complete course with Amoxycillin (O) as above) OR If compliance doubted	5-7 days
	Benzathine penicillin (IM) 2.4 MU single dose	1 day

Second line treatment: If patient is in respiratory distress, or no response after 3 days of first line treatment, or patient's condition deteriorates, then investigate. For interpretation of X-ray and management algorithm, see Section HIV related respiratory conditions (applicable to HIV negative patients with difficult to treat bacterial pneumonias).

Table 9 – Treatment of Community Acquired Infections

Condition	Treatment	Duration
A typical Pneumonias Alternative in pregnancy or lactation or children under 12 year	**Doxycycline (O)** 200 mg stat then 100 mg daily Erythromycin (O) 500 mg every 6 hours	7 to 10 days 7 to 10 days
Pneumocystis carnii pneumonia (PCP)(a)	**Co-trimoxazole (O)** 3 to 4 tabs of 480mg every 6 hours PLUS **Folic acid** if cytopenic Alternatively: Dapsone 100mg daily for those allergic to sulphonamides	14 – 21 days
Staphylococcal Pneumonia (b)	**Cloxacillin (IV)** 1 to 2mg every 6 hours Or **Clindamycin** (IV/O) 600mg every 6 to 8 hours	14 days 14 days
Klebsiella Pneumonia (b)	**Chloramphenicol** (IV) 500 mg every 6 hours +/- Gentamicin (IV) 4 to 5 mg/kg/24 hrs in 3 divided doses	10 to 14 days 10 to 14 days

NOTE: Alternative regimen for PCP and sulphanomide allergy is the following combination (note the high cost)

Clindamycin (O) 600mg every 6 hours
Plus
Primaquine (O) 15 mg once daily

NOTE: Alternative in Staphylococcal and Klebsiella pneumonia: Ceftazidime (IV/IM) every 8 hours

2.1.6.2 **Hospital Acquired Infections**

Table 10: Treatment of Hospital Acquired Infections

Condition	Treatment	Duration
Empirical treatment until bacteriology available	**Ampicillin (IV)** 1g every 6 hours **PLUS** **Gentamicin (IV)** 4 to 5mg/kg/ day in 3 divided doses	7 to 10 days 7 to 10 days

2.1.7 **Chronic Bronchitis**

There are many aspects of management:

1. Stop smoking and/or remove from hazardous environment
2. Prompt treatment of infective exacerbations
   - Antibiotics as above
   - Controlled oxygen therapy
   - Physiotherapy
3. Bronchodilator may give some benefit
   Medicine of choice: Ipratropium aerosol 20 – 80mg, 6 – 8 hourly
4. Trial of steroids if there is any possibility of reversible airways obstructions
   Prednisolone (O) 20mg once daily for 5 days

Assess response by changes in peak flow rate.

2.1.8 **Other Respiratory Infections**

Table: 11 Treatment of other Respiratory Infection

Condition	Treatment	Duration
Chronic Bronchitis (infective exacerbation)	**Doxycycline (O)** 200mg stat 100mg daily **or** **Amoxycillin (O)** 250 to 500mg three times per day **or** **Co-trimoxazole (O)** 960mg (2 tabs of 480 mg) twice daily	5 to 7 days 5 to 7 days 5 to 7 days
Acute Bronchitis	Antibiotics not usually needed; if required, treat as above	
Bronchiectasis	Physiotherapy and postural drainage, antibiotic as for chronic bronchitis	
Lung Abscess or Aspiration Pneumonia	Postural drainage **PLUS** **Benzylpenicillin (IV)** 2.5-5 MU Every 6 hours with or without **Metronidazole (O)** 400-500 mg three times per day **Amoxycillin (O)** 250 to 500mg three times per day	4 to 6 week 4 to 6 weeks

2.1.9 **Asthma**

This is a chronic inflammation disorder of the airways, characterised by reversible airflow distruction. There is also inflammation of the bronchial wall.

Clinical features: Asthma is a reversible obstructive airways disease of varying severity. The symptoms are caused by constriction of bronchial smooth muscle (bronchospasm) oedema of bronchial mucous membrane and blockage of the smaller bronchi with plug of mucus. It can be due to identifiable trigger factors or allergens (extrinsic asthma) and is characterized by dyspnoea, wheezing and tightness of the chest and cough etc.

Management guidelines

- Maintenance therapy should be adequate
- Treatment of acute attacks
- Avoid heavy exercise

NOTE: The management of asthma in children is similar to that in adults. Infants under 18 months, however, may not respond well to bronchodilator. Details of asthma medicine treatment in children are given after that of adults below.

Table: 12 Asthma Score

Symptom's (Frequency of Attacks of wheezing)	Score A
Waking at night, more than twice weekly	4
Daily, but not at night	3
Not daily, but more than once weekly	2
Less than once weekly or on exercise	1
None for 3 months	0
Frequency of use of bronchodilator	Score B
>4 times daily	4
1 to 4 times daily	3
< Once daily	2
1< Once weekly	1
None for months	0

NOTE
- Scoring system can help to assess the severity of asthma.
- Peak flow meters when available should be used to assess the progress

Asthma Score
- Add symptoms score (A) to the frequency of use of bronchodilator score (B). The maximum score is 8

  Score (A + B)
  Mild asthma 0-3
  Moderate asthma 4-6
  Severe asthma 7-8

2.1.9.1 **Chronic asthma in adults**

Treatment guidelines

Oral beta 2-stimulant is the drug of first choice. It may be used intermittently as needed or on a regular basis:

Medicine of choice **Salbutamol (O)** 2-4mg one to four times a day

Second choice **Ephedrine (O)** 30mg one to 3 three times a day **Or Aminophylline (O)** 15-116mg//kgg/day in 3-4 divided doses (maximum 1100 mg/day**)**

NB: Loading doses required: max. 500 mg/day increase after every 3 days to maintenance.

2.1.9.2 **Moderate Asthma in adults**

If no response or poor response or troublesome side effects on oral treatment then try beta 2-stimulant in inhaler/aerosol form.

NOTE Ensure competence in inhaler technique before stopping oral preparations

Second Choice If response still not adequate add **Beclomethasone** 50μ 1-4 metered inhalations per dose 3-4 times daily.

CAUTION: Rinse mouth with water after administration

2.1.9.3 **Severe Asthma in adults**

Same drugs as for moderate asthma, but **Add**: **Prednisolone (O)** 2.5 – 10mg daily to the above therapy, but try to keep the dose as low as it remains effective.

Nocturnal asthma

Patients, who get night attacks, should be advised to take their medication on going to bed. If aminophylline has not been used its addition may be highly beneficial.

Treatment of Acute Asthma attacks in Adults

General measures:

- Careful monitoring of the patient's condition is essential to assess severity, and to detect improvement or deterioration. In the absence of blood gas facilities, this will depend on close assessment of physical signs such as paradox, use of accessory muscles, colour, mental state, etc.
- Humidified oxygen by mask at high concentration (6 litres/min) is important.
- Consider ventilation in severe cases. A short period (5-10 minutes) of ventilation with ether or halothane may end the attack.
- After an acute attack all patients should continue with bronchodilator. A course of high dose prednisolone should be given again with all but the mildest attacks.
- Except in mild cases follow up is essential.

NOTE: Treatment regimen of all degrees of asthma should include a steroid, preferably an inhaler formulation

Acute Attack in Adults

Medicine Regimens

Adrenaline 1:1000 (SC) 0.5ml (injected subcutaneously). Repeat at 1-2 hour intervals if necessary. This is useful when asthma is too severe for inhalation.
or

Aminophylline (IV) slow intravenous injection (over 20 minutes) 50-500mg. if patient has not been taking aminophylline before. If he was on aminophylline give 3mg/kg.

Plus

Prednisolone (O) 30-40 mg once daily for 5 days

Severe Acute Attacks in Adults

If poor response to initial therapy give **Adrenaline** as above.
Plus

Hydrocortisone (IV) 200 mg as a single dose, further IV doses are needed only, if oral dosing is not possible. At the same time, start on Prednisolone (O) 40-60 mg once daily for 5 days. If chest is clear, at this stage steroids can be stopped without prednisolone tapering of the dose, otherwise reduce by 5 mg/day a maintenance of 5 mg daily until the patient is reviewed.

Plus
Aminophylline (slow IV) 6 mg/kg over 20 minutes unless the patient was on oral **aminophylline** in the past 8 hours, in which case no bolus dose is required.

2.1.9.4 **Maintenance therapy in children**

Table: 13 Asthma Maintenance therapy in Children

SEVERITY OF ASTHMA	TREATMENT
Mild intermittent, associate mainly with respiratory infections	Intermittent Treatment **Salbutamol (O**) 0.15 mg/kg/day to the nearest 1 mg) in 2 to 4 divided doses **1 to 5 years**: 1 to 2 mg four times a day **5 to 12 years**: 2 to 4 mg four times a day **>12 years**: 4 mg four times a day **OR** if available **salbutamol** inhaler intermittently
Moderate Frequent, triggered by infection, allergy, exercise etc.	Continuous treatment **Salbutamol** (O/Inhalation) as above +/-**Sodium cromoglycate** Inhaler (if available) 1 mg (1 spincap) three to four times a day. Dose may be increased to a maximum of 2 spincaps six times a day.
Severe persistent wheeze and/or failure to breath	Add to the Above **Beclamethasone** inhaler (50 micrograms/puff) 1 to 2 puffs three to four times a day respond to the above (always use a spacer) **OR** **Prednisolone (O)** to 2 mg/kg/day initially, reducing to dose which controls the asthma; then attempt to give on alternative days (5 to 10 mg dose).

NOTE: Long term prednisolone in children should be avoided unless there is no alternative

<u>Acute Attacks in children</u>

The same general measures apply as in adult. Give several puffs of salbutamol metered inhalation. If poor response

Add **Adrenaline 1;1000 (sc)** 0.01 ML/KG

OR **Aminophylline (slow IV)** 4mg/kg over 10 minutes. Do not give if oral aminophylline was given in the last 8 hours.

Unless response to the above is dramatic and complete, start:-

Prednisolone (O) 2mg/kg/day in divided doses for 3-5 days.

Severe Acute Attack in children

If response to the above therapy is inadequate, give

Dextrose 5% IV – 100 ml/kg/day
Plus
Aminophylline (IV infusion) at 0.8 – 1mg/kg/hour
Plus
Hydrocortisone(IV) 2mg/kg every 4 hours

Change to oral therapy when possible; **Prednisolone** (o) 2mg/kg/day for 5 days

Prophylaxis of asthma

Sodium cromoglycate is used in the prophylactic treatment of asthma including exercise-induced asthma. It should however, not be used for acute attacks of asthma as it has no effect on an established asthmatic attack. Sodium cromoglycate should be used regularly. When withdrawing treatment, the dose should be reduced gradually over a period of one week. Sodium cromoglycate should be used for at least 4 weeks before it can be proved as ineffective.

2.1.10 **Cough**

Clinical features: Cough is a symptom produced by inflammatory viscid secretions or obstruction of the tracheobronchial system. It may be dry or productive cough. Cough may be paroxysmal, hacking, explosive, harsh (brassy).

Treatment guidelines

Causative/precipitating factors e.g. CCF, asthma, allergies must be established and treated accordingly. Where causative/precipitating factors cannot be detected, the following treatments may be offered:

Non-productive irriating cough

Codeine Cough syrup (O) (sedative) give 1.5 mg every 6 hours
or
Linctus codeine (O) give 5-10 ml every 6 hours

Expectorants may be used to liquefy viscid secretions.

NOTE: Antibiotics should never be used routinely in the treatment of cough

2.1.11 Whooping Cough

Clinical features: whooping cough is a highly infectious disease caused by *Bordetella* pertusis. It is a childhood disease. The main clinical feature is paroxysmal cough associated with a whoop.

Treatment guidelines
In the first week of infection (catarrhal stage)

Medicine of choice: **Erythromycin (O)** 10 mg/kg body weight every six hours for 14 days

Second choice: **Chloramphenicol (O)** gives 12.5 mg/kg body weight every 6 hours for 14 days

> **CAUTION:** Chloramphenical should be used cautiously due to potential toxicity of aplastic anaemia

Prevention: Whooping cough is preventable by immunization with pertussis vaccine contained in DPT triple vaccine. It is advisable to start giving it at the age of 6 weeks and repeated twice at 4 weeks interval.

2.1.12 Allergic rhinitis

Clinical features: Allergic rhinitis is caused by sensitivity reaction in the blood vessels of the nasal mucusal e.g. due to pollen, animal hair or feathers. It is characterized by nasal obstruction, bouts of sneezing and excess nasal discharge which is usually watery but occasionally thick and mucoid.

Treatment guidelines

Attempts should be made to identify the responsible allergen – which should then be avoided whenever possible. Desensitization for specific allergens should be done.

Ephedrine (O) give 15-30 mg every 8 hours
Or
Chlorpheniramine (O) give 4 mg every 8 hours
Or
Promethazine (O) give 25mg every 12 hours

For patients unresponsive to antihistamines

Prednisolone (O) give 15-30 mg every 12 hours and then gradual tapering is recommended.

Children:

Ephedrine (O) 0.5 mg/kg body weight every 8 hours

Or

Chlorphaniramine (O) give 0.1 mg/kg weight every 8 hours

Or

Promethazine (O) give (O) 0.25 – 0.5 mg/kg body weight give every 12 hours

If unresponsive to antihistamines give **Prednisolone (O)** as for adult dose above

Surgery is indicated in the presence of polyps and drainage of purulent sinuses.

3. OBSTETRICAL/GYNAECOLOGICAL DISEASE CONDITIONS AND CONTRACEPTION

3.1 Infection of the Genital-Urinary Tract

3.1.1 Urinary Tract Infection During Pregnancy

Clinical features:
Urine specimen for microscopy, with blood cells, culture and sensitivity tests should be carried out before medicines are initiated, except on acute conditions.

Treatment:

First Line: **Amoxycillin (O) 250 mg** every 8 hours for 5 days
Or
Trimethoprim (O) 300 mg once daily for 5 days
Plus
Folic acid (O) 5 mg once daily for 5 days

Second Line: **Nalidixic acid (O) 100 mg** every 6 hours for 5 days with food

Positive RPR or Syphilis during pregnancy

Benzathine penicillin B (IM) 2.4 MU weekly 3 doses.
Or
For **Penicillin** allergic patients give **Erythromycin** (O) 500 mg every 6 hours a day for 14 days

3.1.2 Vaginal Discharge during Pregnancy

Clinical features:
Take carefull history (amount, colour, presence of odor, whether leaves stains in the undercloth etc)

In children/infants due to immature epithelium common type candidiasis
Adults: Vulvo-vaginal candidiasis is characterised by pruritic, cord like vaginal discharge, dysuria and dysporuria.

Treatment:

Nystatin pessaries insert 1 at night for 14 days **OR**
Clotrimazole pessaries/vaginal cream insert/ apply once at night for 3 days **OR**
Ketoconazole 200 – 600mg every 24 hours for 10 days **OR**
Fluconazole 200mg once daily for 14 days

Tricomanial vaginitis (TV): frothy/yellow green discharge, itching and dysuria
Treatment as above

Gonococcal vaginitis: Purullent yellow discharge, dysuria

Treatment: **Benzathine Penicillin 2.4 MU IM** 2 doses
Or
Erythromycin 500mg every 6 hours for Penicillin allergic individuals)

Persisted infections with fungal organisms require rule out systemic disorder such as diabetis mellitus.

NOTE: The dose of Erythromycin may be reduced to every 8 hours if side effects are intolerable, but the period should be extended appropriately.
Leukorrhoea (increased whitish discharge is common during pregnancy but does not require treatment. However it is mandatory for all discharge to be thoroughly investigated (start with simple investigations such as smers for wet and gram stain microscopy. Incase of STIs, treatment of partner is mandatory

CAUTION: Avoid taking both medicines concomitantly if side effects are intolerable
Avoid metronidazole in the first trimester
Avoid alcohol while taking metronidazole

3.2 Abortion

Clinical features: Interruption of pregnancy (expulsion of a foetus) before it is viable, legally at 28th week of gestation. Clinical types are recognized according to findings when the patient is first seen. These include: Threatened abortion, inevitable abortion, incomplete abortion, complete abortion and missed abortion. Vaginal bleeding which may be very heavy in incomplete abortion, intermittent pain which ceases when abortion is complete and cervical dilation in inevitable abortion. In missed abortion, dead ovum retained for several weeks while symptoms and signs of pregnancy disappear. When infected (septic abortion) patient presents with fever, tachycardia, offensive vaginal discharge, pelvic and abdominal pain.

Post abortal sepsis

Pyrexia in a woman who has delivered or miscarried in the previous 6 weeks may be due to puerperal or abortal sepsis and should be managed actively. Abdominal pain in addition to pyrexia is strongly suggesstive. The uterus needs evacuation. However, a patient must be administered with antibiotics preferably parenteral before evacuation.

Mild/moderate

Medicine of choice: **Amoxycillin (O)** 500mg every 8 hours for 10 days

Plus

Metronidazole (O) 400 – 500 mg every 8 hours for 10 days

Plus

Doxycline (O) 200 mg stat, then 100 mg daily for 10 days

Treatment Guidelines for severe cases

Body temperature higher than (38^0C) and marked abdominal tenderness are signs of severe post abortal sepsis

Medicine of Choice **Benzylpenicillin (IV)** 2MU every 6 hours

plus

Chloramphenicol (IV) 500 mg every 6 hours

plus

Metronidazole (O) 1 g twice daily

NOTE: If patient cannot swallow give Metronidazole (PR) 1 gm twice daily or IV/500 mg every 8 hours

Second Choice: **Ampicillin (IV) 500 mg** every 6 hours

plus

Gentamicin (IM) 80 mg every 8 hours

plus

Metronidazole (O) or (PR) 1 g twice daily

NOTE: Change to oral therapy if temperature rise is controlled
-Pelvic abscess may be suspected if after 48 hours no response, in this case laparatomy or referral may be necessary

3.3 **a) Prolonged Rupture Of Membrane (PROM)**

- Rupture of membrane before onset of labour

b) Pre-term premature rupture of membrane (PPROM)

- Rupture of membrane before term i.e. 37 completed weeks

Clinical features:

Characterized by leakage of watery fluid per vagina which can be demonstrated by performing a sterile speculum examination.

Prolonged PROM for more than 12 hrs is a risk of ascending infection which led to chorioamnionitis (injection of chorion amnion and amniotic fluid)

Treatment
PROM at term: Delivery with 24hrs
PPROM: If no sign of infection, wait for foetal maturity and give prophylaxis

Amoxyllin (0) 500mg 6hrly x 10days
OR
Erythromycin (0) 500mg 6hrly 10 days

If there are signs of infections, pyrexia, foul smelling liquor (chorioamnionitis)

Benzly penicilline (IV) 2MU every 6hrs
OR
Chloramphenicol (IV) 500mg every 6 hours

Urgent Delivery irrespective of gestational age

3.4 Prophylaxis for Caesarian Section

Immediately before operation give **Benzylpenicillin (IV)** 5MU as a single dose
plus
Chloramphenicol (IV) 1 g as single dose

NOTE – Facilitate early delivery
– Continue with antibiotics after delivery for 3-5 days

NOTE: Use of antibiotics for prophylaxis during surgery, should be evaluated from situation to situation and not generalized

3.5 Nausea and Vomiting in Pregnancy

- If vomiting is not excessive, advise to take small but frequent meals and drinks
- In persistent vomiting cases, search for other reasons e.g. UTI, Multiple or molar pregnancy,
- Otherwise give:-

Medicine of Choice: **Promethazine (O)** 25 mg at night
Chlorpheniramine (O) 4 mg at night

Second Choice (Severe cases only)
Prochlorperazine (O) 5 mg up to 3 times per day

Hyperemesis Gravidarum (Vomiting and dehydration**)**

Admit and give dextrose 5% IV plus **Promethazine (IM)** 25 mg twice daily
Or
Prochlorperazine (IM) 12.5 mg twice daily.

3.6 Anaemia During Pregnancy

Prophylaxis in antenatal Care

Ferrous sulphate (O) 200 mg twice daily
Plus
Folic acid (O) 5mg once daily.

CAUTION: Ferrous sulphate should be taken in a full stomach
Where vomiting is experienced reduce dosage to tolerable level

If patient has severe anemia in pregnancy the following clinical investigation should be done:

- Stool for ova and parasites
- Full blood count (FBC)
- Peripheral blood film for malaria parasites
- Urine for microscopy, culture and sensitivity test
- And HIV| test

3.7 Hypertension in Pregnancy

3.7.1 Essential Hypertension

This is also called primary hypertension where systolic pressure raises to 140 – 159 mmHg and/or diastolic pressure of 90 – 99 mmHg. The underlying cause of primary hypertension is not clear.

Clinical features:

High blood pressure can cause symptoms such as headache, dizziness, fatigue, and ringing in the ears. However it may cause no symptoms at all. High blood pressure can cause damage to many organs, including the brain, eyes, heart and kidneys, as well as to arteries throughout the body. If you have high blood pressure that has not been diagnosed, or that is not being treated adequately, you are at greater risk of having a heart attack, stroke, kidney failure and blindness.

Medicine of Choice: **Methyldopa (O)** 250 – 500 mg every 6-8 hours daily

3.7.2 **Pregnancy Induced hypertension (PIH)**

- Exclude UTI
- Check urine for protein
- Count this as a high risk antenatal patient

3.7.3 **Mild PIH**

Diastolic: 90 – 100 mm, Hg no proteinuria (protein in urine)

- Advice bed rest
- Weekly antenatal clinic visits
- May be given low doses of **Acetylsalicylic acid (O)** 75 mg once daily

3.7.4 **Moderate PIH**

Diastolic: 100-110 mm Hg, no proteinuria
Consider low dose of **Acetylsalicylic acid (O) 75 mg** once daily plan immediate delivery at gestation > 37 weeks.

Admit and monitor BP up to 6 times per day, and give **methyldopa (O)** 250 – 500 mg every 6-8 hours daily

3.7.5 **Severe PIH**

Diastolic>110, give **Nifedipine (**Sublingual) 10 mg

- The need for more doses indicates the urgency for delivery.

3.7.6 **Pre-Eclamptic Toxaemia (Proteinuria PIH)**

- Exclude UTI
- Check urine for protein daily
- Plan delivery at 37 weeks or before
- Consider low dose of Acetylsalicylic acid 75 mg once daily Also give:-

Hydralazine (IM) 12.5 mg
Or
Nifedipine (sublingual) 10 mg.

3.7.7 **Imminent Eclampsia**

This is proteinuria PIH characterized by visual disturbance, epigastric pain and or signs of brisk reflexes.

- Prevent convulsion magnesium sulphate (mg SO4) 4g in 100mls normal saline 8 hourly
- If diastolic pressure still > 110mmHg give antihypertensive hydralazine (im) 12.5

mg intermittently
- Nifedipine 10mg once per day/every 12 hours

3.7.8 Eclampsia (Proteinuria PIH with Fits)

Patient with pre-eclampsia developing convulsions.

Treatment guideline
- Stop convulsions by Diazepam 10-20mg iv bolus, loading dose of mgso4 4g in 20mls normal saline (IV) slowly for 10-15 minutes.
- Maintanance dose 4g mg so4 in 1000mls normal saline 8 hourly.
- In case of recurrent seizure add 2g of MgSO4 in 10mls normal saline (iv) slowly for 10 minutes
- Give antihypertensive as above
- Plan urgent delivery within 12 hour, preferable vaginal delivery amitomy and induction with assisted vaginal delivery of the 2nd stage
- Caesarean section indicated for the obstetrical Indication

NOTE: Maintain patient airway and secure IV line with a cannular.

Diabetes in Pregnancy (Gestational Diabetes)
Gestational diabetes develops in women during pregnancy because the mother's body is not able to produce enough insulin. High blood sugar levels in the mother's body are passed through the placenta to the developing baby. This can cause health problems. Gestational diabetes usually begins in the second half of pregnancy, and goes away after the baby is born. The cause of gestational diabetes is unknown. It is thought that the hormones produced during pregnancy may block the action of insulin.

Diabetic pregnant women require management before and through out pregnancy
- If possible they should be managed by specialists.
- Diabetes should be controlled by insulin and diet and not oral hypoglycaemics
- Diabetic should be advised to start insulin before conceiving
- Throughout pregnancy blood sugar should strictly be within the range of 4-6 mmol/L
- Insulin requirement will increase as pregnancy progresses:
- Labour if possible should be in a tertiary level hospital
- When labour is induced give half the usual insulin dose first and start on IV infusion of dextrose 5% at 125 ml per hour.
- Labour should be as short as possible
- Manage the patient on a sliding scale of insulin after delivery.

3.8 Heart burn in pregnancy

Magnesium trisilicate compound tablets up to 10 tablets per day

3.9 Respiratory Distress Syndrome in newborn

Clinical features:
Respiratory Distress Syndrome may occur in newborn and in premature labour before 36 weeks gestation. The following steroids can be used to prevent this.

Medicine of choice Hydrocortisone (IV) 250 mg repeat after 24 hours

Second choice Dexamethasone (IV) 12 mg, two doses at an interval of 12 hours

NOTE: If no delivery the course can be repeated after one week

CAUTION: Anaemic patients under Beta stimulants and steroids are inclined to congestive cardiac failure

3.10 Stimulation

- Myometrial stimulants should be used with great care before delivery in highly parous women
- Use in obstructed labour should be avoided
- Oxytocics are indicated for:-
  - augmentation of labour
  - Induction of labour
  - Uterine stimulation after delivery

Labour Induction: If no progress of labour is achieved give; **Oxytocin** (IV infusion) as follows:

- Initially 1 unit then 4 units in 1 litre Normal Saline at 15, 30, 60 drops per minute (dpm) until regular contractions lasting for more than 40 secondly are maintained.
- When 4 units are not enough to cause maintained contractions, and it is first pregnancy, the dose can be increased (monitor) to 16, 32 then 64 units a the litre of Normal Saline each time increasing the delivery rate through 15, 30 and 60 dpm.

Augmentation of Labour

- If the membrane is already ruptured and no labour progressing, the steps above should be followed.
- Obstructed labour could be the cause of labour failure.

3.11 Myometrial Stimulation After Delivery

Excessive bleeding after the third stage of labour is a major cause of maternal mordidity and mortaility. Post partum haemorrhage is defined as excessive bleeding from the genital tract after the third stage of labour (more than 500ml)

- Major causes are;
- Uterine atony
- Tears of the vagina/vulva
- Rarely rupture of the uterus
- Bleeding disorder (e.g coagulopathics, DIC)

In order to prevent the occurance of this condition, active management of the third stage (ATMSL) is mandatory.
This involves the injection of an oxytocic after the delivery of the foetus followed by controlled cord traction and uterine massage

Medicine of choice: **Oxytocin (IM) 10 I.U.**
Ergometrine (M) 0.25 – 0.5 mg
Misoprostol 600 microgram (mcg) orally

Misoprostol may cause mild shivering and a slight temperature rise.

Continuation of bleeding requires further investigation such as examination for tears in the genital tract, bed side clotting time.
Patient may lose significant blood after normal procedure such as episiotomy and assisted vaginal deliveries.
If bleeding continues recheck for uterine contraction, apply bimanual compression and administor normal salineand refer (IV).

NOTE: Ergometrine is not preferred as it may cause BP rise in hypertensives patients and patients with heart disease. It is unstable and may loose potency even within using time. Examine the ampoule, colour change to yellow liquid may mean it is not effective.
Store in a cool dark container and should not be used in patients known to be HIV positive.

3.12 Myometrial Relaxation

This is done to relax the uterus in order to:

- Relieve foetal distress immediately prior to caesarean section
- Stop contraction of uterine in premature labour
- Prevent uterine rupture
- Perform external cephalic version

Medicine of Choice **salbutamol (O)** 4 mg every 8 hours

NOTE: B_2-(eg salbutamol) stimulants should NEVER be used if the patient had an antepartum haemorrhage
B_2-stimulants are CONTRA-INDICATED for the following
- With severe cardiac disease
- anaemia in pregnancy

3.13 Termination of Pregnancy

Abortion is illegal in Tanzania except where there is a substantial threat to the woman's health or life in continuing the pregnancy

3.14 Pregnancy and Lactation

General Guidelines

- All medicines, if possible, should be avoided during the first trimester
- Well known drugs and their use in pregnancy and lactation, which have been documented as safe, should be preferred – AVOID new drugs
- Absence from a list of medicines not to be used in pregnancy or lactation does not guarantee safety (annex products contraindicated in pregnancy and Laction)
- During pregnancy and lactation, medicines should be prescribed only if benefit overweighs risk to the foetus or neonate.

3.15 Pelvic Inflammatory Diseases

Clinical features: Pelvic inflammatory disease (PID) occurs when there is infection in the female reproductive organs. The infection can happen as an ascending infection from the vagina, after delivery (puerperal sepsis), after an abortion (septic abortion) postmenstrual or after Dilation and Curettage (D&C) operation. The common causative organisms are *Neisseria gonorrhea*, *Chlamydia trachomatis* and *Mycoplasma hominis*. Endogenous bacteria e.g. gram-negative aerobes and anaerobes like bacteroides, aerobic and anaerobic streptococci, and *E. coli* may also cause PID. The condition can either be acute, sub-acute, chronic or acute. The main clinical features are lower abdominal pain, backache, vomiting, vaginal discharge, menstrual distrubance, dyspareunia, fever, infertility and tender pelvic masses. PID predisposes to ectopic pregnancy.

Treatment guidelines

In acute PID: give Intravenous Dextrose 5%

Ciprofloxacin (O) 500mg single dose
Doxycyline (O) 100 mg every 12 hourly for 14 days
And
Metronidazole (O) 400 – 500 mg every 8 hours for 10 days

Give an appropriate analgesic depending on the severity of the disease

Acetylsalicylic acid (O) 600 mg every 8 hours preferably after food
Or
Paracetamol (O) 500mg, 8 hourly

CAUTION: Patients on Metronidazole should not take alcohol

In chronic PID

Give an appropriate analgesic (aspirin or paracetamol) depending on the severity of the pain.

NOTE: There is no need of antibiotics

3.16 Hormonal Contraception

Oral contraceptives (oestrogen – progestogen combinaitons) are used primarily for prevention of conception. May also be used in treatment of dysfunctional uterine bleeding, dysmenorrhoea or endometriosis.

The goal of therapy in the use of these products for contraception is to provide optional prevention of pregnancy while minimizing the symptoms and long term risks associated with excess or deficiency of the oestrogen and progestogen components.

The following questions may be asked to the woman intending to start taking contraceptives before they are prescribed.

NOTE: Detailed information can be obtained from the Reproductive Health Clinic.

Check List Questions

NOTE: If the answer to All questions is NO the women may be given any oral contraceptives. If in any of the questions the answer is YES.
Consult clinician.

- History of severe leg pain or swelling of calf?
- History of sugar in urine?
- History of yellow eyes or skin?
- Severe chest pain?
- Unusual shortness of breath after working or light work?
- Severe headaches (not relieved by headache tablets)
- Bleeding and/or between periods after sexual intercourse?
- Missed a menstrual period?
- Missed a menstrual period, then started bleeding?
- Very heavy menstrual periods?
- Increased frequency of menstrual periods
- History of mental disturbances?
- Goiter or history of goiter?
- 35 years of age and over?
- Painful varicose veins?
- Had any surgical operations within the last 2 weeks?
- Normal delivery within 6 weeks?
- Received treatment for high blood pressure?
- History of epilepsy.

NOTE: Establish the age of the woman intending to use contraceptives

3.17 Oral Contraceptives (OCs)

They fall into two major categories:

a) Combined Oral contraceptives (COCs)

Oestrogen 30 – 35 micrograms (as ethinylestradiol) - "Low Dose"
Oestrogen 50 micrograms + progestogen - "High Dose"
Triphasic pills – contain phased levels which closely mimic normal cyclical hormonal acitivity

NOTE:
- Lower oestrogen dose pills cause fewer side effects than higher dose pills
- Mid-cycle spotting in patients on 30 microgram COCs can be managed by changing to 50 microgram COCs
- Menstruation on COCs will be regular, light and short

b) Progestogen Only Pills (POPs)

These contain norethisterone, or norethindrone or norgestrel or levonorgestrel. This type is suitable for lactating mothers or women with mild or moderate hypertension.

Menstrual irregularity is a common side effect.

c) Management

- Instruct women always to inform the doctor or nurse that they are on contraceptives while attending clinic or hospital.
- Women on Oral Contraceptives need regular physical check-ups including blood pressure measurement every six months e.g. if women develop depression after starting OCs.

d) Need to Withdraw COCs or POPs

- Pregnancy
- Severe headaches especially associated with visual disturbances
- Numbness or paresis of extremities
- Unexplained chest pain or shortness of breath
- Severe leg pains
- Development of any of the absolute contra-indication conditions

NOTE:

i. Medicine Reducing Effect of Oral Contraceptives

The following drugs are likely to reduce the effectiveness of OCs and a woman may become pregnant. If it is unavoidable to prescribe the following drugs, patients should be cautioned appropriately; and if possible advised to use additional methods of contraception such as condoms.

- **Hypnotic/sedatives and anti-migraine medication** such as barbiturates, chloral hydrate, diazepam, phenytoin
- **Anti acids**: Aluminium hydroxide, magnesium hydroxide, magnesium trisilicate
- **Anti-tuberculosis medicines** (rifampin)
- **Certain antibiotics:** ampicillin and other penicillins and tetracyclines
- **Antiretroviral medicines** (Nevirapine, and ritonavir

NOTE:
- For short term use of these drug, employing additional contraceptive methods may be beneficial e.g. condoms or abstaining from intercourse.
- For long term use of these drugs "High Dose" COCs – 50 micrograms should be used or other method of contraception

ii. Medicines made less Effective by Oral Contraceptives

Prescribers might consider increasing the doses of the following drugs, known with careful monitoring
- Anticonvulsant
- Antidiabetic agents
- Anticoagulants
- Antihypertensive agents (methyldopa)
- Corticosteroid
- Hypnotics, sedatives or other CNS depressants

3.17.2 Post Coital Contraception ("morning-after pill")

The method is applicable mostly after rape and unprotected sexual intercourse where pregnancy is not desired.

Within 3 days (72 hours) of unprotected sexual intercourse, give
Combined oral Contraceptive 100 microgram ethinyloestradiol and 500 micrograms levonorgestrel (2 high dose COC tablets)

Or

When this preparation is not available, use 3 tablets each containing 30-35 micrograms ethinyloetradiol and 150-250 microgram levonorgestrel (3 low dose COC tablets).
- Repeat this dose after twelve hours
- Advice to return to physician if menstruation does not occur within 3 weeks
- Give advice on contraceptive use
- Rape victims should also be given Erythromycin (O) 250 mg every 6 hours for 5 days
- Offer counseling

3.17.3 Long Term Hormonal Contraceptives

These contraceptives should be prescribed by medical doctors only or trained family planning staff.

i. Injectable Contraceptive

Medroxyprogesterone acetate injection IM 150 mg every three months.

CAUTION: Avoid use in severe hypertension and in women without proven fertility

ii. Implant Contraceptive

Levonorgestrel in six silastic capsules is implanted in the left upper arm made under local anesthesia.

Levonorgestrel is effective for five years and is recommended for women who have completed their family or not ready for sterilization or those not able to take oestrogen containing contraceptives.

Contraindications for Norplant

- Severe hypertension
- Thromboembolism
- Active liver disease
- Sickle cell anaemia
- Undiagnosed genital bleeding
- Severe headaches
- Heart failure

3.18 Antepartum Haemorrhage (APH)

Clinical features: Bleeding from the birth canal after the 28th week of gestation. Main forms are placenta praevia and abruptio placenta. Bleeding is painless in placenta praevia. Bleeding may be visible or concealed in abruptio placenta. Pain and shock in abruption placenta correspond with degree of separation.

Treatment guidelines

Expectant therapy
Allow bed rest
Blood grouping and cross-matching
Active therapy delivery if foetus viable. If a major placental separation has occurred, emergency delivery to minimize the possibility of disseminated
Intravascular coagulation
Give blood when indicated

3.19 Dysmenorrhoea

Clinical features: Dysmenorrhoea is painful menstruation. Dysmenorrhoea is present if pain prevents normal acitivity and requires medication. There are 3 types of dysmenorrhoea:
Primary (no organic cause), Secondary pathological cause e.g. PID and uterine polyposis and membranous (cast of endometrial cavity shed as a single entity (rare). Typically, in primary dysmenorrhoea pain occurs on the first day of menses, usually about the time the flow begins, but it may not be present until the second day. Nausea and vomiting, diarrhea and headache may occur.

Treatment guidelines

-Allow bed rest
-Analgesics and antispasmodics such as

Hyoscine-butylbromide 20mg 8 hourly (Adult); 10mg 8 hourly (children 6-12 yrs)

Mefenamic acid 500mg every after 8 hours

Ibuprofen 200-600 mg every 8 hours (maximum 2.4 g/day)

or

Acetylsalicylic acid 300-600 mg every 4 hours

or

Diclofenac 25 mg 2-3 times a day

Women with regular complaints can easily detect length of use during their periods (2-3 days usually sufficient). Treat the underlying condition if known

> **NOTE:** For primary dysmenorrhoea patients may be advised to start taking Ibuprofen one or two days before menses and continue for three to four days during menses to minimize painful menstruation

3.20 Dysfunctional uterine bleeding (DUB)

Abnormal uterine bleeding without pathological lesion in the uterus or lower genital tract.
Diagnosis after excluding pathology in the uterus, endometrium, cervix vagina and vulva. The physiology behind is thought to be due to anovulatory cycles and hormonal imbalance. Other factors that can change bleeding patterns include medications, excessive weight loss, obesity, stress or illness.

Treatment

(a) Hormonal therapy

Norethisterone (Primolut N) 5mg 12hourly for 10 -14 days

COC (E+P) Combined oral contraception 2-3 cycles.

(b) **NSAIDS** – e.g. Mefenamic acid 500mg every 8 hours to relieve pain

3.21 Infertility

Clinical features: This is failure to conceive after one year of regular coitus without contraception.
Primary infertility: There has never been a history of pregnancy
Secondary infertility: There is a prior history of conception and then failed to conceive.

Treatment guidelines

Emphasis should be paid to see and investigate the couple.
Referral to the specialist for infertility workup and treatment is advised.
Treatment in all cases depends upon correction of the underlying disorder(s) suspected of causing infertility whether primary or secondary.

4. CARDIOVASCULAR DISEASE CONDITIONS

4.1 Infections

4.1.1 Prophylaxis of subacute Bacterial Endocarditis

To reduce the risk of bacterial endocarditis, antibiotic prophylaxis should be given to patients with congenital heart disease; acquired valvular disease (notably rheumatic heart disease), prosthetic heart valves that undergo any of the following:

- Dental procedures
- Upper respiratory tract surgery, e.g. tonsillectomy
- Urinary tract instrumentation and surgery
- Dilatation and Curettage (D & C) in presence of infection
- Surgery through infected tissues

4.1.2 Dental and Upper Respiratory Tract Procedures

	Amoxycilin (O)
Adult	3g one hour before operative procedure.
Child	50mg/kg body weight one hour before operative procedure.

For patients allergic to penicillin group, give

	Erythromycin (O)
Adults	1.5 g one hour before operative procedure and then give 500 mg six hourly after operation, as long as necessary.
Children	20 mg/kg body weight followed by 10mg/kg body weight six hourly as long as necessary.

4.1.3 Genital-Urinary procedures

Adult	**Ampicillin (IV)** 1.5-2 g **Plus** **Gentamicin (IV**) 5mg/kg body weight
Child	**Ampicillin (IV)** 50 mg/kg body weight **Plus** **Gentamicin (IV**) 1.5-2mg/kg body weight

Both drugs should be given half an hour before the operation begins.

4.1.4 Patient with Prosthetic Valve

Adult	**Cloxacillin (IV)** 2g **Plus** **Ampicillin (IV)** 2g **Plus** **Gentamicin (IV)** 5mg/kg body weight

Child	**Cloxacillin (IV)** 50 mg/kg body weight **Plus** **Ampicillin (IV)** 50 mg/kg body weight **Plus** **Gentamicin (IV)** 1.5-2 mg/kg body weight

The above medicines should be given 30 minutes prior to procedure.

NOTE: Patients with prosthesic valve should be given warfarin in places where prothrombin time can be determined.

4.2 Rheumatic Heart Disease

Clinical features: Clinical features of the rheumatic heart disease (RHD) are closely parallel to those of acute rheumatic fever. The main site of pathology is on the valves. There may be initial stenosis, mixed mitral valve disease (both stenosis and regurgitation), mitral regurgitation due to chordal shortening, aortic stenosis and incompetence, aortic regurgitation due to aortic cusp distention, acquired tricuspid valve disease resulting in either stenosis or regurgitation. The main clinical features of rheumatic heart disease depend on the valve damaged. For example in pure mitral stenosis there is reduction in exercise tolerance, breathlessness and palpitation. In the case of aortic regurgitation, when severe, then the clinical manifestations are those of left ventricular failure.

Treatment guidelines

Prophylaxis to prevent recurrence of rheumatic fever.
A patient with rheumatic heart disease is at risk of getting recurrences of acute rheumatic fever, which may lead to further rheumatic heart disease manifestations with more valves being involved or more damage to already affected valves.

Benzathine penicillin 1.2 MU IM every three weeks for life
Treat complications which arise e.g congestive heart failure
Valvular replacement surgery is indicated for the treatment of valvular rheumatic heart disease

Anticoagulants (warfarin)

These are indicated in patient with prosthetic valves where regular determination of prothrombine time is possible.
Refer such care for prothrombine determination and warfarin administration.

4.2.1 **Rheumatic Fever**

Treatment of Acute Attack

Benzathine penicillin (IM) as a single dose

Children under 5 years	0.3 MU
Children 5-10 years	0.6 MU
Children above 10 years and adults	1.2.MU

Or

Phenoxymethylpenicillin (O)	for 10 days
Children under 5 years	125mg every six hours
Children 5-10 years	250 mg every six hours
Children above 10 years and adults	500 mg every six hours

Or

Erythromycin (O) 500mg every six hours for 10 days (penicillin allergy).

4.2.3 **Prophylaxis after Rheumatic Fever**

Prophylaxis should be given to all patients with a history of rheumatic fever and to those with heart valve lesions thought to be or rheumatic origin. When possible, prophylaxis should be continued up to 30 years of age. This may be individualized in some circumstances.

Specific situations always requiring prophylaxis **at least to 30 years** are

- High risk to Streptococcal infections
- Proved carditis in previous attacks
- Not more than 5 years since last attack.

Table: 14 Antibiotics Prophylaxis after Rheumatic Fever

Antibiotic	**Children < 12 years**	**Children > 12 years and adults**
Benzathine penicillin (IM) Or Phenoxymethylpenicillin (O)	1.2.MU monthly 125-250 mg twice daily	2.4 MU monthly 250 mg twice daily
Penicillin allergy		
Erythromycin (O)	125-250 mg twice daily	250 mg twice daily

NOTE: Prophylaxis is given to prevent recurrence of rheumatic fever, and is not enough to protect against infective endocarditis. Phenoxymethylpenicillin and Erythromycin are less effective

4.3 Treatment of Acute Arthritis and Carditis

Acetylsalicylic acid (O) 100 mg/kg/24 hrs in 4-6 divided doses for both adults and children dose to be reduced if tinnitus or other toxic symptoms are observed.

> **NOTE:** Acetylsalicylic acid should be continued until fever, all signs of joint inflammation and the ESR have returned to normal, and then reduce gradually over two weeks. If symptoms recur, full doses should be restarted

In severe carditis with development of increasing heart failure or failure of response to acetylsalicylic acid, give: **Prednisolone (O)** 1.5 mg/kg/24 hrs

Gradual reduction and discontinuation of prednisolone may be started after at least 3-4 weeks when there has been a substantial reduction in clinical disease activity; Acetylsalicylic acid should be continued as above.

> **NOTE:** Heart failure should be managed in the usual way. All patients with carditis must be kept on strict bed rest until all evidence of active carditis has resolved and the ESR has returned to normal. Activity should then be gradually increased.

4.4 Hypertension

Clinical features: Hypertension is elevation of blood pressure (B.P) noted on at least three separate occasions. The disease processes associated with high arterial pressure are the consequences of the damage caused to the heart or to the arterial wall. The consequences of the actual level of pressure in a given person will depend not only on the measured level but also upon certain other 'risk' factors such as age, race, sex, glucose intolerance, cholesterol and smoking habit hypertension. In over 80% of hypertensive patients no specific cause is detectable, hence the name 'primary hypertension.' Hypertension can be secondary to conditions like coarctation of the aorta, renal disease, endocrine disease, EPH gestosis and due to the contraceptive pill. Hypertension is symptomless in the majority of patients. Because hypertension may result in secondary organ damage and reduced life span it should be evaluated and treated appropriately.

Classification

Hypertension is categorized according to the level of the diastolic blood pressure (DBP) and systolic as follows:

	Diastolic	**Systolic**
Mild hypertension:	DBP 90 – 99 mm Hg	140-159mm Hg
Moderate hypertension:	DBP 100 – 109 mm Hg	100-180mmHg
Severe hypertension:	DBP 110 mm Hg or above	180mm Hg and above
	Lower levels of blood pressure are recommended for diabetics	**below 130/80 mmHg**
Malignant hypertension:	Severe hypertension associated with retinal exudates, haemorrhages or papilloedema	

Diagnosis

Blood pressure may rise transiently as a result of stress e.g. when consulting a clinician (white coat hypertension). Therefore do not diagnose hypertension on the basis of a single reading but confirm on three separate occasions. Readings should be carefully made and measured to the nearest 2mm Hg phase V diastolic (disappearance of sounds).

A special large cuff is needed to accurately measure BP in those in whom the sphygmomanometer bladder does not encircle the upper arm.

Points to Note

- Antihypertensive treatment is required for life in truly hypertensive patients
- Hypertension often has no symptoms: the aim of treatment is to lower the risk of end-organ damage, especially stroke
- Compliance is the most important determinant of blood pressure control. Explanation, education and minimizing side-effects of drugs are important
- Extra care should be taken with antihypertensive drugs administered to those over 60 years of age, because of increased side-effects. Lower doses are needed
- Recommended an alternative contraceptive method for women using oestrogen containing oral contraceptive
- Evidence of end organ damage, i.e. cardiomegaly, proteinuria or uraemia, retinopathy or evidence of stroke, dictates immediate treatment
- Patients should be reviewed every 1-3 months, and more often if necessary
- Urgent blood pressure reduction may precipitate stroke or blindness. It is only indicated in those patients with hypertensive crisis (see below)
- The aim of treatment is to bring the diastolic BP below 90 mm Hg, without unacceptable side effects

Management

Change in Life style

- Regular exercises and weight reduction for overweight patients

These non-pharmacological measures should be applied in all hypertensive patients:

- Dietary management
- Regular exercise
- Relaxation to calm down stress
- Discontinuation of smoking
- Avoidance of stress

4.4.1 Mild Hypertension

Patients with mild hypertension generally can be treated by change in life–style alone but consider total risk profile of a patient.

In diabetics for examples medical treatment preferably with a converting enzyme

inhibitor (**captopril, enalapril**) is recommended, to protect the kidney.

4.4.2 Moderate/Severe Hypertension

Consider drug therapy only in patients with average DBP over 100 mm Hg checked on at least 3 occasions over 6 months in spite of changed lifestyle. Drug therapy is indicated for all those with end organ damage. A step up approach is recommended for choice of antihypertensive drugs.

Recommended Step-up Care

Step One
Bendrofluazide (O) 2.5 – 5mg daily
Or
Hydrochlorthiazide (O) 12.5-25 mg once daily.

Step Two
Hydrochlorthiazide (O) 25 mg daily
Plus
Methyldopa (O) 250 mg two to three times a day
Or
Propranolol (O) 160-320 mg once daily
Or
Atenolol 50 – 100mg once daily
Or
Nifedipine modified release 20-30mg once daily

Step Three Captopril (O) 12.5 – 25 mg every 8 hours

4.5 Cardiac failure

Clinical features: It is a state in which an abnormality of cardiac function is responsible for the failure of the heart to pump sufficient blood to meet tissue requirement.

Dyspnoea, orthopnea, paroxysmal nocturnal dyspnea, basal crepitation, congestive hepatomegaly and peripheral oedema. The principles of therapy are removal of the precipitating cause, e.g. pneumonia, correction of the underlying problem e.g. hypertension and control of the congestive heart failure state.

NOTE: Constrictive pericarditis, liver and renal failure should be excluded before the diagnosis of cardiac failure is made.

- Precipitation factors should be sought and treated e.g.:
- Hypertension
  - Infections (especially sub acute bacterial endocarditis) arrhythmias
  - Electrolyte imbalance
  - Anaemia
  - Drug overdose especially digoxin
  - Pulmonary embolism
  - Thyrotoxicosis
- Daily weights and fluid balance (intake/output should be recorded as a simple measure of response to treatment. Weight loss should not exceed 1 kg per day
- Restrict salt in diet
- Encourage bed rest
- Check BP daily

4.5.1 Mild to Moderate and Severe Chronic Heart/Cardiac Failure

For most patients in sinus rhythm the following regimen is adequate:

Hydrochlorthiazide (O) 25 – 50 mg once daily, if necessary increase up to 100mg once daily

NOTE: Salt restriction and bed rest must be encouraged

If no response add **Hydralazine (O)** 25 mg twice a day increasing to a maximum of 50 mg two to three times a day.

BP should be monitored continuously.

For oedematous and bed ridden patients **Heparin (SC)** 5000 units 8 hourly day

NOTE: Duration of treatment will depend on response of the patient

4.5.2 Acute Pulmonary Oedema

Prop up in bed **Oxygen** 40% by mask (1-2 litres per minute)
Frusemide (IV) 40 – 80 mg once daily
Morphine (IV) 5-10 mg slowly over 1-2 minutes

If no response, recheck your diagnosis, then repeat with higher dose of frusemide. If patient continues to deteriorate despite repeated doses of Frusemide then Hydralazine (IV) may be life saving (see dosage under hypertensive crisis). Venescecting 1 unit of blood may also be helpful.

Use and indications for Digoxin

Digoxin toxicity is a very common problem especially in the elderly and pediatric age groups. Absolute indication is fast atrial fibrillation

To digitalise (check serum potassium levels before starting) indicate recommeded serum potassium levels

Digoxin (O)

Adults Average dose 500 mcg (0.5mg) stat followed by 125-250 mcg (0.125 – 0.25mg) once daily

Children 10 mcg/kg/24 hours (once daily); However when starting treatment give this dose 8 hourly in the first 24 hours then continue with one dose daily.

4.6 Angina Pectoris

Clinical features: Angina pectoris is an episodic clinical syndrome resulting from transient myocardial ischaemia which is caused by occlusive disease in the coronary arteries usually secondary to atheromas but occasionally due to syphilitic coronary ostial stenosis, coronary embolism or congenital abnormalities in the coronary vessels. The presenting clinical features are a sense of oppression or tightness in the middle of chest which is induced by exercise and is relieved by rest. The oppression or tightness lasts for a few minutes. Prinz-metal variety of angina is experienced without exertion.

Change in lifestyle

Minimize risk factors with particular attention to:

- Cessation of smoking
- Weight reduction if obese
- Control of hypertension

Other factors which should be considered and addressed where appropriate include: high blood cholesterol, stressful lifestyle and excessive alcohol intake. Regular moderate exercises should be encouraged.

4.6.1 Stable Angina (Infrequent Attacks)

Acetylsalicylic acid (O) 150 mg once daily; (contraindicated in peptic ulcers)

Plus

Glyceryl trinitrate) (sublingual) 500 micrograms as required (no more than 3 tablets every 15 minutes).

CAUTION: Acetylsalycilic acid (Aspirin) is contraindicated in patients with peptic ulcers

NOTE: Glyceryl trinitrate deteriorates on storage. It is recommended that tablets be kept in original container and not more than 3 months after opening. Do not leave the container open for a long time, close immediately after use

Unstable Angina (Frequent Attacks)

Drug of choice: Isosorbide dinitrate (O) 30-120 mg/day in 12 hourly.
If no response, add:

Second line **Propranolol (O) 40-80 mg** every 8 hours
Or
Atenolol (O) 50 – 100 mg once daily

Atenolol is preferred for diabetics and asthmatics. If there is no response to the combination of nitrates and beta-blockers change to:

Nifedipine (O) 10-20 mg 8 hourly

NOTE: Nifedipine may replace or be cautiously combined with beta-blokers. If pain continues inspite of above treatment refer patient for further management.

4.7 Myocardial Infarction (MI)

Clinical features: It is ischemic necrosis of the heart muscle due to occlusion of coronary arteries by thrombus or sub-intimal hemorrhage at the site of atheromatous narrowing. The cardinal symptom of MI is pain but breathlessness, vomiting and extreme tiredness and syncope may be present. The pain occurs in the same sites as for angina pectoris but is usually more severe and lasts longer.

Treatment guidelines

The main immediate needs are for the relief of pain and prevention or treatment of arrhythmias and other complications
Acetylsalicylic acid 150 to 300mg mg start
Oxygen should be given
Morphine sulphate (IV) 2-4 mg every 5 minutes until pain subsides
Plus
Glyceryl trinitrate 500mcg sublingual for prophylasis
Heparin (IV) 5000 IU, 8 hourly in the acute phase and
Then
Warfarin (O) 5-10mg in 24 hours

General Measures

- Bed rest
- Oxygen administration
- Set up an IV line (dextrose 5%)

NOTE: Avoid IM injection where possible since this interferes with the measurement of cardiac enzymes

If necessary, give oral antiemetic: Metoclopropamide 10mg; 8 hourly

NOTE: Thrombolytic/Anticoagulant therapy is only indicated in patients with infarcts of less than 6 hours duration

Prochlorperazine (O) 5 mg every 4-6 hours when required
Streptokinase (IV) 1, 500, 000 IU intravenous in 100 ml normal saline or dextrose 5% over 1 hour, to be preceded by hydrocortisome (IV) **100 mg as a single dose**

Plus

Heparin (IV) 20,000-30,000 IU per day in divided doses for 48 hours. To be commenced 6 hours after streptokinase administration

Plus

Acetylsalicylic acid (O) 150 mg once daily

CAUTION:

- Do Not give digoxin in acute infarction unless there is a supraventricular arrhythmias which requires it
- DO NOT use inotropic agents such as isoprenaline, glucagon or adrenaline, as they may be productive and cause an extension of the infarction indefinitely

4.7.1 Left Ventricular (Pump) failure

Treated in the normal way (see cardiac failure).

4.7.2 Arrhythmias

Bradycardia
Sinus Bradycardia
Post-infarction:

Atropine (IV) 0.6 mg to maintain pulse above 50 per minute

If chronic (sick sinus syndrome) patient requires pacemaker – refer to referral Hospital

NOTE: Post-infarction angina is treated as for angina pectoris.

4.7.3 Tachycardia

- **Atrial fibrillation**

Direct current (D&C) cardioversion

> **CAUTION**: If patient is on digoxin avoid it if there is mitral stenosis. Digoxin therapy should be withdrawn 36 hrs before electric cardioversion.
> Anticoagulants should be provided after D&C cardioversion for 4 weeks.

- **Supraventricular Tachycardia**

Consider D&C cardioversion if patient distressed.
Carotid sinus massage/valve manoeuvre
Verapamil (IV bolus) 5-10 mg

Repeat at 5 minute intervals until tachycardia controlled; max 1 g.

> **CAUTION**: Verapamil with B-blocker combinations are dangerous. Verapamil with digoxin combinations shoulde be used with caution.

- **Ventricular tachycardia**

Consider D&C cardioversion if patient distressed

Lignocaine (IV) 100 – 200 mg followed by infusion 2-4 mg per minute for 12-24 hours

Or

Amiodarone 200-400mg daily

> **CAUTION**: Ensure Potassium ion>3.5 mmol/1 in all arrhythmias

4.7.4 Rehabilitation

The period of bed rest, rehabilitation, and management varies in individual cases; precipitating factors should be avoided, such as smoking, high cholesterol diet, stress, and thrombogenic agents such as oestrogen.

4.7.5 Prevention of Re-infection

Acetylsalicylic acid (O) 15**0** mg daily.

The addition of B blockers may be beneficial:

Propranolol (O) 40 – 80 mg twice daily

Or

Atenolol (O) 50 – 100 mg once daily.
Plus **Simvastatin** 20mg at night

5. MALARIA

Clinical features:

Malaria is an acute disease. Patients usually present with fever, chills and profuse sweating. Howver, an individual with malaria infection may be completely asymptomatic. The clinical features of malaria vary from mild to severe, according to the species of the parasite present, the patient's state of immunity, the intensity of the infection and the presence of accompanying conditions such as malnutrition, anaemia and other diseases. The above signs and symptoms are not specific for malaria and can be found in other disease conditions. Therefore, it is always necessary to find out other causes of illness.

Where possible, laboratory investigations are mandatory. Laboratory tests should be interpreted in conjunction with clinical findings. Urgent laboratory investigations should be made available for all patients admitted with severe malaria. Since parasite-based diagnosis is important, rapid diagnostic tests (RDTs) may be an alternative or complement to microscopy

The management of a patient with malaria will be determined by the clinical presentation and the diagnosis of either uncomplicated or severe disease.

The objectives of treatment of uncomplicated malaria are:

- ***To provide rapid and long lasting clinical and parasitological cure***
- ***To reduce morbidity including malaria related anaemia***
- ***To halt the progression of simple disease into severe and potentially fatal disease***

Since the progression towards severe and fatal disease is rapid, especially in children under five years of age, it is recommended that diagnosis and treatment of uncomplicated malaria should be done within 24 hours from the onset of symptoms.

5.1 **Treatment of Uncomplicated Malaria**
First line: Artemether Lumefantrine (ALu).

Dosage regimen

Table 15: Dosage of Artemether 20mg & Lumefantrine 120mg (ALu) tablets

Weight (Kg)	**Age**	**Day 1**		**Day 2**		**Day 3**	
	Dose	1st	2nd	3rd	4th	5th	6th
	Hours	0	8	24	36	48	60
Kg	Age	Tab	tab	tab	tab	Tab	tab
5 – 14	3 months up to 3 years	1	1	1	1	1	1
15 – 24	3 years up to 8 years	2	2	2	2	2	2
25 – 34	8 years up to 12 years	3	3	3	3	3	3
35 and above	12 years and above	4	4	4	4	4	4

The first dose should be given as DOT; the second dose should strictly be given after 8 hours; subsequent doses could be given twice daily (morning-evening) in the second and third day of treatment until completion of 6 doses. Third dose should be given 24hours after the 1st dose followed by the treatment Internal of 12hours until completion of 6 doses.

NOTE: ALu is not recommended for

- **Infants below 5kg body weight**: Malaria is quite uncommon in infants below 2 months of age (approximately below 5 kg). Since ALu is currently not recommended for infant below 5kg body weight, quinine is the drug of choice in this category
- **First trimester of pregnancy**: Presently, Artemisinin derivatives cannot be recommended for treatment of malaria in the first trimester of pregnancy. During the first trimester of pregnancy quinine should be used as drug of choice for treatment of uncomplicated malaria. During the second and third trimesters of pregnancy Artemether-Lumefantrine should be used as drug of choice for treatment of uncomplicated malaria
- **Breast feeding mother whose infant is below 5kg body weight:** ALU passes through milk. Safe of drug at this stage not known Quinine is drug of choice at this category.

As far as possible malaria cases should be followed up on the third day if symptoms persist or immediately if the condition worsens. Health workers should know where they could refer cases that fail to respond to the recommended drug regimen for further investigations and appropriate management

Where a patient returns between 4 to 14 days after treatment with ALu complaining of continued symptoms of malaria, non-response should be considered and the following recommendations followed after a full history and examination:

- Where laboratory facilities are not available and malaria is still suspected, treatment with Quinine should be started immediately with strict follow up
- Where laboratory facilities are available, a blood smear (and not RDT) should be examined. If parasites are found treatment with Quinine should be started and treatment failure recorded. If parasites are not found other causes for the symptoms should be sought and treated accordingly

Second line for uncomplicated malaria: Quinine (O)

Adults	600 mg (salt) 8 hourly for 7 days
Children	10mg/kg (salt) 8 hourly for 7 days

CAUTION: Quinine may have side effects even at this dosage tinnitus, muffled hearing, sometimes vertigo or dizziness. These side effects disappear a few days after completion of the course. Hypotension and hypoglycaemia can appear especially if injected rapidly by the intravenous route.

5.2 Treatment of Complicated Malaria

Severe *Plasmodium falciparum* malaria is a medical emergency. Delay in diagnosis and provision of appropriate treatment may lead to serious complications and even death. In Tanzania the commonest presentations of severe malaria are severe anaemia and cerebral malaria.

NOTE: It is important that therapy is initiated without delay at a health facility in accordance with treatment guidelines

Where **facilities for administration of IV quinine are not available** management should include

- Early diagnosis of severe malaria based upon a complete history, physical examination and where possible, blood smear/rapid diagnostic test (RDT) examination for malaria parasites. Taking and reporting of blood smear must not be allowed to delay treatment unduly.
- Provision of pre-referral treatment with intra-muscular quinine and
- Immediate referral with clinical summary, to the nearest health care facility where resources for the continuing care of patients with severe malaria are available

(a) Quinine Administration (i.m.)

Dilution of Quinine Dihydrochloride injection (300 mg/ml) for intra-muscular use: dose of 10 mg of salt/kg bodyweight (not exceeding a maximum dose of 600mg). Quinine should be diluted four times in water for injection to a concentration of 60 mg/ml. This dilution will minimize the risk of sterile abscess formation. The calculated dose should be divided into two halves and then administered by deep intra-muscular injection preferably into the mid anterolateral aspect of the thigh (one

injection on each side). Preferably the dose should be calculated for each single patient according to the body weight. Table below is given for guidance

Table 16: Dilution schedule for intra-muscular Quinine administration (Dose = 10 mg/kg of body weight)

Age (years)	Weight (Kg)	Volume of undiluted Quinine (300 mg/ml)	Volume of diluent (to add to each dose)	Total volume of diluted Quinine (60 mg/ml)
2 up to 4 months	4 up to 6	0.2 ml	0.8 ml	1.0 ml
4 up to 9 months	6 up to 8	0.3 ml	1.2 ml	1.5 ml
9 up to 12 months	8 up to 10	0.4 ml	1.6 ml	2.0 ml
12 months up to 3yrs	10 up to 14	0.5 ml	2.0 ml	2.5 ml
3 up to 5	15 up to 19	0.6 ml	2.4 ml	3.0 ml
5 up to 8	19 up to 25	0.7 ml	2.8 ml	3.5 ml
8 up to 12	25 up to 35	1.0 ml	4.0 ml	5.0 ml
12 up to 14	35 up to 50	1.4 ml	5.6 ml	7.0 ml
14 up to 16	50 up to 60	1.8 ml	7.2 ml	9.0 ml
16 and above	60 and above	2.0 ml	8.0 ml	10.0 ml

Where **facilities for administration of IV quinine are available** management should include:

- Early diagnosis of severe malaria based upon a complete history, physical examination and blood smear/RDT for malaria parasites. Taking and reporting of blood smear must not be allowed to delay treatment unduly
- Provision of appropriate treatment with intra-venous Quinine
- Treatment of hypoglycaemia. Hypoglycaemia remains a major problem in the management of severe malaria especially in young children and pregnant women. It should be deliberately looked for and treated accordingly.
- Referral with clinical summary to the nearest hospital when clinical need dictates (e.g. blood transfusion or intensive care)

(b) Quinine (i.v. infusion)

Quinine dose: 10 mg/kg body weight of salt, to be diluted in 5-10 ml/kg body weight of 5% Dextrose or dextrose-saline and infused over 4 hours and repeated every 8 hours. Infusions should be discontinued as soon as the patient is able to take oral medication. Patients should be properly instructed to complete the 7-day treatment with quinine tablets or, alternatively, a full course of ALu may be administered to complete treatment

The **drop rate** for quinine IV infusion is calculated as follows:

Drop rate per minute = ***amount of fluid to be infused (in ml) x 20 (drop factor)***

time period to be infused (in minutes)

The table below is given for easier calculation:

Table 17: Dilution schedule and drop rate for intravenous Quinine administration

Age (years)	Weight(kg)	Quinine dose	Volume of undiluted quinine solution (300mg/ml)	Amount of fluid to be infused (in 4 hours)	Drop rate per minute
2 up to 4 months	4 up to 6	60 mg	0.2 ml	50 ml	4 drops
4 up to 9 months	6 up to 8	90 mg	0.3 ml	100 ml	8 drops
9 up to 12months	8 up to 10	120 mg	0.4 ml	100 ml	8 drops
12 up to 3yrs	10 up to 14	150 mg	0.5 ml	100 ml	8 drops
3 up to 5	15 up to 19	180 mg	0.6 ml	150 ml	13 drops
5 up to 8	19 up to 25	210 mg	0.7 ml	200 ml	17 drops
8 up to 12	25 up to 36	300 mg	1.0 ml	250 ml	21 drops
12 up to 14	36 up to 50	420 mg	1.4 ml	350 ml	30 drops
14 up to 16	50 up to 60	540 mg	1.8 ml	500 ml	42 drops
16 and above	60 and above	600 mg	2.0 ml	500 ml	42 drops

CAUTION:

- The initial dose should be halved if patient had received quinine, quinidine or mefloquine during the previous 12 – 24 hours.
- Maintenance dose should be reduced 7 mg/kg body weight in patients with impaired renal function
- Pulse and blood pressure should be closely monitored during administration
- Direct I.V injection should NOT be given. Hypoglycaemia may occur after I.V administration of Quinine

(c) Non response to Quinine therapy

Patients with Malaria who have not responded to quinine therapy should be given parenteral Artemether.

Dose: 3.2 mg/kg Stat IM followed by 1.6 mg/kg IM daily for 6 days

General measure for severe malaria treatment

- **Coma** (cerebral malaria): maintain airway, nurse on side, exclude other causes of coma (e.g. hypoglycaemia, bacteria meningitis)
- **Hyperpyrexia**: fanning, paracetamol
- **Convulsions**: treat as directed in section … (CNS disorders).
- **Hypoglycaemia**: urgent and repeated blood glucose screening;
- In children: give 5 mls/kg of 10% dextrose OR 2.5 mls/kg of 25% dextrose as bolus; if 50% dextrose solution is available, it should be diluted to make 25% by adding an equal volume of water for injection or normal saline
- In adults: give 125 mls of 10% dextrose OR 50 mls of 25% dextrose dextrose as bolus
- Where dextrose is not available, sugar water should be prepared by mixing 20 gm of sugar (4-level tea spoons) with 200 ml of clean water. 50 ml of this solution is given ORALLY or by naso-gastric tube if unconscious
- **Severe anaemia**: transfusion of packed cells if Hb equal or less than 4 g/dl and/or signs of heart failure and/or signs of respiratory distress
- **Acute pulmonary oedema**: review fluid balance and run patient on " dry side" but avoiding inadequate perfusion of kidneys; set up Central Venous pressure (CVP) line, give oxygen. Intubation/ventilation may be necessary
- **Acute renal failure**: exclude pre-renal causes, check fluid balance and urinary sodium. If adequately hydrated (CVP>5cm) try diuretics. Haemodialysis / haemofiltration should be started early in established renal failure.

5.3 Management of malaria in pregnancy

Malaria is an important cause of morbidity and mortality for the pregnant woman, the foetus and the newborn. The effects of malaria in pregnancy are related to the malaria endemicity, with abortion more common in areas of low endemicity and intrauterine growth retardation more common in areas of high endemicity. Early diagnosis and effective case management of malaria illness in pregnant women is crucial in preventing the progression of uncomplicated malaria to severe disease and death.

(a) Management of uncomplicated malaria

During history taking and physical examination, it is particularly important to elicit signs and symptoms of severe malaria. Whenever malaria is suspected, laboratory confirmation of malaria parasites should be performed if possible. If laboratory facilities are not available, treatment should be started on the basis of clinical presentation. If a laboratory is present, a negative result does not rule out malaria. RDTs have an added value, as they can be positive even if parasites are hidden in the placenta.

Quinine is safe in pregnancy. In therapeutic doses it does not induce labour. Uterine contractions and foetal distress with the use of quinine may be attributable to fever and

effects of malaria disease.

Presently, Artemisinin derivatives cannot be recommended for treatment of malaria in the first trimester of pregnancy. However, they should not be withheld if treatment is considered to be life saving for the mother and other antimalarial are considered to be unsuitable. Artemether-lumefantrine (ALu) is not recommended during pregnancy in the first trimester.

During the first trimester of pregnancy quinine should be used as drug of choice for treatment of uncomplicated malaria.
During the second and third trimesters of pregnancy Artemether-Lumefantrine should be used as drug of choice for treatment of uncomplicated malaria

(b) Management of severe malaria in pregnancy

Pregnant women infected with malaria are more susceptible to develop severe malaria. They commonly present with one or more of the following signs/symptoms: high fever, hyperparasitemia, low blood sugar, severe haemolytic anaemia, cerebral malaria, pulmonary oedema

The management of severe malaria in pregnant women does not differ from the management of severe malaria in other adult patients. The drug of choice for treatment of severe malaria is **intravenous quinine**. The dose is 10mg quinine dihydrochloride salt/kg body weight given by infusion in 5% dextrose over four hours, repeated every eight hours. Infusion should be discontinued as soon as the patient is able to take medication orally.

The risk of quinine induced hypoglycaemia is greater in pregnant than non-pregnant women. Blood sugar should be monitored regularly and if falls below 2.5 mmol/L (< 45 mg/dl) give IV 10% or 25% dextrose. While the patient is on IV Quinine treatment, pay particular attention to the feeding of the patient.

5.4 Intermittent preventive treatment (IPT)

The drug of choice for IPT is sulfadoxine/Pyrimethamine (SP)

SP remains the drug of choice for IPT even though it is no longer the first line drug for malaria treatment. This is because the aim of IPT is to prevent the worst effects of infection, rather than to cure a potentially life threatening illness. As such, lower efficacy antimalaria is acceptable for IPT than for curative purposes. It is particularly important that drugs used in pregnancy are known to be safe. It is also likely that drugs with a long half-life are the most effective when used as IPT

The first IPT dose is administered between 20-24 weeks of gestational age. The second IPT dose should be administered at 28 – 32 weeks.

NOTE: IPT should be administered as direct observed treatment (DOT) during an antenatal care visit

6. SKIN DISEASE CONDITIONS

6.1.1 Bacteria Pyrogenic Skin Infection

Clinical features: Bacterial skin infections can be either impetigo, erysipelas or recurrent boils. All these are caused by either staphylococus alone or together with streptococcus but rarely streptococus alone. There are other non-bacterial skin infecitions e.g. viral (warts, herpes simplex, herpes zoster and varicella, kaposis varicelliform eruption), fungal (candidiasis, ringworm and tinea vesicolor), skin infestations (scabies and pediculosis)

6.1.2 Impetigo

A superficial bacterial infection causing rapidly spereading blisters and pustules. It occurs commonly in children, usually starting on the face, especially around the mouth or nose. Often due to *Staphylococcus aureus*.

Keep infected areas clean and prevent spread to others [(care with towels, clothes, bedding; change frequently)

Bath affected parts/soak off the crusts with:

Cetrimide or chlorohexidine

Or

Simply with soap and water.

If severe, or systematic symptoms are present (e.g. Pyrexia) add an oral antibiotic.

Systemic

Medicine of Choice	**Flucloxacillin (O)** for 7 – 10 days
Adults	250 – 500mg four times daily (every 6 hours)
Children	50 – 100 mg/kg/24hrs every hours in equal doses.
	or
	Erythromycin (O) for 7-10 days
Adult	250 – 500mg every 6 hours
Children	25-50mg/kg/every 6 hours in a day

Topical Mupirocin ointment 2% 12 hourly

NOTE: For *S. aureus* erythromycin or Cloxacillin are preferable as they are likely to be effective against these organisms.

6.1.3 Folliculitis

Superficial infection causing small pustules, each localized around a hair. Deep follicular inflammation often occurs in the bearded areas of the face (Sycosis barbae).

Treatment:

- Suspected irritants should be avoided
- Use of suitable disinfecting and cleansing agents should be encouraged
- Apropriate anti-infective skin preparations (Neomycin sulphate, gentamicin oxytetracycline cream/ointment or mupirocin ointment 2% can be used.

6.1.3 Furunculosis

Painful boil most frequently caused by Staphylococcus aureus. The skin around becomes red and hot. Usually resolves itself, but improved by placing frequent hot compresses over the boil until it breaks.

In a healthy person, review after 2 days, if not improving consider surgical incision and drainage.

> **NOTE:** For If the boil causes swollen lymph nodes and fever, consider systemic antibiotics

Drug of Choice	**Flucloxacillin (O)** for 5 – 7 days
	Or
Second Choice	**Erythromycin (O)** for 5-7 days
Adult:	250 – 500mg every 6 hours
Children:	25 – 50 mg / kg every after 6 hours

6.1.4 Erysipelas

A superficial cellulitis with lymphatic vessel involvment, due to streptococcal infeciton.

Begins as a small break in the skin or umbilical stump (infants). The area affected has a growing redness, accompanied by high fever and pains. Responds to oral penicillin.

Medicine of choice	**Phenoxymethylpenicillin (O)** for 5-7 days
	Adults: 250 – 500mg every 6 hours
	Children: 25mg/kg/every 6 hours in a day

> **NOTE:**
>
> - Starting with benzylpenicillin injection offers no advantage
> - Erysipelas has tendency to recur in the same area, especially if there are predisposing factors such as chronic lymphatic oedema. In recureent episodes, increase duration of antibiotic to 10-14 days
> - Bed rest, elevate the affected part and potassium permanganate or topical Mupirocin ointment 2% compresses may be beneficial

6.1.5 Acute Cellulitis

Inflammation of the deeper, subscutaneous tissue most commonly caused by streptococci or staphylococci

Acute cellulitis should be differentiated from erysipelas as follows:

- Raised, sharply demarcated margins from uninvolved skin erysipelas;
- Indistinct borders – acute cellulitis

Acute cellulitis can be serious if not treated early (spreads through lymphatics and bloodstream). Give antibiotics:

Medicine of Choice	**Flucloxacillin (O)** for 5-7 days
Adults:	250 – 500mg every 6 hours
Children:	50 - 100mg/kg/every 6 hours in a day
Second Choice	**Erythromycin (O)** for 5-7 days
Adults:	250 – 500mg every 6 hours
Children:	25 - 50mg/kg/every 6 hours in a day

6.1.6 Acne

Clinical features: Comedones, papulopustules and eventually nodular lesions on the face, chest and back.

Management

- Seek underlying cause e.g. over use of oils on skin, stress, anticonvulsant drugs etc.
- Encourage a healthy lifestyle – exercise, sunshine, diet, etc
- Use ordinary soap and water 2-3 times a day (harsh antibacterial cleansers or iodine-containing preparations may aggravate the acne)

In cases with many pustules, use:

Benzoyl peroxide 5% gel topically at night.

In severe cases of nodular acne, treat with oral antibiotics

Doxycycline (O) 100 mg twice daily for one month, then 100 mg once daily. Continue until condition has improved; this may take 2-4 months. The patient should be properly counselled.

Alternative for specialist use only: **Tretinoin acid (**topically) once daily at night.

NOTE:	The acne may initially worsen, if too irritant, use every second or third night. Patients should be encouraged to persist with treatment.

6.1.7 Paronychia

Painful red swellings of the nail folds which may be due to bacteria or yeast.

Acute Paronychia

Tenderness and presence of pus indicates the need for systemic antibiotics

Medicine of choice	**Phenoxymethylpenicillin (O)** for 5-7 days
Adults:	250 – 500mg every 6 hours
Children:	25mg/kg/every 6 hours in a day

Second choice	**Flucloxacillin (O)** for 5-7 days
Adults:	250 – 500mg every 6 hours
Children:	25 - 50mg/kg/every 6 hours in a day

Chronic Paronychia

Often fungal, due to candida. Avoid excessive contact with water, protect from trauma and apply:

Miconazole or Clotrimazole cream, apply twice daily

Treat secondary infection with antibiotics as above

NOTE: For both acute and chronic paronychia, incision and drainage may be needed

6.2 SKIN FUNGAL INFECTION

6.2.1 Dermatophytosis (Ringworm)

Clinical features: It is a chronic fungal infection of the skin, hair or nails. Clinical features depend on site of infection and species of infecting fungus. The types of fungus and site are shown below. Ringworm on hairs is shown by loss of hair, itching and pustules. On the skin there is a colour change.

Treatment

6.2.2 Corporis (Body Ringworm)

Round, expanding lesions with white, dust-like scales and distinct borders on the body or face.

Responds to any of the topical antifungal agents

Medicine of choice:	**Compound benzoic acid** (Whitfield ointment) applied two to three times a day for up to 4 weeks.

Second choice: Clotrimazole cream 1% apply thinly three times a day, continue for 5 to 7 days after clearing of symptoms.

Or

Miconazole cream 2%, apply thinly two to three time a day. Continue for 5-7 days after clearing of symptoms

6.2.3 Tinea Capitis (Scalp Ringworm)

In this case, the fungus has grown down into the hair follicle. Topical treatment is unlikely to be effective. Treat with:

Griseofulvin (O) for more than 6 weeks

Adults 500mg once daily
Children 10mg/kg once daily

NOTE: Do not crush the tablet (micronised tablet)

6.2.4 Tinea Vesicolor (Pityriasis Versicolor)

For common fungal infection caused by a yeast. hypopigmented patches of varying size on the chest, back arms and occasionally neck and face, no systemic treatment is required. Apply:

Whitfield ointment, miconazole, clotrimazole, ketoconazole cream or ointment
Treat as Tinea corporis for a longer period
Continue with treatment 2 weeks after the systmptons has diappeared.

6.2.5 Tinea Pedis (Athlete's Foot)

This is a very common fungal infection and is often the source of infection at other sites.

Treat any bacterial super infection first:

First choice Whitefield lotion apply for 4 weeks

Second choice If fails to respond,

Miconazole cream 2% or Tolnaftate 1% solution

Or

Clotrimazole cream 1% / powder for 4 weeks

If the above medication not responding use Griseofulvin as above.

ADVISE: Frequent change of socks/footwear, use of cotton socks, thorough drying between toes after bathing, separating the opposing skin surfaces (e.g. with a piece of gauze), will prevent infection and speed up healing.

6.3 OTHER FUNGAL DISEASE

6.3.1 Candidiasis

Clinical features: It is caused mainly by candida albicans. Clinical feature depend on the site of infection. Thus the infection of the skin (cutaneous candidiasis) is characteerized by red, itchy lesions often found in the folds and on the buttocks of babies. Infection of the nails gives a swollen and painful nail bed which may discharge pus and is made worse by contact with water. There may be destruction of the nail. Vulvae-vaginal Candidiasis is common in women on the pill, in pregnancy and diabetics and in people on prolonged antibiotic courses. Vulvae vaginal candidiasis is characterized by pruritic, curd-like vaginal discharge, dysuria and dyspareunia. Disseminated Candidiasis, a complication of the above, presents with fever and toxicity.

Treatment guidelines

(a) Oral Oesophageal fungal infections

Nystatin 100,000 IU apply either as a gargle (in adults) every 8 hours or as oral suspension in children every 8 hours for 14 days

Or

Miconazole oral gel apply as oral suspension in children every 8 hours for 5 days or Fluconazole 200mg once daily for 14 days

or

Fluconazole 50mg daily for 7 – 14 days

(b) Vaginal infections

Nystatin Pessaries insert 1 tablet at night for 14 days

Or

Clotrimazole pessaries/vaginal cream insert 1 tablet or apply at night for 6 days

Or

Miconazole Pessaries/vaginal cream insert/apply once at night for 3 days

Or

Ketoconazole 200 mg every 24 hours for 10 days

Or

Fluconazole 200mg start may be repeated after 3 days

6.3.2 Deep fungal infection

Clinical features: The common clinical entities of deep fungal infecitions are Nocardiosis and Actinomycosis. **Actinomycosis** is caused by actinomyces. Its clinical features depend on the infected site. There is induration in the skin, sinus formation, pain and when lungs are involved there is cough with purulent sputum. **Nocardiasis** is an acute or subacute or chronic infection by nocardia species whose clinical features are mainly in the lungs and may include pneumonia, fever and a productive cough.

Treatment guidelines: **Doxycycline 100mg** 12 hourly for 2-4 months for Actinomycosis.

CAUTION:	Doxycycline should not be given to pregnant women and children under 12 years of age

Alternative medicines (also for Actinomycosis)

Adults: **Phenoxymethylpenicillin (O)** 500 mg every 6 hours 2-4 months
Co-trimoxazole 480mg every 12 hours for 2-4 months for Nocardiosis

Children: **Phenoxymethylpenicillin (O)** 25 mg/kg body weight 6 hourly for 2-4 months
Co-trimaxazole (O) syrup 0.5 ml/kg body weight every 12 hours for 2-4 months

NOTE:	Regular blood examination must be done when Co-trimaxazole is used for more than 14 days

Alternative medicine for Nocardiasis

Adult: **Dapsone** 100 mg every 24 hours for 2-4 months
Children: **Dapsone** 25 – 50 mg every 24 hours for 2-4 months
Co-trimoxazole 960mg (IV) every 12 hours

6.4 Scabies

Clinical features: It is caused by the mite Sarcoptes scabie burrowing into the skin. The main clinical features are itching initially between the fingers or on the buttocks or genitals and latter can be generalized. In the tropics secondary streptococcal infection is an important cause of rheumatic fever and glomerulonephritis.

Treatment guidelines

- Treat **all** close contacts, especially children in the same household with BBE 25% apply every 12 hours.
- Wash clothing and bedding and leave in the sun to dry
- Secondary bacterial infection (septic scores) treat with antibiotic as for impetigo for 5 days.
- The scabicide agent should only be applied once lesions are closed
- Advice that the itch may continue for several weeks

6.5 Herpes Simplex

Clinical features: It is an acute infection characterized by superficial vesicles containing clear fluid in the skin and mucous memberanes, particularly of the buccal area, on the conjunctive, corneas or genitalia. It is caused by the medium sized Herpes virus homines.

The main clinical features are: tingling discomfort or itching, followed by vesicular formation. Outbreaks of herpes simplex virus encephalitis have been reported.

Treatment guidelines

First Choice **Acyclovir** 400mg 8 hourly for 7 – 10 days

NOTE: Use of systemic Acyclovir is effective when given at the onset of episode

6.6 Herpes Zoster (Shingles)

Clinical features: Due to the resurgence of the varicella-zoster virus, this also causes chickenpox. Severe burning pain precedes a rash which is vesicular and almost always unilateral; does not cross the midline. In uncomplicated cases, the rash disppears in 24 weeks, in the haemorrhagic, necrotising form (HIV related) scarring often remains.

Treatment guidelines:

- Pain Management: **Indomethacin (O)** 25mg every 8 hours may be helpful in the acute phase.
- Apply topical calamine lotion or emollient.
- Take **Acyclovir (O)** 800 mg 5 times a day until no new lesions appear
- Wound care: **Potassium Permanganate** soak (1:4000).

CAUTION: Avoid **Gentian Violet 0.5%** as repeated use in this condition may cause keloid Secondary infection (bacterial) may require treatment.

Post-Herpetic Neuralgia
After the rash is fully resolved:

Amitriptyline (O) 75 mg at night, may be increased to 150 mg at night

Or

Carbamazepine (O) 200 mg at night; may be gradually increased to a maximum of 400 mg three times a day over 10 days

Indomethacin 25mg, 8 hourly

NOTE: Refer if there is no improvement in sever neuralgia. Refer immediately if there is ophthalmic/pulmonary involvement.

6.7 Chicken Pox

Clinical features: Chicken pox like Herpes zoster is caused by the zoster virus. Clinical presentation is mainly fever followed by a papula eruption. It is self limiting.

Treatment guidelines

Adult	**Paracetamol** 1 g every 8 hours **And** **Calamine lotion** apply over the whole body every 24 hours
Children	**Paracetamol** 10 mg/kg body weight every 8 hours **And** **Calamine lotion,** as for adult

6.8 Other skin diseases

6.8.1 Allergic Contact Dermatitis

Results from an acquired allergy after skin contact with particular chemicals (dyes, perfumes, rubber, nickel or drugs and skin preparations containing lanolin, iodine, antihistamines, neomycin, vioform etc). Avoid contact if allergic.

6.8.2 Eczema

(a) Atopic Dermatitis/Eczema: Often a personal or family history of atopic disease (asthma, hay fever or atopic dermatitis). Cause not known. These persons are also more susceptible to herpes simplex and vaccinia (but not varicella-zoster).

The clinical form may differ according to age

(b) Infantile aczema ("milk crust") usually appears at 3 months with oozing and crusting affecting the cheeks, forehead and scalp.

IMPORTANT If generalized exfoliative dermatitis develops, refer to a specialist

(c) Flexural eczema starts at 3-4 years, affecting the flexure surface of elbows, knees and nape of neck (thickening and lichenificaiton). In adults any part or the whole of the skin may be affected with intense itching, particularly at night. Over a period of a month, there may be acute exacerbations and a chronic phase.

Management of Eczema

-Remove any obvious cause e.g. skin irritant or allergen (avoid irritants e.g. soap, wool and extremes of temperature).

Emulsifying ointment - the equivalent of cream E45, Sofderm cream
Or
Aqueous cream

-Treat itching with an oral antihistamine such as

Chlorpheniramine (O) 4 -16mg at night. Not recommended in children under 2 years.

Or

Promethazine (O) 25 mg at night if sleeplessness is a feature.

Or

Cetrizine 10mg once daily for 3 to 5 days

Or

Loratadine (O): Adult (10mg); Children (6 – 12 years) – 5 mg once daily

> **NOTE:** Avoid Alcohol
> Never use topical antihistamines

-Treat any infection (usually bacterial, but occasionally viral). Choice of skin preparations depends on whether lesions are wet (exudative) or dry/lichenified (thickened skin with marked skin lines).

If eczema is "weepy", dry first using saline baths or bathe in.:

Potassium permanganate 1:4000 (0.025%) solution once daily for 2-4 days.

-Where large areas are involved give a course of antibiotics for 5-10 days (as for impetigo, item no. 6.1)

-After the lesions have dried, apply an aqueous cream or zinc oxide preparation for soothing effect. A topical corticosteroid may be useful in the acute phase. Use the mildest topical corticosteroid which is effective, starting with:

Hydrocortisone 1% cream for wet, ointment for dry skin. Apply thinly, frequently initially, then three times a day intermittently to prevent tachyfylaxia

> **NOTE:** Topical corticosteroids often do more harm than good. They may produce striae, acne lesions and hyper pigmentation. Avoid long term use; never use on weepy or infected skin. Advise patients NOT to use them as cosmetics

> **CAUTION:** Never use corticosteroid preparations on the face or in children unless supervised by a specialist. More potent steroid, e.g. betamethasone should only be prescribed by specialist

-If the skin starts scaling (condition becomes chronic), add/apply a keratolytic preparation such as:

Benzoic acid 6% +Salicylic acid 3% (Whitfield) ointment applied twice daily.

For maintenance, an antipruritic preparation may be useful:
Coal tar ointment 5% applied twice daily.

Salicylic acid 2% and **coal tar ointment 5%** are to be prepared extemporaneously.

6.8.3 **Urticaria**

May be allergic, toxic or physical in origin. In many cases the cause is unknown (idiopathic). Allergic urticaria may be caused by drug (e.g. penicillin), infection, contact with plants, pollen, insect bites, or foodstuffs (e.g. fish, eggs, citrus fruits, nuts, strawberries, tomatoes). Physical urticaria may be caused by mechanical irritation, cold heat, sweating.

-If acute (existing for less than 3 months), exclude drug reaction (e.g. penicillin), or infection (bacterial, viral or fungal).

-Give antihistamine by mouth:
Adult **Chlorpheniramine (O)** 4-16 mg once at night. Not recommended in children under 2 years.

Or

Promethazine (O) if sleeplessness is a feature

Adult	25 -50 mg at night
Child	0.1 – 0.2 mg/kg 2-4 times a day or 0.5 mg/kg at bedtime

Or

Cetrizine (O) 10mg once daily or **Loratadine (O)** 10mg once daily

> **NOTE:** Warn about drowsiness. If no improvement after 1 month or chronic problem, refer. Never use topical antihistamines.

6.8.4 **Psoriasis**

A condition of the skin characterized by thickening and scaling (the disposition is inherited) usually symmetrical.

Exclude precipitating factors e.g. alcohol, deficiencies of vitamin B12 or folate, stress, infections.
To reduce scaling use a keratolytic:
Benzoic acid 6% + Salicylic acid 3% in white soft paraffin applied once daily in the evening.
Sun exposure to the lesions for half an hour or one hour daily may be of benefit. In resistant cases

Plus

Coal tar 5% in salicylic acid 2% or zinc oxide ointment or Dithranol 0.1%+Coal tar 5%

NOTE: Steroids are discouraged in this condition. If not responding well, refer.

6.8.5 Pellagra

Syndrome caused by deficiency of a variety of specific factors, nicotinic acid being the most important. Cardinal signs: diarrhea, dermatitis (sites exposed to sun and pressure) and dementia. Treat both adults and children with:

Nicotinamide (O) 100mg once daily for two weeks or until healing is completed

ADVICE ON DIET: The diet should be rich in protein (meat, groundnuts, beans)

6.8.6 Depigmented skin (Vitiligo)

Leucoderma may be secondary to eczema, psoriasis or other skin condition treat underlying disease. There is no causal therapy for albinism and vitiligo. Advise yearly examination for skin cancer; use a sunscreen. An effective and cheap preparation with a sun protection factor of 15 (SPF=15) is "PABA"

Para-amino-benzoic acid (PABA) 5% cream or lotion applied.

In the morning before going out. Continue application during the day as necessary.

6.8.7 Brucellosis (Undulant fever)

Clinical features: Brucellosis is an infection caused by Brucella organisms. Man gets infected through exposure to infected tissue and milk or milk products. It is characterized by seating, weakness, headache, anorexia, fever, malaise, arthralgia, weight loss, pain in the limbs, back and rigorous. There is splenomegaly, lymphadenorpathy and hepatomegaly.

Treatment guidelines

Adults	**Doxycycline (O)** 100mg once daily for 4 weeks **Co-trimoxazole (O)** 960 mg every 12 hours for 4 weeks
Children	
6 weeks – 5 years	**Co-trimoxazole (O)** 0.5ml syrup/kg every 12 hours for 4 weeks
5-12 years	**Co-trimoxazole (O)** 480 mg every 12 hours for 4 weeks

CAUTION: Doxycycline should not be used in children under 12 years or during pregnancy.

6.8.8 **Lichen Planus**

Is a non-infectious, chronic skin disease which may be extremely itchy.

Clinical features: The rash is characteristically violaceous, shiny papules or plaques on the wrists, distal arms and sacral area. Post inflammatory hyperpigmentation is common. Patches of scaling baldness may develop on the scalp leading to permanent hair loss.

Treatment Guidelines **Betamethasone cream** apply every 8-12 hourly to remove scales and allay itching.

For severe form system steroid are recommended.

6.8.9 **Pruritic papular eruptions (PPE)**

This is a skin condition characterised by papular eruptions and itching which may be quite severe, it is associated with HIV infection. The cause is not known.
(See HIV/AIDS Management manual for details of medicines)

7. SEXUALLY TRANSMITTED INFECTIONS (STI)

7.1 General guidelines

Accurate laboratory-proven diagnosis of sexually transmitted infections (STI) is not always possible except in a few health facilities with well equipped functional laboratory services. For health facilities without laboratory services, one must treat on clinical grounds ie treat a disease based on suspected causative agents diagnosed clinically or by syndromic approach. In syndromic approach clinical syndromes are identified followed by syndrome specific treatment targeting all causative agents which can cause the syndrome. Contact tracing is encouraged as an important means of preventing further spread. Appropriate health education should be given at every opportunity.

First line Therapy is recommended when the patient makes his/her first contact with the health care facility

Second line therapy is administered when first line therapy has failed and re-infection has been excluded.

Third line Therapy should only be used when expert attention and adequate laboratory facilities are available, and where results of treatment can be monitored.

In order to ensure complete cure, doses LESS than those recommended must NOT be administered. The use of inadequate doses of antibiotics encourages the growth of resistant organisms which will then be very difficult to treat.

7.2 Gonorrhoea

- Gonococcal and chlamydial infections frequently co-exist. Therefore combined therapy should be given

Treatment guidelines: see under "**The Syndromic Treatment of STI".**

7.3 Chancroid

Clinical features:
Presence of painful genital ulcers with undermined ragged edges. The base is covered with dirty purulent exudates and easily bleeds on touch

Treatment guidelines:

First line	**Co-trimoxazole (O)** 960 mg twice daily for 10 days
Second line	**Erythromycin (O)** 500 mg 6 hourly for 10 days
Third line	**Ciprofloxacin (O)** 250 mg 8 hourly for 7 days

7.4 Epididymo-Orchitis

Clinical features: An acute severe inflammation of the epididymis, testis and spermatic cord. Main clinical features include swollen and tender epididymis, severe pain of one or both testes and reddened edematous scrotum. Causative organisms include filarial worms, *Chlamydia trachmatis, Neisseria gonorrhoeae, Escherichia coli* as well as viruses such as which cause mumps.

Exclude other pathology such as torsion of testis.

Treatment guidelines

First line	**Doxycycline** (O) 100mg 12 hourly for 7 -10 days **Co-trimoxazole** 960 mg every 12 hourly for 5 days **Acetylsalicylic acid** 600mg every 6 hours until pain is controlled
Second line	**Erythromycin** (O) **Adult:** 500mg every 6 hours for 10 days
Third line	**Kanamycin (IM)** 2g, 1g in each buttock, as a single dose **Plus** **Doxycycline** (O) 100 mg every 12 hours for 10 days

NOTE: Patient may need to wear a scrotal support

7.5 Chlamydia infections

Clinical features:
Presence of scanty to moderate white mucoid or serious discharge and is often seen 1-3 weeks after sexual intercourse

Treatment Guidelines:
First line: **Ciprofloxacin (O)** 500mg as a single dose
Doxycycline is added to the first line treatment for urethral discharge in men and women (See Syndromic treatment flow chart no 7.9.2).

NOTE: If doxycycline is not available, oxytetracycline may be used as an alternative

7.6 Syphilis

Clinical features: Syphilis is a chronic infectious disease caused by the spirochete treponema pallidum. It can be acquired mainly through sexual intercourse or congenitally when the mother transfers it to the fetus. The main classification of syphilis is shown below.

Table 18: Classification of Syphilis

Type	Stage	Clinical features/presentation
Congenital	Early	Rhinitis with blood nasal discharge
Acquired	Late	Mucocutaneous lesions e.g. bullae, stigmata of osteochondritis, osteitis (or scars)
	Early Primary and secondary syphilis	• A painless chancre • Rash, Non-tender lymphadenopathy, condylomata accumilata
	Late tertiary (benign gummatous)	Interstitial keratitis, photophobia, corneal infection, 8th cranial nerve deafness, bilateral knee effusion, recurrent arthropathy
	Quarterly (cardiovascular and neurosyphilis	Cardiovascular syphilis and neurosyphilis will give clinical features associated with that system. Also seen are gumma and osteitis

Treatment guidelines

- **For primary and secondary syphilis:**
  Benzathine penicillin give 2.4 IU i.m as a single dose given as two injections at separate sites

  If there is penicillin allergy give:

  Doxycycline (O) 100mg 12 hourly for 15 days

CAUTION: Doxycline should not be given to pregnant and breast feeding women and children under 12 years of age

- **For late Syphilis:**

  Benzathine penicillin give 2.4 IU i.m weekly for 3 weeks.

- **For congenital syphilis:**

  Up to 2 years of age
  Aqueous Benzyl Penicillin 100,000-150,000 IU/kg body weight per day administered as 50,000 -75,000 IU/kg IV every 12 hours, during the first 7 days of life and every 8 hours thereafter for a total of 10 days

  Or

  Procaine benzylpenicillin 50,000 IU/kg body weight every 24 hours for 10 days

Over 2 years of age

Benzyl penicillin 200,000-300,000 IU/kg body weight iv or im administered as 50,000 IU/kg every 4- 6 hours for 10-14 days

Or

Erythromycin 7.5- 12.5 mg/kg body weight every 6 hours for 30 days

7.7 Genital warts

Clinical features: These are usually caused by papilloma group of viruses infecting the skin or mucous membrane. The common sites affected by warts include genital region (condylomata acuminata) hands and legs. The lesions are usually asymptomatic fleshy growths. In the genital region, lesions are often finger like and increase in number and size with time. When extensive they may interfere with sexual intercourse and child birth. The removal of the lesion does not mean cure of the infection. No treatment is completely satisfactory.

Treatment guidelines:

Carefully apply either 10-25% **Podophyllin or Silver Nitrate** to the warts, and wash off in 6 hours, drying thoroughly. Treat every 2-3 days until warts are gone. Contraindicated in pregnancy/lactation. Do not apply on healthy surrounding skin)
Imiquimod 5% cream applied with a finger at bedtime, left on overnight, 3 times a week for as long as 16 weeks. (The treatment area should be washed with soap and water 6-10 hours after application).
Surgery may be useful in selected cases to remove the warts.

7.8 Cervical warts

This case should be refered to consultant/expert
Most expert advice against the use of podophyllin for cervical warts. One of the alternative treatment mentioned above should therefore be used.

Management of Meatal and urethral warts

Accessible meatal warts may be treated with podophyllin or povidone-iodine solution. Great care is needed to ensure that the treated area is dried before contact with normal, opposing epithealial surface is allowed.

7.9 Trichomoniasis

Clinical features: It is caused by a flagellate protozoa Trichomonas vaginalis. It causes inflammation of vagina and cervix in females and inflammation of urethra and prostate gland in males. Clinical features may or may not occur. When they do they include a frothy green/yellowish discharge, itchness, erosion of cervix.

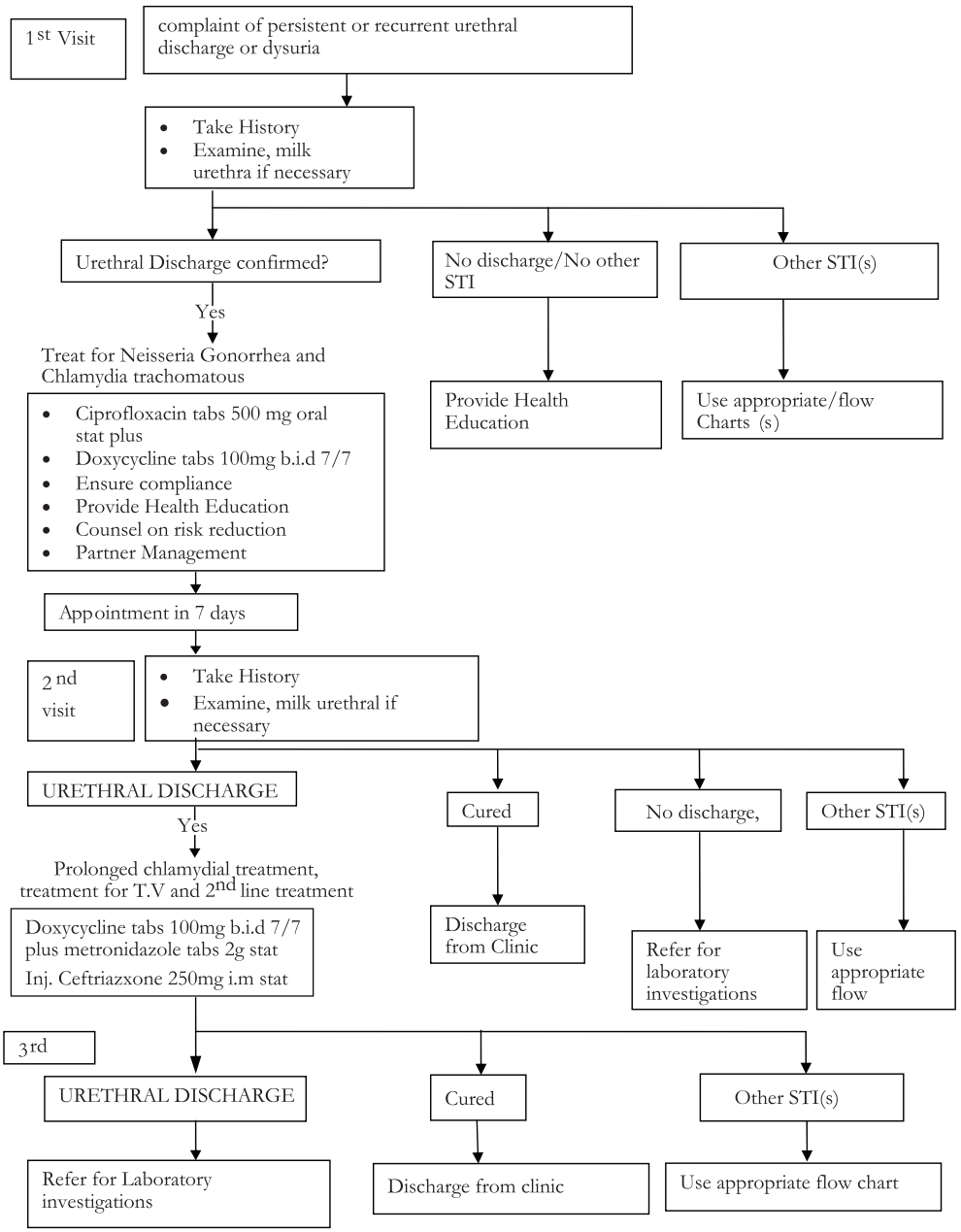
Treatment guidelines

Adults **Metronidazole** give 2gm orally single dose at bed time (avoid alcohol). Give the same treatment to partner. In pregnancy treatment with **metronidazole** should be delayed until after first trimester.

Children 5mg/kg body weight every 8 hours for 7 days

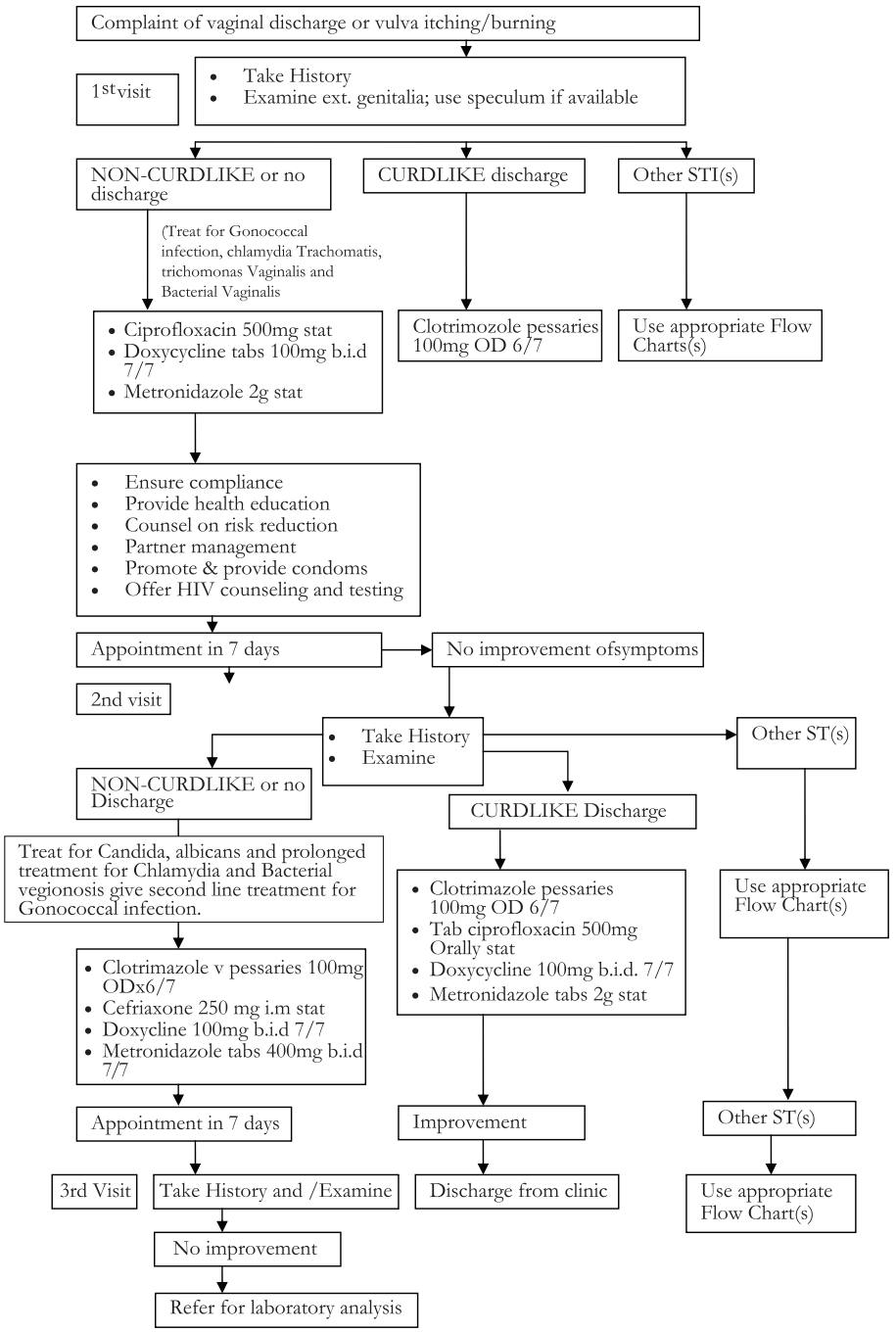
7.10 The syndromic treatment of STI

7.10.1 URETHRAL DISCHARGE SYNDROME (UDS) MANAGEMENT FLOW CHART

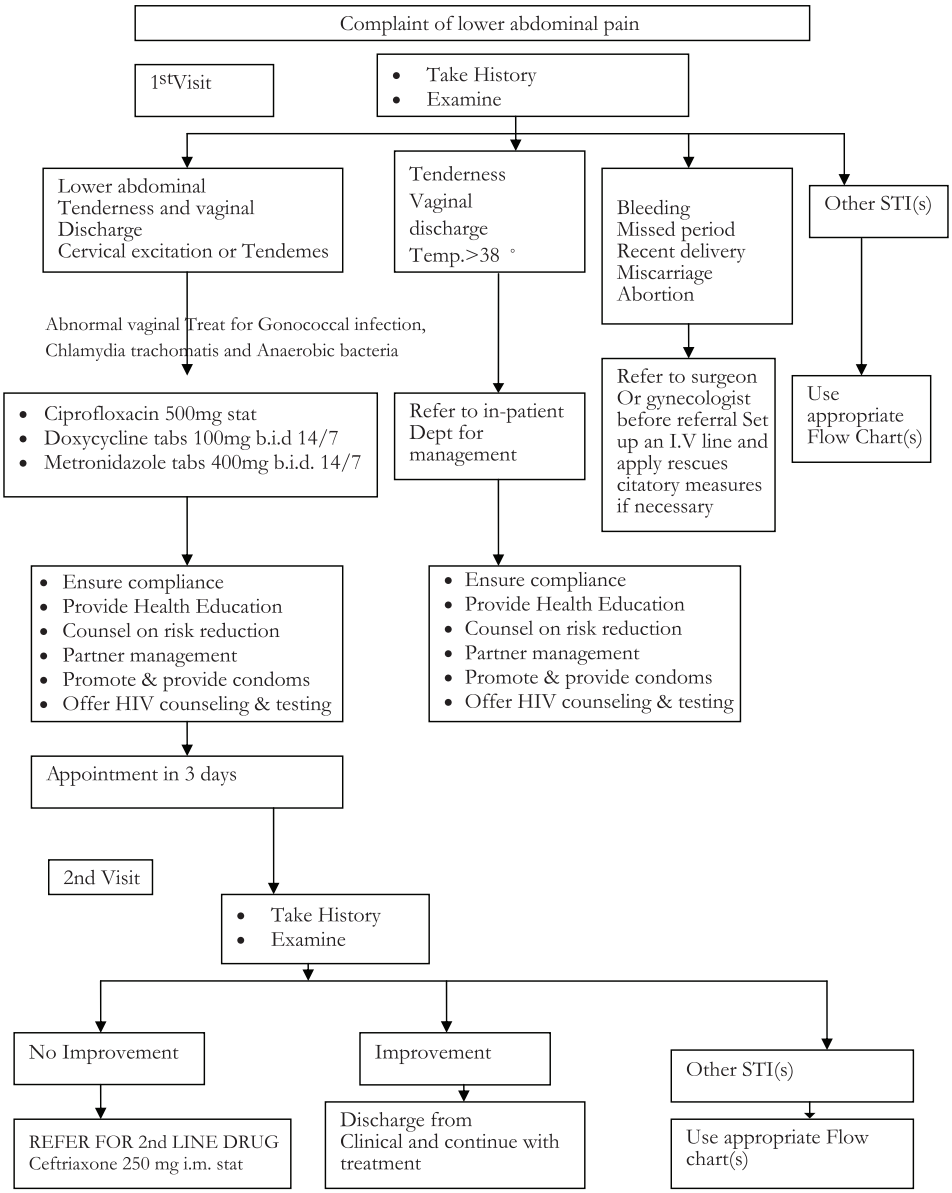


* Other option for second line treatment of Neisseria Gonorrhea is Spectinomycin Inj. 2gm i.m stat

7.10.2 VAGINAL DISCHARGE SYNDROME (VDS) MANAGEMENT FLOW CHART

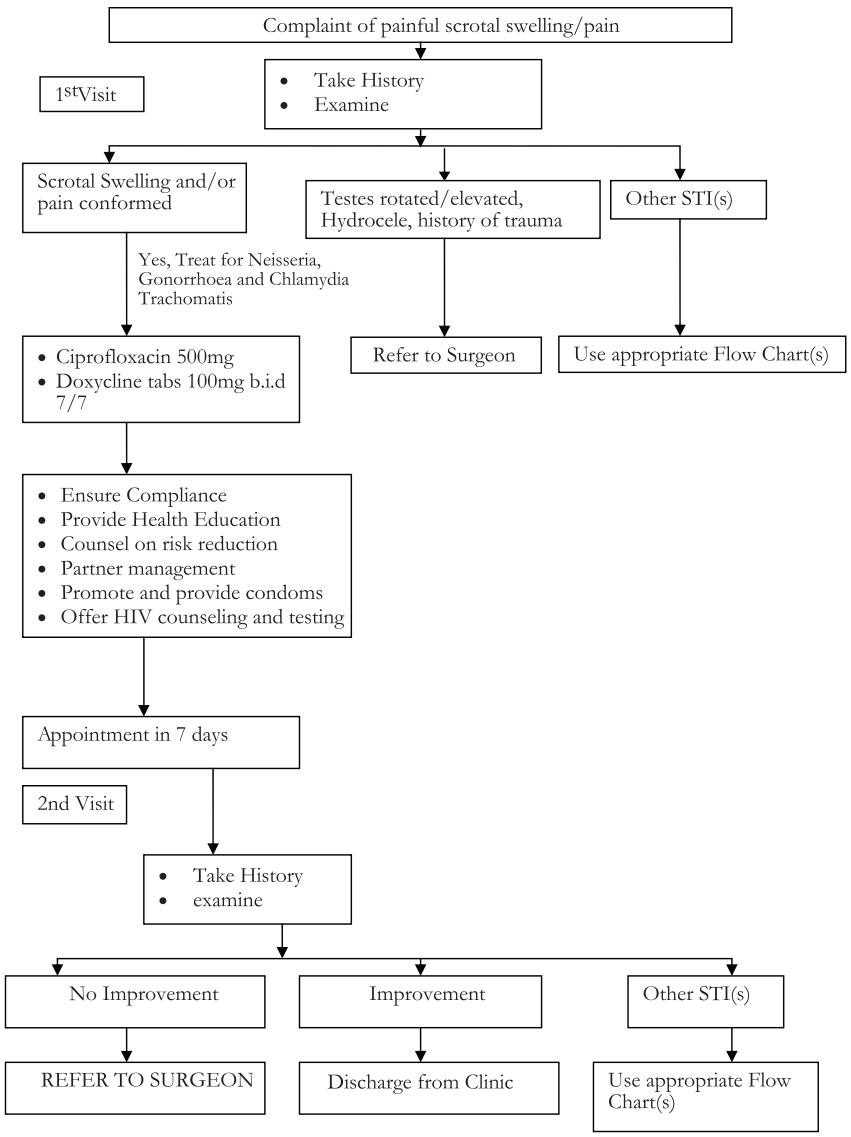


7.10.3 LOWER ABDOMINAL PAIN (PID) MANAGEMENT FLOW CHART

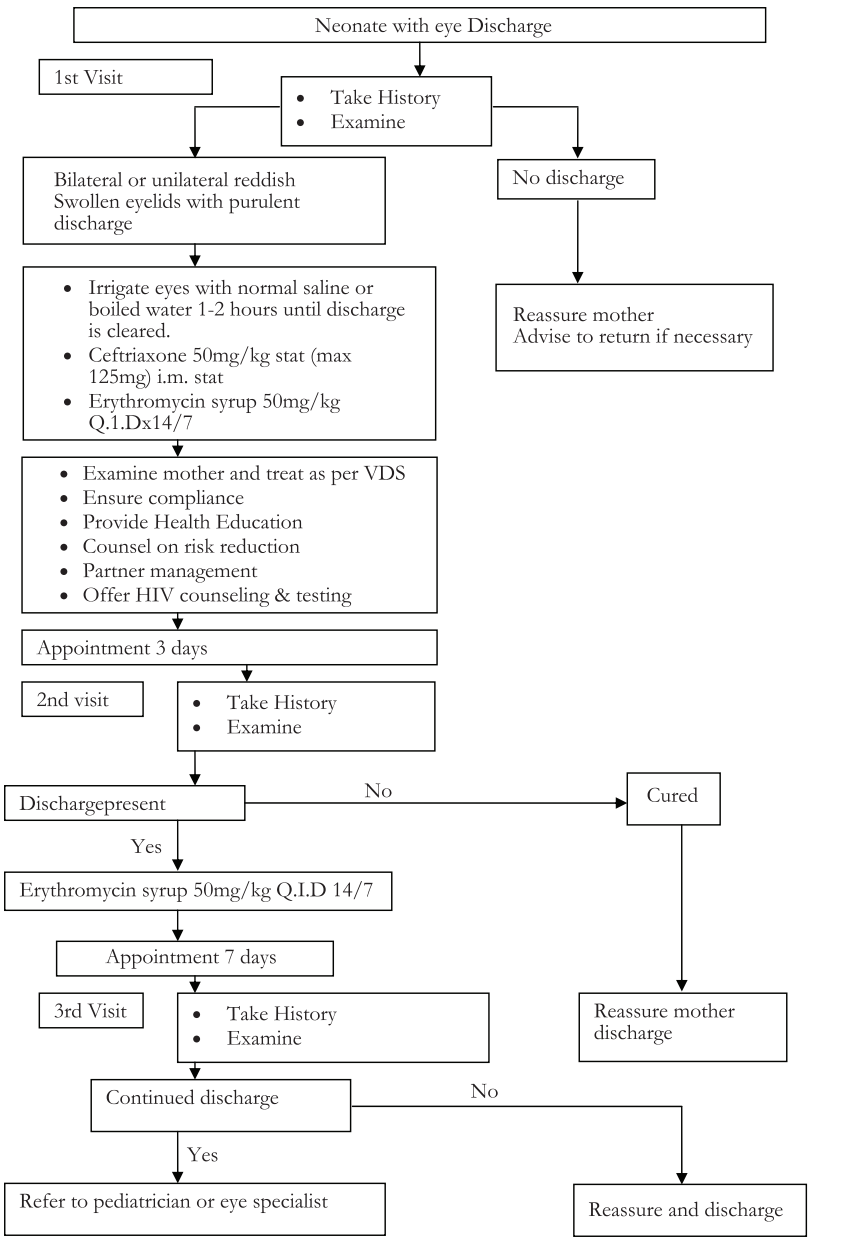


- Do not give Metronidazole in 1st trimester of pregnancy: Do not give Doxycycline or Ciprofloxacin in pregnancy or to lactating mother. Substitute with Erythromycin 500mg t.i.d 7/7 or Ceftriaxone 250 mg i.m. stat
- Even with no tendemess the risk for infection in someone complaining of lower abdominal pain is considered so great that treatment is necessary

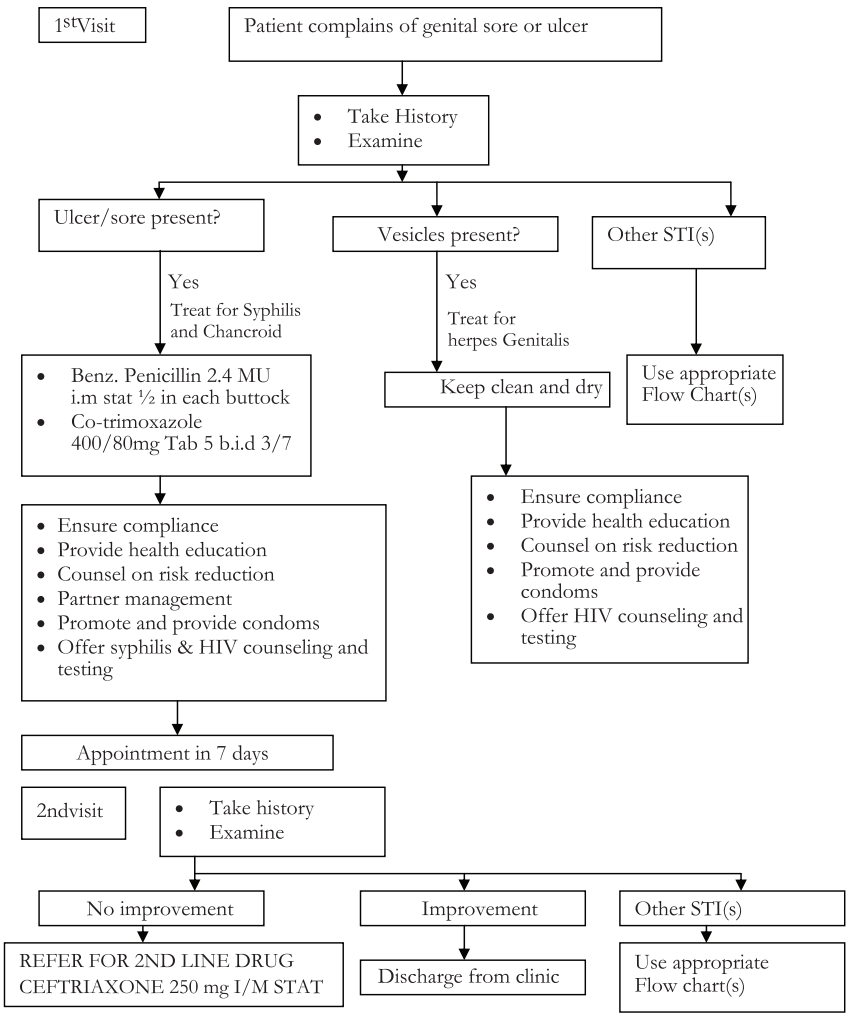
7.10.4 PAINFUL SCROTAL SWELLING (PSS) MANAGEMENT FLOW CHART



7.10.5 NEONATAL CONJUNCTIVITIS (NC) MANAGEMENT FLOW CHART

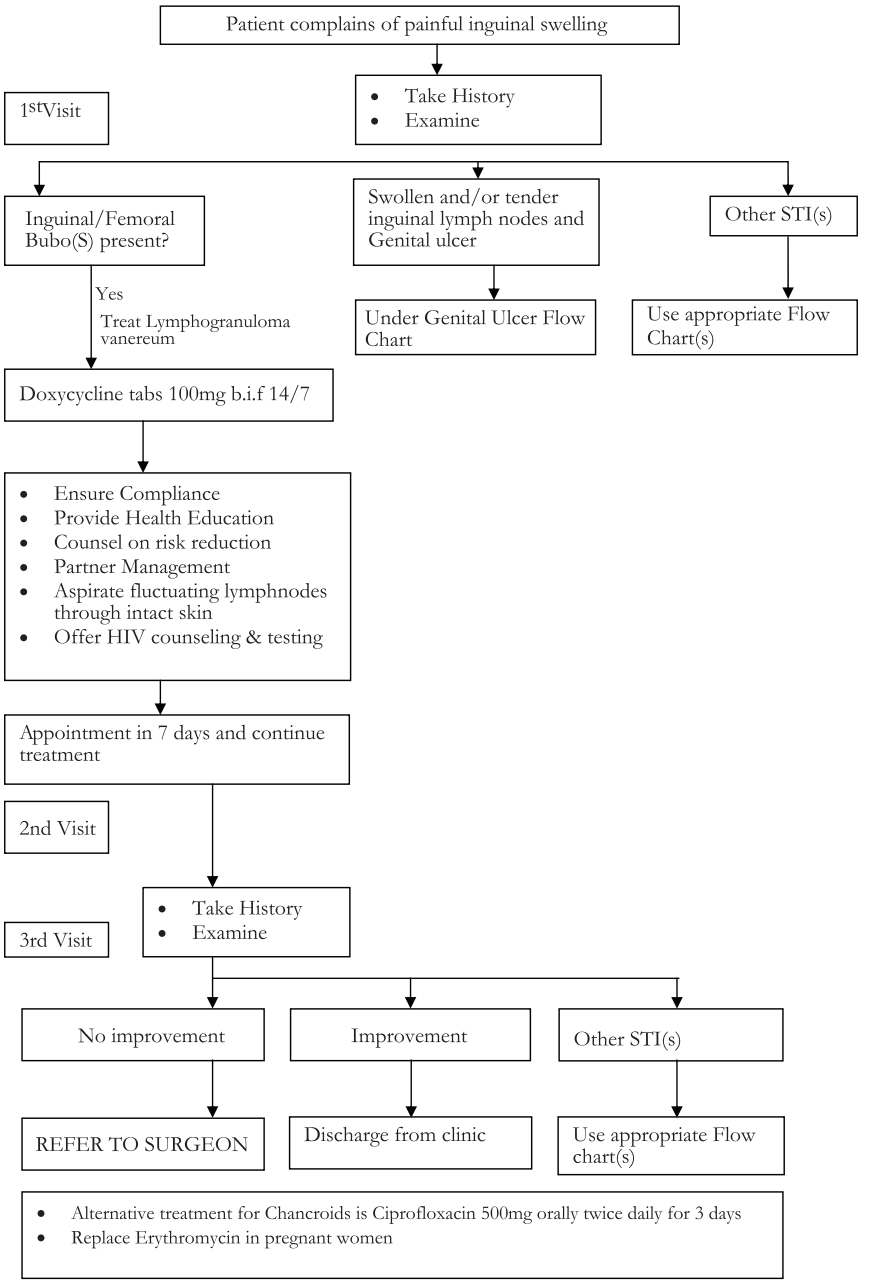


7.10.6 GENITAL ULCER DISEASE (GUD) MANAGEMENT FLOW CHART



- Do not give Co-trimoxazole during pregnancy, substitute with Erythromycin tabs 500 mg QID 7/7
- Patients allergic to penicillin substitute with Erythromycin tabs 500mg QID for 15 days
- Other options fo treatment of Chancroids is Tab Ciprofloxacin 500 mg orally twice daily for 3 days or Azithromycin 1gm orally single dose

7.10.7 INGUINAL BUBOS (IB) MANAGEMENT FLOW CHART



8. ORAL DISEASE CONDITIONS

8.1 Dental infection

8.1.1 Periapical Abscess

A clinical presentation arising as a complication of inflammation of the dental pulp or periodontal pocket. May be acute and diffuse or chronic with fistula or localized and circumscribed. It is located in the apical aspect of the supporting bone. Clinically it may resemble a periodontal abscess and is differentiated according to the vitality of the affected tooth.

Treatment guidelines

For posterior teeth: Extraction of the offending tooth under local anaesthesia (to establish drainage) is the treatment of choice followed by analgesics.

Adult: **Paracetamol (O)** 500mg – 1g, 4-6 hourly for 3 days
Child: No analgesics
For anterior teeth: Root canal treatment

> **NOTE**: Incision and drainage at a hospital is mandatory in cases of deeper spaces involvement followed by a course of antibiotics

Amoxycillin (O) 500mg, 8 hourly for 7 days
Children: (O) 25 mg/kg in 3 divided doses for 5 days

Combination with

Metronidazole 400mg 8 hourly for 7 days.
Children: (O) 7-10 years, 100mg every 8 hours

> **NOTE**: In acute diffuse cases it is recommended to give antibiotic cover first to localize the infection followed by extraction of the offending tooth

8.1.2 Infected (Dry) socket

A post extraction complication due to failure to form clot (dry socket) or infection of the clot due to contamination (infected socket). The condition is very painful and if not managed could lead to osteomylitis.

Treatment guidelines

Socket debridement to stimulate fresh bleeding and new blood clot formation (May be done under local anaesthesia with **Lignocaine 2%** if procedure proves to be painful). Irrigation with **Hydrogen peroxide 6%**

8.1.3 Periodontal conditions

Gingivitis

Inflammatory changes in the gingival develop within a couple of days of undisturbed bacterial growth on the cervical portion of the tooth surface. Clinically, inflammation is initially seen as discrete colour and texture changes of the marginal tissue. After 10 to 20 days of plaque accumulation overt gingivitis is established in most individuals,

characterized by gingival redness and swelling and increased tendency of the soft tissue to bleed on gentle probing.

Prevention

Oral hygiene instructions for proper self care

Acute Necrotizing Ulcerating Gingivitis (ANUG)

It is characterized by rapid destruction of gingival tissue, particularly in the area of the interdental papillary. Patients usually present with soreness and bleeding of the gums and foul test (fetorex ore)

Treatment guidelines

Professional cleaning with

Hydrogen Peroxide 6% (under local anaesthesia)
Metronidazole 400 mg 8 hourly for five days

Periodontal pocket

A periodontal pocket is a gingival pocket that has been deepened by apical migration of the junctional epithelium and destruction of the periodontal ligament and alveolar bone.

Treatment guidelines

Scaling and polishing
Instruction on proper use of toothpicks, dental floss

8.1.4 **Infections of the Oral cavity**

Infections involving the soft tissue around the jaws are usually of dental origin, developing from periapical, periodontal or pericoronarial disease. Infections may also be associated with traumatic injuries, retained dental remnants and pathological lesions such as cysts. The infections are usually mixed in origin and culture of infected material will show a variety of aerobic and anaerobic organisms can be responsible.

Treatment guidelines

Erythromycin (O) 500 mg, 8 hourly for 5 days
Or
Cloxacillin (O) 500 mg, 8 hourly for 5 days

(a) Tuberculosis

Oral manifestations of tuberculosis are rare.

Treatment guidelines

Refer to TB and Leprosy clinic

(b) Syphilis

Hutchinson's incisor is abnormal tooth morphology of the permanent maxillary central incisor inpatients with congenital syphilis. Other teeth may be involved. "Barrel-shaped"

is the term often applied to the typical Hutchinson's incisor. It is narrower at the incisal edge and may have a notch of the incisal edge.
The "Mulberry molar", molar of congenital syphilis is due to marked hyperplasia affecting the first permanent molar resulting in reduction of the crown form towards occlusal surface.

Treatment guidelines

See under STI section

(c) Viral-Herpes simplex

Clinical features: When the herpes simplex virus affects the oral mucosa it results in a herpetic gingivo-stomatitis, usually seen in children between the ages of two and four years, but in recent years diagnosed in a number of older age groups. After an incubation period of one week the patient develops fever, swollen submandibular lymph nodes and a defuse gingivitis.

Treatment guidelines

Symptomatic and preventive

Idoxuridine ointment/solution
Or
Acyclovir cream for lips
And
Chlorhexedine 0.1% mouth wash (diluted from 5%) for intra-oral lesions.
Acylovir cream/tablets – Active against Herpes simplex and Zoster (can be given orally and topically.

Doses:

Herpes labialis	**Acyclovir Cream** apply 4 hourly for 5 days
Herpes Stomatitis	**Acyclovir** 200mg 5 times in 24 hours for 5 days
Immunocompromised	**Acyclovir** 400mg 5 times in 24 hours for 5 days
Herpes Zoster	**Acyclovir** 800mg 5 times in 24 hours for 7 days

(d) Candidiasis

Clinical features: Acute oral candidiasis (Thrush) is seen most commonly in the malnourished, the severely ill, neonates and HIV-AIDS patients or oral corticosteroids use. In chronic oral candidiasis dense chalky white plaques of keratin are formed.

Treatment guidelines

Nystatin (suspension) 100,000 units (1 ml of suspension held in the mouth before swallowing)
Or
Miconazole (O) gel 25 mg/ml 5-10 mls in mouth –hold it before swallowing.

Or

Fluconazole (O) 200mg once daily for 14 days (2 weeks)

(e) Contact stomatitis

Clinical features:
A contact allergy is a type of reaction in which a lesion of the skin or mucus membrane occurs at a localized site after repeated contact with the causative agent. This could be due to anything like dentures, mouthwashes, cosmetics etc.

Treatment guidelines: Remove the cause

8.1.5 **Pericoronitis**

Clinical features: This is a bacterial infection around the crown of partially erupted or unerupted wisdom tooth. The gingival abscess occurs as a result of an infection via breach in the gingival surface. It tends to be localized within the gingivae and is not necessary associated with a pocket.

Treatment guidelines
Irrigation of perioconal space with warm normal saline
If the cause is an upper tooth – extract it or grind offending cusps
If an abscess is present incise and cover with a combination of antibiotics.

Metronidazole (O)400mg, 8 hourly for 5 days
Plus
Amoxycillin (O)500mg 8 hourly for 5 days

8.1.6 **Ludwig's Angina**

Clinical features: It is overwhelming, generalized septic cellulites of the submandibular region. It arises from infection involving both submandibular and submental spaces with extensive involvement of the floor of the mouth. This is usually a result of periapical infection of mandibular teeth spreading rapidly into one submandibular space and then extending to involve the adjacent tissue spaces.

Treatment guidelines

Drug of choice
Metronidazole 500mg IV 8 hourly for 5 days
Plus
Ampicillin 500 mg IV 8 hourly for 5 days

If allergic to penicillin use

Erythromycin (O) 500 mg 6 hourly for 7 days
Or
Gentamicin 80mg (IV) 12 hourly for 5 days

8.1.7 **Dental Abscess**

Clinical features: In this condition there is a collection of pus around the affected tooth, which may spread into the surrounding tissue. Signs include swelling of the gum around the affected tooth leading to facial swelling. Pus may be seen discharging from the gum around the affected tooth.

Treatment guidelines

(a) Incision and drainage with daily irrigation with

Hydrogen peroxide 2%
Or
Chlorinated lime solution

Plus Paracetamol (O) 1000mg 8 hourly for 5 days
Or
Diclofenac Sodium 25-50 mg 8 hourly for 5 days

(b) If septic abscess, use antibiotics

Drug of choice: Erythromycin (O) 500mg 8 hourly for 7 days

Second choice: Cloxacillin (O) 500 mg 8 hourly for 5 days

Plus pain relievers as above

8.2 **Post Extraction Bleeding**

Commonly due to disturbing the blood clot by the patient through rinsing or inadequate compression on the gauze, though at times may be due to bony/tooth remnants.

Treatment Guidelines

Check and repack the socket. Give proper instructions

Rule out bleeding disorders if bleeding continued after 24 hours despite step one above. Refer for further management

8.3 **Tooth sensitivities**

Usually is due to attrition of teeth, abrasion or gingival recession

Treatment guidelines

Self care: Tooth brushing with toothpaste for sensitive teeth.

Professional care: **Duraphat** application

8.4 **Dental caries**

A condition where the tooth is demineralized by acid produced by bacteria on metabolizing sugar. Starts slowly with white spots later developing to cavities in enamel, dentine and later the pulp.

Prevention Avoid frequent use of sugary foods/drinks. Use fluoridated toothpaste to brush your teeth at least once a day.

Treatment guidelines

Restore the tooth/surface with appropriate materials e.g**. Silver amalgam, composites, glassionomer, etc.**

8.5 Aphthous ulceration

Aphthous ulcers are painful recurrent mucous membrane ulcerations. Usually affect the non-keratinized oral mucous membrane. They are divided into two groups, namely minor aphthous ulcers and major aphthous ulcers.

8.5.1 Minor aphthous ulcers

Painful ulcers on non-keratinized oral mucous membranes; there are one to five small 5mm round or oval shallow ulcers, recur frequently, often cyclically, heal spontaneously in less than 3 weeks.

Treatment guidelines
Use **Chlorhexideine 5% or Povidone iodine** mouth washes.
Take care of oral hygiene, avoid acidic and irritant foods.

8.5.2 Major aphthous ulcers

Painful ulcers on non-keratinized oral mucous membrane, they are large 1-3 cm edged ulcers, and several may be present simultaneously. There is marked tissue destruction which is sometimes constantly present. Healing is prolonged often with scarring.

Treatment guidelines

Chlorhexidine 0.1% or Povidone iodine mouth wash, topical or systemic steroids ie **Prednisolone tablets**
Cryosurgery occasionally, to relieve pain and promote healing

8.6 Edentulousnes

The loss of all natural teeth and subsequent resorption of the aviola bone.

Treatment guidelines

Design and construct dental prosthesis according to aesthetic and functional needs. Materials to be used include: acrylic, porcelain, gold, etc

Malocclusions

Is an occlusal variation that may be functionally harmful or aesthetically objectionable? Malocclusion can be classified as follows;

Class I

The sagittal arch relationship is normal. The anterior buccal groove of the lower permanent molar should occlude with the anterior buccal cusp of the upper first permanent molar.

Class II

The lower arch is at least one half a cusp with too far distal to the upper.

Class III

The lower arch is at least one half a cusp with too far mesial to the upper.

Treatment guidelines

Removable orthodontic appliances are those designed to be removed by the patient for routine cleaning. They can be active or passive.

Appliances for active tooth movement fall into two groups

1. Simple removable appliances which have mechanical a component to move the teeth
2. Myofuctional appliances, which harness the forces generated by the orofacial muscles.

Passive removable appliances may also save two functions:

1. Retainers used to hold the teeth following active tooth movement
2. Space maintainers, used to prevent space loss following the extraction of teeth.

8.8 Traumatic injuries to Teeth in Children

May result to loosening, displacement and or loss of teeth, fracture of teeth and or bone, lacerations and bleeding. The commonest causes are alls (in sports and play) at home or school and motor accidents. Most affected are teeth upper incisors.

Prevention

Proper design of playing ground observe road traffic rules early orthodontic treatment

Treatment guidelines

Take x-ray picture of affected tooth/teeth. Strict oral hygiene in cases of loosening and mobility. Use **hydrogen peroxide, normal saline,** tooth brush. Immobilization of affected tooth/teeth with arch bar, ss wires, acrylic splints, sutures.

Removal of fracture elements in excessive mobility degree (surgical toilet).
Anti tetanus cover (ATS or TT).

Antibiotic cover I cases of suspected contamination or extensive damage (procaine penicillin fortified, phenoxymethylpenicillin).
Restoration of aesthetics (composite filling, prosthesis).
Extraction is treatment of choice for traumatized primary teech with mobility and or displacement.
Referral for maxillofacial management in case of extensive damage to maxillofacial structures.

8.9 Tumours of the Oral Cavity

Can be traced to originate from tissues of the tooth germ (odontogenic epithelia, odontogenic connective tissue)
These tumours can be divided into benign and malignant tumours.

(a) Benign Odontogenic Tumours

Ameloblastoma, Calcifying Odontogenic Tumour, Amelobastic fibroma, Ademato id Tumour (Adeno Ameloblastoma), Calcifying Odontogenic Tumour, Ameloblastic Fibro-Odontoma, Odonto Ameloblastoma, Complex Odontoma, Compound Odontoma, Odontogenic Fibroma, Odontogenic myxoma, Cementoma and Cementifying Fibroma.

Treatment guidelines

Can be mandibulectomy, Hemimandibulectomy, Enucleation, Maxillectomy, Hemimaxillectomy

(b) Malignant Odontogenic tumours

Odontogenic Carcinomas and Odontogenic Sarcomas

Treatment guidelines

Palliative treatment (but not radiotherapy). Can be medical palliation

8.9.1 **Soft Tissue and Bone Tumours (Non-Odontogenic)**

These are also divided into two group;

Benign tumours

Papilloma, Heratoacanthome, Fibroma, Fibrous Epulis, Peripheral Giant Cells, Pregnancy Tumour, Hemangioma, Lymphangioma, Lipoma and Pigmented nerves

Treatment guidelines

Surgical excision

For Haemangioma – Use sclerosing agent first until the tumour calcified then you can carry out surgical excision

Benign osteogenic tumours (arise from bone)
Osteomas, Myxomas, Chondromas, Ewing's tumour, Central giant cell and Fibro-osteoma.
Treatment guidelines: Surgical excision

Malignant soft and bone tumours

Squamous cell carcinoma, Sarcoma, Lymphosarcoma, Myosarcoma, Chondrosarcoma, Fibrosarcoma, Adenosarcoma, Adenocystic carcinoma and Epidermoid carcinoma.

Treatment guidelines

Palliative – but this depends on stage of the tumour: stage I and II surgical excision (squamous Cell carcinoma) with wide margin then curative radiotherapy. Others, surgical excision, radiotherapy followed by chemotherapy, if lesion is not advanced or in stage I and II.

8.9.2 Lymphomas

Burkitt's tumour is an undifferentiated lymphoblastic lymphoma. It shows close association and infection with the Epstein Barr virus.

Clinical features: The clinical picture varies with age of the patient, the typical jaw tumour being the commonest in the younger patient.

Treatment guidelines
Early detection and referral
Curative treatment comprises of combination chemotherapy
Palliation with cyclophosphamide is of good but temporary benefit.

These should be treated after a definitive histopathological report.

8.10 Shedding of Primary (Milk) Teeth

Phenomenon occurring between aged of 5-12 years. Milk teeth should be left to fall out by themselves unless otherwise indicated. Parents should be counselled accordingly. Early loss of primary teeth may lead to crowding of permanent teeth.

8.11 Eruption of Teeth

Starts usually at five months of age. Symptoms associated with it like fever and diarrhoea are normal and self limiting unless any other causes can be established. The following conditions usually are associated with tooth eruption should be referred to dental personnel: eruption cysts, gingival cysts of the newborn, pre/natal teeth.

9. KIDNEY DISEASE CONDITIONS

9.1 Glomerulonephritis

Clinical features: The term glomerulonephritis covers a number of glomerular reactions in which glomerular inflammation is either a primary reaction or a secondary consequence of a systemic disorder.

Acute glomerulonephritis occurs most commonly in children and adolescents. Usually it follows infection with nephrogenic strains of B-haemolytic streptococci. Early treatment of infected scabies is a good preventive measure. Major clinical features include oedema, proteinuria and hypoproteinemia. 90% percent of patients make complete and permanent recovery even if no treatment is given. The remaining 10% may develop chronic glomerulonephritis followed by renal failure.

Treatment guidelines

Treatment is supportive designed to maintain fluid and electrolyte balance and provide enough calories until spontaneous recovery of renal function occurs. Treat underlying cause where applicable. Allow bed rest and control diet and fluid intake

Medicine of choice

Adult	**Amoxycillin (O)** 500 mg 8 hourly for 5 - 7 days **Procaine penicillin fortified (PPF)** 1.2 MU
Children	**Amoxycillin (O)** 12.5 mg/kg body weight every 8 hourly for 7 days **Procaine penicillin fortified** (PPF)

NOTE: If blood pressure is high, treat accordingly

9.2 Pyelonephritis

Clinical features: Pyelonephritis is an inflammation of renal parenchymal and renal pelvis. Infections usually occur by the ascending route. It is commonly caused by gram-negative organisms like *E. Coli*. Clinical features include: chills, fever, flank pain and vomiting.

General Management

Where facilities are available, do culture and sensitivity test to determine the antibiotic choice.
Give oral fluids or IV depending on severity of the case to increase urine output.

Treatment guidelines

Adult **Amoxycillin (O)** 500 mg every 8 hours for 7 – 10 days

Or

Co-trimoxazole (O) 960 mg every 12 hours for 7 – 10 days

Or

Trimethoprim (O) 300 mg once daily for 7 - 10 days

Plus

Potassium citrate (O) 1-2 g well diluted with water three times a day.

If serious, give Ampicillin (IV) 500 mg every 6 hours for 5 to 10 days
Plus
Gentamicin (IV) 4 mg/kg/24 hours in 3 divided doses for 5 to 10 days.

Children	**Co-trimoxazole (O)**
6 weeks – 5 years	0.5 ml/kg every 12 hours for 7 days
6- 12 years	480 mg every 12 hours for 7 days
	Or
	Amoxycillin (O)
Up to 10 years	10mg/kg every 8 hours for 7 days
Above 10 years	250 – 500 mg every 8 hours for 7 days
	Or
	Nitrofurantoin (O)
Over 3 months	3-6 mg/kg body weight every 6 hours for 7 days

If serious, give Ampicillin (IV)

Under 10 years	10 mg/kg every 6 hours for 7 days
	Plus
	Gentamicin (IV) 2.5 – 5 mg/kg body weight/24 hours in divided doses every 8 hours for 7 days

NOTE: a) In pregnancy, Amoxycillin is the medicine of choice followed by co-trimoxazole a second line. If Trimethoprim is used give folic acid 5 mg once daily for the of the duration of course.
b) A shorter course of up to 3 days may be enough for uncomplicated infections in women. A duration of 7 to 10 days may be necessary for men and children and for recurrent attacks or previous pyelonephritis in women.

9.3 Nephrotic Syndrome

Clinical features: It is a syndrome charactirised by massive proteinuria (> 3.5 g/24 hours), hypoalbuminemia (<30 g/litre) and massive oedema. Hyperlipidaemia and increased congulability of blood are important features.
Nephrotic Syndrome may be due to primary glomerular disease or secondary to other diseases, systemic diseases such as diabetes mellitus and infections e.g. Hepatitis B, HIV and malaria

Treatment guidelines

- Treat underlying cause where applicable
- Allow bed rest
- Give high protein diet if renal function is normal
- Encourage consumption of potassium rich foods e.g. bananas, papaws, sweet potatoes and pigeon peas
- Restrict salt and water intake
- Try and induce diuresis

Medicine of choice	Diuretics
Adult	**Frusemide (O)** 40-200mg every 12 hrs
	plusSpironolactine (o) 25mg three times daily
	Prednisolone (O) 40-60mg once daily – 6-8 wks

In adults steroid therapy is often unsuccessful

Anticoagulants

These are indicated in case of chronic nephrotic syndrome because of the danger of thrombocilism.

Heparin 5000Units every eight hours

Children

Follow similar schedule with the following dosage

Frusemide 1mg/kg body weight every 24 hours

Prednisolone 1 mg/kg body weight daily for 6 – 8 weeks, tail the dose to avoid relapse.

Heparin 15 – 25 units/kg body weight by IV **Or** 250 units/kg body weigh **(s.c)** every 12 hours.

10. EAR, NOSE AND THROAT DISEASE CONDITIONS

10.1 Otitis (externa and media)

Clinical features: This is an inflammatory condition of both the external auditory meatus and/or the middle ear. The clinical features are itching and pain in the dry, scaling ear canal. There may be a water or purulent discharge and intermittent deafness. Pain may become extreme when the ear canal becomes completely occluded with edematous skin and debris. In otitis media (acute or chronic) the clinical features are ear pain, a sensation of fullness in the ear and hearing loss, aural discharge. Onset usually follows an upper respiratory tract infection. Chronic otitis media is associated with perforation of the eardrum.

10.1.1 Otitis Externa

Treatment guidelines

- Exclude an underlying chronic otitis media before commencing treatment
- Instruct the patient to thoroughly clean and dry the ear.

Adult and children

Aluminium diacetate drops 13%; instill 3-4 drops every 6 hours after cleaning and drying the ear for 5 days.

10.1.2 Otitis Media

Definitions

(a) Acute otitis media: Acute purulent exudates in the middle ear without discharge (acute suppurative otitis media)

(b) Secretory otitis media Multifactorial non-purulent inflammatory condition in the middle ear with serous or mucous discharge. Also a residual condition after acute otitis.

(c) " **Ear – child**" A child suffering from acute otitis three or more times within a six months period.

Acute otitis media usually follows a viral infection; the bacterial infection is caused by:

- Pneumococci
- Haemophilus influenzae
- Group A streptococci
- Maraxella catarrhalis

Clinical features

Acute otitis media

- Previous common cold
- Pain
- Restlessness
- Usually feverish
- Hearing often reduced
- Possible discharge of pus from ear

Simplex otitis Media

May present one or more of the above symptoms in a less pronounced form but without any discharge from the ear.

Secretory otitis Media

- Little or no pain
- Gradual loss of hearing
- "Popping" in the ear (rarely)
- Often discovered by chance

Treatment guidelines

(a) Symptomatic treatment of acute otitis media and simplex otitis

- **Analgesics (e.g. Paracetamol** 10 mg/kg body weight every 6-8 hours, or **Acetylsalicylic acid**). Avoid **Acetylsalicylilc acid** if it is viral infection
- Elevation of the upper part of the body
- Decongestive nasal drops or nasal spray e.g. **Ephedrine hydrochloride**
- Oral decongestants and antihistamines are not indicated.

(b) Treatment of Acute Otitis

It should be treated with antibiotics or paracentesis. Culture of a discharge (if any) could be of a great help to identify the causative bacteria.

Medicine of choice	**Amoxycilin (O)**
Adult	250 – 500 mg every 6 hours for 5 days
Children up to 5 years:	6 mg/kg every 6 hours for 7 days
6-12 years**:**	250 mg every 6 hours for 7 days

NOTE: Treatment periods shorter than five days increase the risk of treatment failure

Second choice **Erythromycin** if allergic to penicillins

Adult and children above 8 years 250 – 500 mg every 6-8 hours for 5 days

(c) Treatment of simplex otitis

If the patient is severely affected by fever and pain or the symptoms continue without improvement, antibiotics should be given. The treatment schedule for acute otitis media should be as follows:

(d) Referral to specialist:

- Children with high fever who are toxic affected or children with severe pain that persists in spite of treatment
- Treatment failure without improvement after change of antibiotics
- "Ear Children"
- Otitis in the normal (or better hearing) ear combined with permanent hearing loss in the other ear.

(e) Treatment of Secretory otitis

- Initial inspection
- Nasal drops, oral decongestants and antihistamines have no demonstratable effect on this condition
- Secretory otitis with hearing loss that does not improve should be referred to a specialist

10.2 Acute Rhinitis and Sinusitis

Clinical features: Rhinitis is caused by a variety of viruses. Acute sinusitis starts with obstruction of the ostium, followed by reduced ventilation, retention of discharge and bacteria multiplication. If the ostium is blocked for a longer period, sinus empyema may occur. The bacteria most often causing purulent sinusitis are pneumococci and *Haemophillus influenza* which in some studies are shown to be equally common. *Maraxella catarrhalis* and group A streptococci also occur. In sinusitis of dental origin, anaerobic bacteria are often found.

Definition

Acute rhinitis: A viral inflammatory condition in the nasal mucous membrane, usually part of a more wide-spread infection of the upper respiratory tract.

Acute purulent sinusitis: Bacterial infection with pus accumulation in one or more of the sinuses

Acute serous sinusitis: An inflammation in one or more sinuses with fluid accumulation but without pus formation.

(a) Treatment guidelines for Acute Rhinitis and serous sinusitis

- Elevation of the head
- Nasal drops or spray e.g. Ephedrine hydrochloride 1% for adult and 0.5% for children or Beclomethasone spray. 1-2 drop/puffs every 8 hours a day for 3 days
- Oral drugs to reduce swelling of the mucous membrane, antihistamines and antibiotics are not indicated.

(b) Treatment guidelines for Purulent Sinusitis

Symptomatic Treatment

- Elevation of the head
- Nasal drops or spray e.g. Ephedrine hydrochloride 1% for adult and 0.5% for children or Beclomethasone spray. 1-2 drop/puffs every 8 hours a day for 3 days
- Oral drugs to reduce swelling of the mucous membrane or anti-histamines are not indicated.

Medicine of choice	**Phenoxymethylpenicillin**
Adult	250 – 500 mg every 6 hours for 10 days
Children up to 5 years	6 mg/kg every 6 hours for 10 days
5 – 12 years	250 mg every 6 hours for 10 days

Second choice **Doxycycline**

For Adults only and Children above 12 years 200 mg on the first day as a single dose then 100 mg from the following day every 24 hours for 10 days

NOTE: Doxycycline for adult only and children above 12 years

Co-trimoxazole

Children

6 weeks – 5 years: 0.5 ml/kg every 12 hours for 10 days

6-12 years: 480 mg every 12 hours for 10 days

Amoxycillin

Adult 500 mg every 8 hours for 10 days

Children

Up to 10 years **10 mg/kg every 8 hours for 10 days**

(c) Referral to specialist

- Children with ethmoiditis present as an acute periorbital inflammation or orbital cellulitis must be hospitalized immediately
- Adults with treatment failure and pronounced symptoms
- If sinusitis of dental origin is suspected
- Recurrent sinusitis, >3 times a year
- Cases where sinus puncture or operation may be indicated.

10.3 **Pharyngotonsillitis**

Clinical features: It is an acute inflammation of the pharynx and/tonsils, characterized by fever and pain.

Pharyngotonsillitis is caused by virus or bacterial. Clinical important pathogens are groups A beta-haemolytic streptococci and Epstein – Barr virus (EBV) in practice group A beta-haemolytic streptococci is an indication for treatment with antibiotics.

Treatment guidelines – group A beta-haemolytic streptococci Infections

- As general rule pharyngotonsillitis caused by group A beta-haemolytic streptococci should be treated with antibiotics
- If treatment is begun early, duration of the illness can be shortened.
- Antibiotics can hinder the spread of infection and reduce the risk of complications.

Medicine of Choice	**Amoxycillin**
Adults	250 mg every 8 hours for 10 days **Plus** **Paracetamol** 10 mg/kg body weight every 8 hours until fever controlled
Children	See under treatment of purulent sinusitis Plus **Paracetamol** 10 mg/kg body weight every 8 hours until fever controlled.

Second choice		**Erythromycin**
Adults and Children over 8 years		250 – 500 mg every 8 hours for 10 days
Children up to 8 year		10 mg/kg every 8 hours for 10 days
		Plus
	Paracetamol	10mg/kg every 8 hours for 10 days

NOTE: Duration of treatment is 10 days. Shorter treatment period increases risk of therapy failure

10.4 Laryngitis

Clinical features: This is an acute infectious inflammation in the larynx. The etiologic agent is normally a virus. Viral infection may give rise to bacterial superinfection. The picture of the disease is different in children and adults.

Acute subglottic laryngitis (pseudocroup) occurs mainly in children under the age of seven. Edema of the mucous membrane of the subglottic space causes breathing difficulties, especially on inspiration. Laryngitis in Children may require active treatment.

Treatment guidelines

(a) Symptomatic treatment

General advice and treatment at home

- Parents should behave calmly and avoid frightening the child
- Raise the upper part of the body
- Keep the air damp and cold
- Give extra fluid
- Nasal drops or spray may be helpful
- If symptoms persist or worsen, seek medical advice

(b) Medicine treatment in general practice

- Epinephrine (Adrenaline) inhalation effectively reduces symptoms, but the effect may be short – lived

Dosage

Preparation of **racemic Epinephrine** solution for inhalation

(c) Hospitalization

- If severe symptoms persist or worsen or recur after Epinephrine inhalation hospitalization is indicated

Table 19: Treatment guidelines of laryngitis in older children and adults

Age	Racemic Epinephrine (20 mg/ml)	0.9% Saline
0-6 months	0.1 ml	2 ml
6-12 months	0.15 ml	2 ml
>12	0.2 ml	2 ml

NOTE: The total fluid volume is inhaled in 5 minutes with the use of inhalator

Symptomatic Treatment

- Voice rest
- Ban smoking
- Antitussive
- Nasal drops or spray
- Extra fluid intake

Treatment with antibiotics

Not indicated

10.5 Acute Epiglotitis (AE)

Clinical features: Acute infectious inflammation of the epiglottitis, supraglottic and hypopharynx. Epiglottitis is a potentially lethal disease. Oedema of the epiglottis may cause acute airway obstruction. Epiglotitis occur both in children and adults. *Haemophilus influenzae* is often the cause.

AE is characterized by throat pain, difficult swallowing, drooling, husky voice, fever often high and with chills, patients prefer sitting posture, laborious inspiration, cough in some cases and anxiety.

NOTE: When epiglotitis is strongly suspected, the patient should be referred immediately to a specialist for hospitalization without further examination, as incision of the throat may be dangerous

Treatment guidelines

- Immediate hospitalization
- Transport the patient in sitting, with oxygen supplementation
- Be prepared to treat respiratory failure (intubation or tracheotomy)
- Antibiotics may be given if transport lasts more than one hour.

11. EYE DISEASE CONDITIONS

11.1 Prevention/Management

- Proper diet (Vitamin A and proteins)
- Personal and environmental hygiene
- Measles immunization
- EARLY treatment of eye diseases by qualified health personnel
- EARLY referral of serious eye diseases and injuries
- DO NOT use non-sterile or herbal medicines in the eye

The following cases may need referral to an eye specialist

- Cataract – cloudiness in the otherwise clear lens
- Glaucoma -high pressure in the eye
- Perforating injuries with loss of vision
- Retinoblsatoma (white pupil) – cataract or tumour in children
- Corneal scars; old injury, ulcer, malnutrition, measles
- Unexplained vision loss
- Severe eye pain

CAUTION: Avoid use of steroid eye preparations; conditions requiring treatment with steroids need confirmation by a specialist

Steroids may worsen infection like trachoma, increase intra-ocular pressure, cataracts, delay healing and worsen corneal ulcers of viral origin.

11.2 Red Eye

Corneal Foreign Bodies and infections

Clinical features: Pain, gritty sensation, excessive lacrimation, red eye and reduced vision

Treatment guidelines

- Attempt removal of foreign body with a cotton-topped applicator
- If successful, instill antibiotic ointment e.g. **Chloramphenicol/Oxytetracycline eye ointment**, pad and review the following day
- If unsuccessful, instill antibiotic ointment (as above), pad and REFER
- If in any doubt REFER

11.3 Corneal Abrasion

Clinical features: Often associated with a foreign body or other minor injuries. Patient complains of pain, gritty sensation and tearing.

Treatment guidelines

- Apply antibiotic ointment (e.g. **Chloramphenicol/Oxytetracycline eye ointment**) and pad
- Review after 24 hours. If signs and symptoms persist, REFER

Table 20: The Red Eye – a Guide to locating the site of the problems

Symptosm and signs	Conjunctiva	Cornea	Uvea i.e Iris, Ciliary Body and Choroid	Acute Glaucoma
1.History of trauma or irritation	Common	Common	No	No
2.Blurring of vision	No	Yes	Yes	Severe with haloes around lights
3. Photophobia	No	Yes	Yes	No
4. Type of pain	No real pain. May have itch or "gritty" sensation	Both superficial pricking and deep pain	Deep pain and circumoribital achinig	Severe, deep pain with headache and nausea
5. Discharge	Usually some, may be copious	Usually some especially if ulcerated	No	No
6.Position of maximum redness	Generalized, including eye lid and conjunctiva	All around cornea but maximal nearest the ulcer or injury	Encircling cornea	Encircling cornea
7.Intraocular pressure	Normal	Normal	Sometimes low	Markedly raised (usually over 50 mmHg)
8.Pupil size and response	Normal	May be small	Small, reaction to light sluggish	Dilated, fixed

11.4 Penetrating Injury

Treatment Guidelines

No topical drops or ointment. Give tetanus toxoid (IM) 0.5 ml.

Medicine of choice: **Amoxycillin** 500 mg every 8 hours for 10 days

Second choice: **Erythromycin**

Adults and children over 8 years

250 – 500 mg every 8 hours for 10 days

Children up to 8 years 10 mg/kg every 8 hours for 10 days

NOTE: Pad the eye and REFER immediately

11.5 Chemical Burns

The burns can be due to acid or alkaline solutions which enter the eye accidentally. Severe pain, loss of vision, blepharospasm and tears are presenting symptoms.

Management

Immediately wash the eye and surrounding tissues with plenty of water, milk or any bland liquid. Continue irrigating for up to 30 minutes then REFER to hospital.

ATTENTION: This is a medical emergency that requires immediate attention to prevent permanent loss of vision. Sterility may be ignored temporarily, the chemical needs to be diluted and washed away quickly.

11.6 Conjuctivitis

Clinical Features: Conjunctivitis is an inflammatory condition which may be caused by viruses, bacteria or allergic reactions. Bacterial conjunctivitis is the commonest form of eye infections. Known causative bacteria include Streptococcus pneumonia and Staphylococcus aureus. Infection from these organisms is usually bilateral and causes copious purulent discharge with no pain and no blood vision.

Treatment guidelines

Medicine of Choice

First line	**Chloramphenicol** eye drops 1% hourly, 3hourly, 4 hourly then 6hly for at least 5 – 7 days.
Second line	**Gentamycin** 1% eye drops apply hourly until the discharge clears then 3hourly, 4 hourly then 8 hours for 5-7 days

11.6.1 Conjunctivitis of the Newborn

Clinical features: A discharging sticky eye with red swollen conjunctiva and swollen eyelids in any baby during the first 28 days of life.

Treatment Guidelines

Gentamycin 1% eye ointment every hour for 4 days then continues every 6 hours for 10 days.

Initiate systemic antibiotics preferably Procaine Penicillin (I.M.) 600,000 I.U and REFER infant and PARENTS to hospital (IM) 60,000 IU

NOTE: See also Sexually Transmitted Disease "Ophthalmia neonatorum"

Table 21: Conjunctivitis

Signs and symptoms	**Acute bacteria**	**Viral**	**Allergic**	**Chronic, endemic Trachoma**
1. Discharge	Purulent	Watery or none	Mucoid	None, Watery or purulent
2. Itching	None	None	Marked	None
3. One or both eyes?	One or both	One or both	Both	Both
4.Recurrences	Unusual	Unusual	Usually	Usually
Treatment	Frequent antibiotic eye ointment or eye drops for 5 days	Usually-self-resolving. If in doubt treat as bacterial or REFER	Educate/ reassure. Cold compresses, zinc sulphate drops or antihistamine drops or sodium cromoglycare drops. If no relief of symptoms, REFER	Tetracycline eye ointment three times a day for 6 weeks. Advise on hygiene. If interned eyelashes, REFER

11.7 **Unilateral** Painful eye

Painful eye is commonly due to iritis, corneal disease of glaucoma.

Management
Persistent watering of an infant's eye suggests either congenital glaucoma or blocked tear duct. REFER.

11.8 **Congenital Trachoma**

Persistent watering of an infant's eye suggests either congenital glaucoma or blocked tear duct.
REFER.

11.9 **Trachoma**

Trachoma is highly contagious, chronic inflammatory disease of the eye and a common cause of blindness worldwide.

Clinical features: Trachoma is a keratoconjunctivitis caused by Chlamydia trachomatous. Transmission is usually by contact with fomites in unhygienic conditions. The clinical manifestation of the disease initially starts as a simple eye infection with itchy eye with profuse watery discharge. If untreated, the disease condition may progress to scarring and blindness.

Treatment guidelines

Medicine of choice: **Azithromcycin 600mg** single dose

NOTE:
- If inturned eye lashes (trichiasis, entropion) present pull out the lashes and REFER patient to specialist.
- Provide education in personal and environmental hygiene for prevention of trachoma

11.10 Xerophthalmia/Vitamin A Deficiency

Clinical features: Xerophthalmia is a condition occurring due to lack of vitamin A in the diet, most commonly in pre-school children, leading to corneal damage and blindness. It is often associated with malnutrition, measles and malabsorption syndromes. The most important early syndrome is night blindness, inability to see in dim light.

General Preventive measure

- Promotion of breast-feeding
- Measles immunization
- Promote foods rich in vitamin A or supplement
- Prophylactic tetracycline eye ointment and vitamin A treatment course in all measles children

Treatment Guidelines

- Give to all children/adult with signs and symptoms of Xerophthalmia

	Vitamin A
Immediately	200,000 IU
Following day	200,000 IU
After 1-4 weeks	200,000 IU

NOTE:
- For children aged less than one year, reduce the dosage to 100,000 IU. Vitamin A is safe if used as directed
- Nutritional rehabilitation is indicated

12. TUBERCULOSIS AND LEPROSY

12.1 TUBERCULOSIS

Clinical features: Tuberculosis is a chronic bacterial infection, debilitating disease caused by Mycobacteria, the most common of which is *Mycobactrium tuberculosis*. Less frequently, it can be caused by *Mycobacterium bovis* and *Mycobacterium africanus*. The clinical picture is quite variable and depends on the specific organ affected by the disease. The disease can take the following forms: Pulmonary, meningitis, lymphadenitis, osteoarticular, potts disease, intestinal, renal, peritoneal and cutaneous. Due to the association of TB and HIV infection, the prevalence of TB is increasing and patients are more seriously ill than before. Tuberculosis is a public health problem and all cases must be notified to the Ministry of Health and Social Welfare.

12.1.1 Control of Tuberculosis

Important key points are:

- Treatment should be short, effective and provided free of charge
- TB services should reach all areas, integrated in Primary Health Care (PHC) system and ensure widespread use of BCG vaccination and case finding (especially sputum positive patients)

Prevention

BCG vaccination is given at birth or at first contact with the child after birth. It is given intradermally on the right upper arm, above the insertion of the deltoid muscle.

> **NOTE**: The batch number of the vaccine and the date of manufacture must be recorded on the antenatal card. Dosages are recommended by EPI Programme. BCG should be given to all babies.

Non-healing ulcers after vaccination with BCG (up to 8 weeks) or regional lymphadenopathy can be treated with:

Isoniazid (O) 5 mg/kg body weight daily for 6 months and needle aspiration in case of an abscess.

12.1.2 Case Management

Diagnosis

Smear microscopy remains the most important diagnostic tool. Histopathology and radiography are also helpful, particularly in those patients who do not produce sputum.

Sputum

Each patient should have direct smear microscopy (DSM) on 3 sputum specimens for diagnosis. DSM should be repeated at the end of the intensive phase to confirm sputum conversion.

Sputum of TB patients MUST be sent or taken to the TB Reference Laboratory when:

- Sputum conversion to negative has not taken place
- There is concern that the patient has developed drug resistance
- Culture and sensitivities are required.

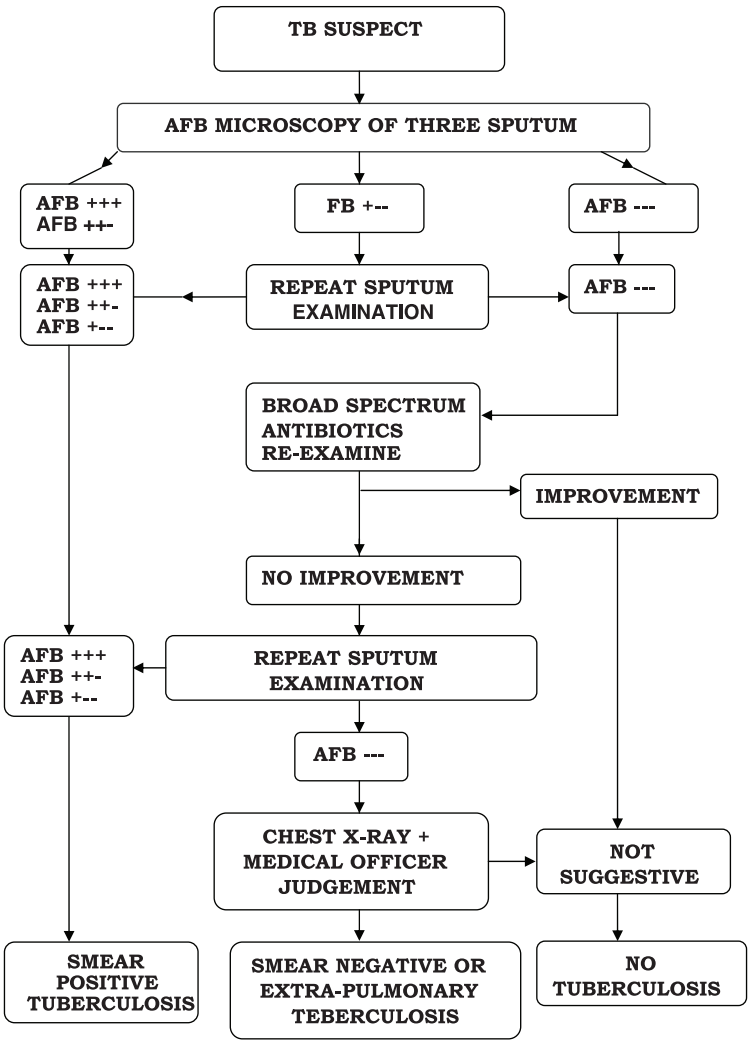
Chest X-rays

This has to be done upon:

- Admission for diagnosis
- Completion of outpatient treatment

NOTE: To reduce the rate of exposure of the patients, any other films can be taken only where specifically indicated. An X-ray at the end of the intensive phase is not likely to provide any additional benefit.

12.1.2.1 **DIAGNOSIS OF PULMONARY TUBERCULSIS IN ADULTS**



The diagnosis of TB in children can be very difficult owing to the wide range of symptoms. Sputum cannot often be obtained from children and in any case it is often negative even on culture. Symptoms in children are not typical. The diagnosis should therefore be based on clinical findings, family history of contact with a smear positive case, X-ray examination and tuberculin testing, culture (if available) and non-response to broad spectrum antibiotic treatment. A score chat below can help to reach the diagnosis of tuberculosis. Older children who are able to cough up sputum should go through the same assessment as adults using smear microscopy as the "gold standard".

Table 22: SCORE CHART FOR THE DIAGNOSIS OF TUBERCULOSIS IN CHILDREN

SCORE IF SIGN OR SYMPTOM IS PRESENT						
	0	1	2	3	4	Score
GENERAL FEATURES						
Duration illness	less than 2 weeks	2-4 weeks		More than 4 weeks		
Failure to thrive or weight loss	weight gain		No weight gain		Weight loss	
TB contact	none	Reported not proven		Proven smear-/EP	Proven Smear +	
Tuberculin test				Positive		
Malnutrition				Not improved after 4 weeks		
Chronic infant disease		Recurrent		No response to antibiotics		
LOCAL FEATURES						
Chest x-ray				TB suggestive feature like infiltration, cavity or hilar lymph nodes		
Lymph nodes				Cervical, sub-mandibular		
Swelling of bone or joint				Suggestive feature on X-ray		
Ascitis				With abdominal mass		
Meningitis				Chronic CNS signs		
Angle deformity of the spine					X-ray feature	
TOTAL SCORE						

A score of **9 or more** indicates a high likelihood of tuberculosis

Tuberculin Testing

The tuberculosis skin test is valuable as a diagnostic tool in young children. In a child who did not receive a BCG vaccine an induration of 10mm or more is interpreted as positive. If the child did receive a BCG, the induration should be a t least 15mm to be positive.

A positive result may indicate:

- Active infection (especially when strongly positive)
- Previous infection or
- Previous BCG

NOTE: Absence of a response does not exclude TB because individuals with HIV may not have sufficient immunity for a positive Mantoux Test despite active TB

12.1.3 **Treatment Categories**

Table 23: TB patients are grouped in four main categories,

Category	**Patients**
Category I	New sputum smear positive PTB (positive pulmonary TB) New patients with severe forms of EPTB (extra pulmonary TB)
Category II	Relapse, Treatment failure and sputum smear positive return after default
Category III	New sputum smear negative and EPTB (less severe forms)
Category IV	Chronic cases

12.1.3.1 **Table 24: Treatment Guidelines Category I; 2{RH}ZE/6{EH}**

Duration of treatment	**DRUG**	**CHILD Pre-treatment weight**			**ADULTS Pre-treatment weight**	
		5-10 kg	11 – 20 kg	21 – 30 kg	< 50kg	> 50kg
Intensive phase: 2 months, daily supplied and observed treatment	(RHZE) 150/75/ 400/275 (FDC)	½ tablet	1	2	3	4
4 Months continuation phase, daily observed OR 6 Months continuation, monthly supply,self administered	(RH) 150/75	½ tablet	1	2	3	4
	(EH) 400/150	¼ tablet	1/2	1	2	2

R = Rifampicin H = Isoniazid Z = Pyrazinamide E = Ethambutol
Maximum recommended daily dosage of rifampicin in FDC 750 mg

The numbers indicate number of tablets to be taken daily for treatment according to body weight and content of tablets.

These recommendations are based upon dosages by body weight: Rifammpicin 10mg/ kg; Isoniazid 5mg/kg; Pyrazinamide 25 mg/kg; Ethambutol 25 mg/kg; If Ethambutol is given for any reason for more than 8 weeks, the daily dose must be reduced to 15 mg/ kg body weight.

Some important notes

- The oral drugs should preferably be given on an empty stomach in a single dose
- The oral drugs must be swallowed under direct supervision of a health facility worker or at home undersupervisionof of supporter of the choice.

12.1.3.2 Treatment guidelines Category II; 2 S{RH}ZE/1{RH}ZE/5{RH}3E3

Duration of treatment	**DRUG**	**CHILD Pre-treatment weight**			**ADULTS Pre-treatment weight**	
		5-10 kg	11 – 20 kg	21 – 30 kg	< 50kg	> 50kg
2 months intensive phase, daily supplied and observed treatment	S (i.m)	15mg/kg	15mg/kg	500mg	750mg	1 g*
	(RHZE) 150/75/ 400/275	½ tablet	1	2	3	4
1 month intensive phase, daily supplied and observed treatment	(RHZE) 150/75/ 400/275	½ tablet	1	2	3	4
5 Months continuation phase, 3 weekly observation	{RH} 150/ 150**	½ tablet	1	2	3	4
	E 400	¼ tablet	½ tablet	1 ½ tablet**	3 **	4**

* Patients older than 50 years of age should not exceed a dose of 750 mg Streptomycin. Streptomycin should not be given to pregnant women

** Notice the higher dose-formulation of RH and increase in dosage of Ethambutol in the three weekly regimen

NOTE

- If Ethambutol is to be given for more than 8 weeks reduce to 15 mg/kg body weight
- Ethambutol should not be given to children

12.1.3.3 **Treatment guidelines Category III; 2 {RHZE}/4{RH}**

Duration of treatment: 6 months
DOT: Daily for full duration of treatment

12.1.3.4 **Treatment guidelines Category IV; Chronic patients**

No regimen available yet in Tanzania

These are patients who remain or become sputum smear positive after completing fully supervised re-treatment regimen. It is important to identify patients with Multi Drug Resistant (MDR) TB among chronic patients. Not every chronic patient is MDR-TB case. Many of these patients, although persistently smear positive, may still harbour bacilli partially or fully sensitive to the common anti-TB drugs.

A "chronic" TB patient with unknown susceptibility pattern should always first submit sputum samples for drug susceptibility testing to the central TB reference laboratory before any further actions taken.

12.1.3.5 **Treatment in special cases**

Pregnancy Always ask woman if is pregnant before commencing treatment. Most anti-TB drugs are safe during pregnancies except streptomycin, which causes permanent deafness in the foetus therefore it should be avoided during pregnancy.

Breastfeeding Full TB treatment is safe and is the best way to prevent tuberculosis in the baby. Mother and child can stay together for the entire duration of treatment. In mothers with pulmonary tuberculosis, the baby should receive INH preventive treatment (5mg/kg) for 6 months followed by BCG vaccination.

Oral contraceptives Rifampicin interacts with oral contraceptives and reduces the efficacy of this contraception. Women using oral contraceptives should be advised to use pills with a higher dose of oestrogen (50mcg) or change to another method.

Liver disease Most anti-TB drugs can cause liver damage. In case a patient develops jaundice, treatment should be stopped and restarted as soon as the jaundice resolves. In severely ill patients start streptomycin and ethambutol only. If the patient improves follow with a gradual step-up introduction of Isoniazid followed by Rifampicin until full

dose. Monitor liver functions and clinical picture. If the condition deteriorates stop the drug which was last added.

Patients with established chronic liver-disease should not receive Pyrazianamide. The treatement given is 2 RHE/6EH for Category I and III patients and 2 SRHE/6RHE for Category II patients.

Renal failure Isoniazid, Rifampicin and Pyrazinamide are almost entirely excreted by the liver and therefore safe to use. Streptomycin and Ethambutol are excreted by the kidneys and should either be avoided or given in a reduced dose. The safest regimen for patients with renal failure is 2 RHZ/4 RH combined with pyridoxine to prevent Isoniazide induced peripheral neuropathy.

HIV There is a danger of interaction between Rifampicin and protease inhibitors in HIV positive patients receiving antiretoviral (ARV) treatments. Rifampicin stimulates the activity of the liver enzyme system, which metabolises protease inhibitors (PI) and Nucleoside Reverse Transcriptase Inhibitors (NsRTIs). This can lead to decreased blood levels of PIs and NsRTIs. Of the NsRTIs the concentration of Nevirapine is significant redeced and hence Nevirapine and Rifampicine should not be used concomintantly. On other hand PIs enhance the liver enzyme system which influences the blood levels of rifampicin resulting in ineffective TB treatment or drug toxicity. NsRTIs can cause peripheral neuropathy, which can result in an added toxicity caused by Isoniazid.

12.1.3.6 The role of adjuvant steroid therapy

Steroid therapy given in additional to anti-TB treatment is beneficial in tuberculosis meningitis, pleural TB with large effusion and TB pericarditis.

The recommended dosage in TB meningitis and TB pericarditis is 40-60mg/daily for 1 – 4 weeks, gradually decreasing the dosage over several weeks.

Other less frequent conditions, which can benefit from steroid treatment, are:

- TB laryngitis with airway obstruction
- Massive lymphadenopathy with signs of obstruction of e.g airway
- TB of renal tract to prevent uretic scarring
- Tb of adrenal glands causing hypo-adrenalism
- Severe hypersensitivity reaction to anti-TB drugs

Although steroids are immunosuppressant they can be used in HIV positive patients as the overall benefit of steroids, in the context of above conditions, outweighs the risk of other opportunistic infections.

12.2 LEPROSY

Clinical features: It is a chronic granulomatous disease caused by *Mycobacterium leprae*, an acid and alcohol fast bacillus that has a very slow multiplication. Leprosy is the commonest cause of peripheral neuritis in the world. The major clinical features therefore include hypopigmented anaesthetic macula or nodular and erythematous skin lesions and nerve thickening. It is classified into five different levels according to nuclear of bacilli found in the lesion.

12.2.1 General Information about Leprosy

Leprosy is a chronic infectious disease caused by *Mycobacterium leprae*. It mainly affects the skin, the peripheral nerves and the mucous membranes. It is a disease mainly of human beings, which affects people of all races, all ages and both sexes.

Patients harbouring many bacilli in their bodies, the multi bacillary patients, are the main sources of infection. If not treated, they spread the disease in the community and infect others through coughing and sneezing (droplet infection). These infectious patients represent only about 25% of the registered leprosy patients in Tanzania. The other 75% of patients with few leprosy bacilli, the paucibacillary patients are less infectious. Skin contact with leprosy patients is no longer considered to be an important means of transmission.

The different manifestation of leprosy are due to differences in the degree of resistance (immunity) of the human body and not due to different kinds of bacilli.

The majority of people (about 85%) have a strong resistance to M. Leprae that even when infected they do not develop the disease. They are immune. About 75% of children who get infected with leprosy bacilli have such a high resistance that they overcome the disease themselves, without treatment, at very early stage. People who have a fairly high but incomplete immunity to leprosy bacilli will develop paucibacillary leprosy.

There are only very few people in the community (5-10%) whose immunity to *M. Leprae* is naturally very low. When somebody from this group of people is infected by *M.Leprae*, the bacilli may multiply freely and attain large numbers causing multi-bacillary leprosy.

12.2.2 When Leprosy should be suspected

Patients should be suspected of having leprosy when they show one or more of the following signs or symptoms:

- One or more pale or reddish, hypo-pigmented patch(es) on the skin with or without loss of sensation
- Painless swellings or lumps in the face and/or earlobes
- Enlarged and/or tender nerves
- Burning sensations in the skin
- Numbness or tingling of the feet and/or hands
- Weakness of eyelids, hands and/or feet
- Painless wounds or burns on the hands and/or feet

Such patients need to be examined by trained health worker.

12.2.3 Diagnosis of Leprosy

The diagnosis of leprosy must be based on the history of the symptoms and careful clinical examination of the person for signs of leprosy. Only in rare instances a laboratory and other investigation may be needed to confirm the diagnosis of leprosy.If one is not sure of dignosis,the suspect should be seen by the DTLC or other personel trained in leprosy.

History taking

Proper history taking and collection of certain information on the patient are very important for understanding the patient's situation and for tracing a lost patient.

The following must be obtained:

- General information: all three names, sex, year of birth,occupation, full address including the name of of village/street leader and distance from home to clinic.
- Main complaints, including date of onset, site of first lesions,subsequent changes and development of the disease,previous treatment received.
- Information regarding other leprosy cases in patient's household.

Physical examination

Physical examination should always be carried out with adequate light available and with enough privacy for the person to feel at ease.

The patient is asked to undress. To ensure that no important sign is missed, a patient must be examined systematically. A well tried system is to examine the patient as follows:

- Start with examination of the skin, first head, then neck, shoulders, arms, trunk, buttocks and legs. Look for any discouration of the skin, thickening or swelling.
- Then palpation of the nerves; starting with the head and gradually going to the feet
- Then the examination of other organs
- Examination of the skin smear
- Finally the examination of eyes, hands and feet for disabilities.

Complications due to nerve damage

Patients should be examined for the following complications which result from nerve damage:

- Injury to cornea and loss of vision due to incomplete blink and/or eye closure
- Skin cracks and wounds on palms and sole with sensation loss
- Clawed fingers and toes
- Drop foot
- Wrist drop
- Shortening and scarring fingers and toes with sensation loss. Mark and draw also wounds, clawing and absorption levels on the maps using the appropriate marks.

A dignosis of leprosy should be made if ONE of the following CARDINAL SIGNS is presents

- Skin lesion with loss of sensation
- One or more enlarged peripheral nerves
- A skin smear positive for leprosy baccili

12.2.4 Classification of Leprosy

The main purpose of classification is to decide on the treatment regimen to be given to the patient. Leprosy is classified into two groups depending on the number of bacilli present in the body. Patients considered to harbour many bacilli belong to the multibacillary (MB) group; those with few bacilli form the paucibacillary (PB) group.

Classification is also important as it may indicate the degree of infectiousness and the possible problems of leprosy reactions and further complications.

There are two methods of classifying leprosy, based on:
- the number of leprosy skin lesions
- the presence of bacilli in the skin smear

Skin smear are recommended for all new doubtful leprosy suspects and relapse or return to control cases.

Classify patients as follows:

Multibacillary (MB) leprosy
- patients with six or more leprosy skin lesions
- positive skin smear

Paucibacillary (PB) leprosy
- patients with one to five leprosy skin lesions
- negative skin smear

If there is any doubt regarding the classification, the patient should be classified and treated as a multibacillary case. This certainly applies to patients who have been treated in the past and of whom insufficient information is available on the treatment previously used.

12.2.5 Treatment guidelines

Multiple drug treatment (MDT) is recommended treatment for leprosy.MDT is the combination of a minimum of two ant-leprosy drugs..Treatment of leprosy with only one drug (mono-therapy) will result in development of drug–resistance,therefore it should be avoided.
Patients having multibacillary leprosy are given a combination of Rifampicin,Dapsone and Clofezimine while those having paucibacillary leprosy are given a combination of Rifampicin and Dapsone.Both regimens are given in the form of a blister pack on a four weekly basis.

A patient takes a first dose under direct observation of a health worker. For the following 27 days, the patient then takes the medicine unsupervised.

Dosage (Adult MB)
Monthly Treatment: Day 1
Rifampicin 600mg (2x 300mg)
Clofazemin 300mg (3 x 100mg)
Dapsone 100mg
Daily Treatment: Days 2 – 28

Clofazemine 50mg
Dapsone 100mg

Duration of treatment

12 blister packs to be taken within a period of between 12-18 months

Dosage (Child MB 10 – 14 years)

Monthly Treatment: Day 1
Rifampicin 450mg (3 x 150mg)
Clofazemin 150mg (3 x 50mg)
Dapsone 50mg
Daily Treatment: Days 2 – 28
Clofazemine 50mg every other day
Dapsone 50mg daily

Duration of treatment

12 blister packs to be taken within a period of between 12-18 months

Dosage (Adult PB)

Monthly Treatment: Day 1
Rifampicin 600mg (2 x 300mg)
Dapsone 100mg
Daily Treatment: Days 2 – 28
Dapsone 100mg

Duration of treatment

6 blister packs to be taken within a period of between 6-9 months

Dosage (Child PB 10 – 14 years)

Monthly Treatment: Day 1
Rifampicin 450mg (3 x 150mg)
Dapsone 50mg
Daily Treatment: Days 2 – 28
Dapsone 50mg daily

Duration of treatment

6 blister packs to be taken within a period of between 6-9 months

Duration of MDT

Paucibacillary leprosy

- Patients should receive 6 doses to be taken within a maximum period of nine months. When collecting the 6th dose the patient should be released from treatment(**treatment completed**)
- Every effort should be made to enable patients to complete chemotherapy. A patient whose treatment is cumulatively interrupted for more than three 'months' or patient who has missed three doses of MDT in a total and hence cannot complete the 6 doses within 9 months, should be recommended as **defaulter**
- If a defaulter returns later to the clinic, s/he should be given ONE- second course of paucibacillary leprosy MDT.

Multbacillary leprosy

- MB patients should receive 12 doses to be completed within a maximum period of 18 months.When colledting the 12th dose of MDT the patient should be released from treatment(**treatment completed**)
- Patient who fail to collect the 12 doses of MDT within 18 months should given ONE second chance to complete a full course of Blister Pack.The procedures for asecond course fo MB

  Blister Pack as follows:-

  - A patient whose treatment is cumulatively interpted for more than six 'months' or A patient who has missed 8 doses of MDT in tatol and hence cannot complete the 12 doses within 18 months, should be recorded as defaulter.
  - When a defaulter report at a clinic, asecond course of MDT should be started after the importance of regular treatment has been discussed with the patient. Patients who restart the treatment must be registerd into the unit register District Leprosy Register again with a new number as return after default and thus should be included in another treatment cohort for assessing completion of treatment.
  - Every effort should be made to ensure that patients complete the second course of MDT as recommended.
  - After completion of the second course of MDT the patient should be recorded as treatment completed.

  A patient who fails to complete the second course

12.2.6 Treatment in special cases

Pregnancy: The standard MDT regimens are considered safe, both for mother and child and should therefore be continued during pregnancy.

Tuberculosis: Patients suffering from both tuberculosis and leprosy require appropriate anti-tuberculosis therapy in addition to the MDT. Rifampicin must be given in the dose required for the treatment of tuberculosis. Once the intensive phase of anti TB treatment is completed, the patient should continue with his/her monthly rifampicin for leprosy treatment.

HIV: The management of a leprosy patient infected with HIV is the same as that for any other patient. The response and cure rate of HIV positive patient is the same as in other patients. The management, including treatment reactions, does not require any modifications.

LEPROSY REACTIONS AND RELAPSE

Leprosy reaction is sudden appearance of acute inflammation in the lesions (skin patches,nerves,other organs) of a patient with leprosy.This is due to an alteration in the immunological status of the patient. **Reactions are the major cause of nerve damage and disability in leprosy.** Therefore should be detected early and treated.

Leprosy reactions are of natural cause of the disease and can occur at any time.Reaction commonly occurs during the early stage of disease. Sometimes patients report for first time to a health facility because of leprosy reaction. Some reactions are seen after completion of the treatment.

There are two types of reactions

- Reverse Reaction(RR) or type I reaction
- Erythema Nodosum Leprosum (ENL) or type II reaction (For detail refer Manual for management of Leprosy for Health Workers)

Treatment of Reversal Reaction Or Type I Reaction

Depending on severity, treatment of RR is by giving anti- inflammatory drugs or corticosteroids usually prednisolone for a prolonged period.

Table 26: Standard treatment of Severe RR with Prednisolone

40 mg daily (8 tablet of 5mg or 1 tablet of 40mg Prednic pack)	2 weeks
30 mg daily (6 tablet of 5mg or 1 tablet of 30mg Prednic pack)	2 weeks
20 mg daily (4 tablet of 5mg or 1 tablet of 20mg Prednic pack)	2 weeks
15 mg daily (3 tablet of 5mg or 1 tablet of 15mg Prednic pack)	2 weeks
10 mg daily (2 tablet of 5mg or 1 tablet of 10mg Prednic pack)	2 weeks
5 mg daily (1 tablet of 5mg or 1 tablet of 5mg Prednic pack)	2 weeks
Total	**12 weeks**
Continue MDT during treatment of reversal reaction	

Table 27: Treatment of severe RR with Prednisolone at Hospital level

60 mg daily (12 tablets of 5 mg prednisolone)	1 week
50 mg daily (10 tablet of 5 mg prednisolone)	1 week
40 mg daily (8 tablets of 5 mg prednisolone)	2 weeks
30 mg daily (6 tablets of 5 mg prednisolone)	2 weeks
20 mg daily (4 tablets of 5 mg prednisolone)	10 weeks
15 mg daily (3 tablets of 5 mg prednisolone)	2 weeks
10 mg daily (2 tablets of 5 mg prednisolone)	2 weeks
5 mg daily (1 tablet of 5 mg prednisolone)	2 weeks
Total	22 weeks
Continue with MDT during treatment of reversal reaction	

Treament for Erythema Nodosum Leprosum (ENL) or Type II reaction

Erythema Nodosum Leprosum occurs only in multibacillary leprosy patients.An estimated 5 to 10% of MB patients develop ENL reaction. It is caused by an interaction between dead *M.leprae* and substances accumulating in the blood and tissues.The reacton is often triggered by special circumstances like emotional stress, pregnancy or childbirth, infectious diseases (malaria TB), etc

Treatment of ENL

Mild ENL: Advice the patient to rest and provide anagelsics such as aspirin (600mg three times a day) and chloroquine if available (150 mg two times daily), for one week

duration .Re-examine the patient for signs of new nerve damage at weekly intervals. If no improvement after six weeks with analgesics or signs of a more severe ENL reaction occur, use prednisolone.

Severe ENL: Refer the patient to the nearest hospital for appropriate examinations and treatment. Prednisolone is given for three weeks as per schedule shown below.

Table 28: The standard treatment schedule of severe ENL at Hospital level

Daily dose prednisolone (mg)							
	Days						
Weeks	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1st week	50	50	50	50	40	40	40
2nd week	40	30	30	30	30	20	20
3rd week	20	10	10	10	5	5	5

Recurrent ENL

A few patients get regular episodes of ENL as soon as the dose of prednisolone come below 20 or 15 mg per day.This is called chronic or recurrent ENL. Patients with recurrent ENL should be referred to hospital

13. MUSCULO SKELETAL AND JOINT DISEASE CONDITIONS

1.1. Infections

13.1.1 Osteomyelitis

Osteomyelitis denotes infection of the bone and is most common in children under 12 years.

Clinical features: Common symptoms are fever, malaise and severe pain at the site of bone infection. If the infection is close to a joint there may be a 'sympathetic' effusion. Staphylococci are the most frequent responsible organisms. Salmonella osteomyelitis infection is a common complication of sickle cell anaemia.Tuberculosis osteomyelitis occurs in association with having tuberculosis

Table 29: Bone Infection

Condition	Treatment	Duration
Acute Osteomyelitis	Surgical drainage (recommended in all cases presenting with history > 24 hours) Flucloxacillin (IV) 1 to 2 g 4 times a day Or Clindamycin (IV) 600 mg three times a day. See Notes on Acute Osteomyelitis in text.	6 weeks or stop at 3 weeks if X-ray normal
Chronic Osteomyelitis	Surgery. Antibiotics not generally recommended	
Osteomyelitis in patient with sickle cell anaemia	Flucloxacillin (IV) 1 to 2 g four times a day Plus Chloramphenicol (IV) 500 mg four times a day (if salmonella is suspected) Check Ciprofloxacin with sickle cell patients	5 to 12 weeks 6to 12 weeks 2 to 3 weeks
Septic Arthritis	Surgical drainage Flucloxacillin or Clindamycin as for acute osteomyelitis	
Gonococcal Arthritis	Benzylpenicillin (IV) 2.5 to 5 MU four times a day or (if penicillin resistant) See STI Urethritis Kanamycin (IM) 2 g once daily	6 days 7 days
Compound Fracture (no infection established)	Flucloxacillin (IV) 1 g four times a day Or Clindamycin (IV) 600 mg 3 times a day	3 days

Notes on Acute osteomyelitis:

- Culture and sensitivity tests are essential to determine further treatment
- For osteomyelitis, treatment may be completed orally after 4 weeks, if fever and toxicity have resolved.
- ESR useful as guide of efficacy of treatment
- Alternative second line drugs for staphylococcal infection include **Cephalosporin, Rifampicin, Co-trimoxazole** and **Chloramphenicol**

Treatment guidelines

(a) Acute osteomyelitis

Adults **Cloxacillin** give 2-3 g IV every 6 hours for 7 days and then orally for a total of 4 weeks
Or
Clindamycin give 0.3 – 0.6 g I.V every 6 hours for 7 days and treat orally for a total of 4 weeks.

Children **Cloxacillin** give 25 mg/kg body weight IV initially every 6 hours for 7 days and then orally for a total of 4 weeks

(b) In patients with sickle cell osteomyelitis give

Adults **Ampicillin** give 2 g IV every 6 hours **in combination with**

Flucloxacillin 2 g IV every 6 hours for 7 days then orally for a total of 4 weeks.

Children with **Ampicillin** 50mg/kg body weight IV every 6 hours **in combination**

Flucloxacillin 25 mg/kg body weight IV every 6 hours for 7 days and then orally for a total of 4 weeks.

Further treatment should be influenced by results of culture and sensitivity. In case of salmonella being identified then give:

Ciprofloxacin 500 mg od for 21 days

In chronic osteomyelitis: surgery may be indicated. In all cases of osteomyelitis, pain should be treated with an adequate analgesic e.g. **Paracetamol** 1000 mg every 6 hours or in severe cases even Tramadol 50 – 100mg twice daily for 3 to 5 days

Paracetamol 10mg/kg body weight every 8 hours.

13.1.2 Tropical Pyomyositis

Clinical features: The cause of tropical pyomyositis is uncertain since abscesses explored early are sterile but later culture of the pus usually yields *Staphylococcus aureus*. The main clinical features are fever and painful indurations of one or more of the large muscles, mostly in the lower limbs.

Treatment guidelines

- Drain the pus from abscess

Adults	**Flucloxacillin (O)** 500 mg every 6 hours for 14 days **Or** **Erythromycin (O)** 500 mg every 6 hours for 14 days
Children	**Flucloxacillin (O)**25 mg/kg body weight every 6 hours for 14 days Or **Erythromycin (O)**10 mg/kg body weight every 6 hours for 14 days

13.2 Inflammatory Conditions

13.2.1 General Guidelines

- The first line treatment for most of these conditions is a non-steroidal anti-inflammatory drug (**NSAID**)**.** This group includes **Aspirin, Diclofenac** and **Ibuprofen,** but does **NOT** include **Paracetamol**
- **NSAIDs** should be used cautiously in pregnancy, the elderly, and patients with asthma and liver or renal impairment
- **NSAIDs** should be avoided in patients with current or past peptic ulceration. Refer patients with serious rheumatic disease and peptic ulceration for specialist help.
- **NSAIDs** should be taken with food
- If dyspeptic symptoms develop in a patient on NSAIDs, try adding magnesium trisilicate compound tablets or mixture. If dyspepsia persists with use of NSAID considered use of H_2 receptor antagonist (eg Cimetidine, Ranitidine)
- Physiotherapy is a useful adjunct treatment in many inflammatory joint conditions

13.2.2 Rheumatoid Arthritis

Clinical features: RA is a chronic multisystem disease of unknown aetiology. In the majority of patients with RA, the onset is insidious with joint pain, stiffness and symetrical swelling of a number of peripheral joints. The clinical course is however, variable.

Treatment Guidelines

	Acetylsalicylic acid give 1.2 g every 6 hours with food
Alternative medicines	**Ibuprofen** give 400 – 800 mg every 8 hours. Continue for a long as it is necessary

NOTE: Patients with intractable symptoms may require special treatment at specialists centre

13.2.3 **Gout**

Clinical features: Gout is a recurrent acute arthritis of peripheral joints which results from deposition, in and about the joints and tendons, of crystals of monosodium urate from supersaturated hyperuricaemic body fluids. The arthritis may become chronic and deforming. The main clinical features are those of an acute gouty arthritis, often nocturnal, throbbing crushing or excruciating. The signs resemble an acute infection with swelling, hot red and very tender joints. The first metatarsophlangeal joint of the big toe is frequently involved.

Treatment Guidelines

General principles

- Termination of acute attack
- Prevention of recurrence
- Prevention of further deposition of urate crystals.

13.2.3.1 **Specific treatment for acute Attack**

Give any NSAID high dose such as diclofenac orally 75 mg start then 50 mg every 8 hours until 24 hours after relief of pain. Reduce dose to 50 mg every 8 hours for 3 doses then 25 mg every 8 hours for three doses

Alternatively, give Ibuprofen 400 – 800 mg every 8 hours. Continue as long as necessary.

Prevention of recurrence

- Institute prophylactic diclofenac
- In obese patient, reduce weight
- Avoid precipitants e.g. alcohol
- Institute anti-hyperuricaemic therapy e.g. allopurinol give 100 mg every 8 or 12 hours to reduce uric acid synthesis.
- Prevention or reversal of deposition of uric acid crystals by use of allopurinol and dietry measures.
- Aim is to maintain serum uric acid level below 8 mg/dl (0.48 mmol/1).

13.2.3.2 **Chronic gout**

Give allupurinol 100mg daily increasing weekly by 100mg to 400 mg daily, the mean dose is 300mg.

13.2.3.3 **Osteoarthritis**

Clinical features: Common form of arthritis, characterized by degenerative loss of articular cartilage, subschondral bony sclerosis, and cartilage and bone proliferation subsequent osteophyte formation. Cause unknown, but genetic, metabolic and biomechanical have been suggested. Gradual onset of one or a few joints involved. Pain is the commonest symptom. Specific clinical features depend on the joint involved e.g. enlargement of distal interphalangeal joint (Bouchard's nodes)

Treatment guidelines

Rest the joint Use crutches or walkers to protect weight bearing joints in severe cases.

- Reduction of weight in obese patients
- Physiotherapy – exercise to the affected joints

Medicine therapy

Acetylsalicylic acid give 900 mg orally every 6 hours with food
Or
Diclofenac give 50 mg every 8 hours

NOTE: In sever cases surgery may be indicated e.g. hip joint replacement

14. METABOLIC AND ENDOCRINE DISEASE CONDITIONS

14.1 Diabetes Mellitus

Clinical features: Diabetes mellitus is a clinical syndrome characterized by hyperglycemia, due to deficiency or diminished effectiveness of insulin. Main clinical features of diabetes are thirst, polydipsia, polyuria, tiredness, loss of weight, white marks on clothing, pruritus vulvae or balanitis and paraesthesia or pain in the limbs.

Two main types have been recognized, type 1 (insulin dependent diabetes mellitus, IDDM) treated with insulin and diet and type 2 (non – insulin dependent diabetes mellitus, NIDDM) treated with diet and oral anti-diabetic agents.

Maintenance Therapy in Adults and children

Diet; Dietary control and maintenance of correct weight for height.
Advice on diabetic diets.

Insulin

Maintenance therapy is twice daily subcutaneous injections of a mixture of short acting and long acting insulin in the ratio of 1:3. 2/3 of the daily dose given in the morning and 1/3 of the dose in the evening. In pregnancy an additional dose of short acting insulin may be given with a midday meal.

NOTE:
- During surgery omit the usual morning dose of insulin
- Give small doses of short acting insulin during surgery and continue with short acting insulin until the patient has resumed his usual meals
- Most diabetics properly informed and managed soon become experts in their own care
- Be cautious about changing regimens and do not change dietary and drug regimens simultaneously
- Advice on diabetic diet is given later in the chapter
- Infections may require increased dosage of insulin

Oral anti-diabetic agents

(a) Sulphonylureas (best taken 15 – 30 minutes before meals)

Chlorpropamide	125 – 500 mg as single dose daily
Glibenclamide	2.5 – 15 mg give every 24 hours before meals.
Gliclazide	40 – 320 mg in 2 divided doses daily
Tolbutamide	500 mg – 3 g give in 2 – 3 divided doses
Glipizide	2.5 – 5 mg daily shortly before breakfast or lunch, adjusted according to response; maximum 20 mg daily; up to 15 mg may be given as single dose

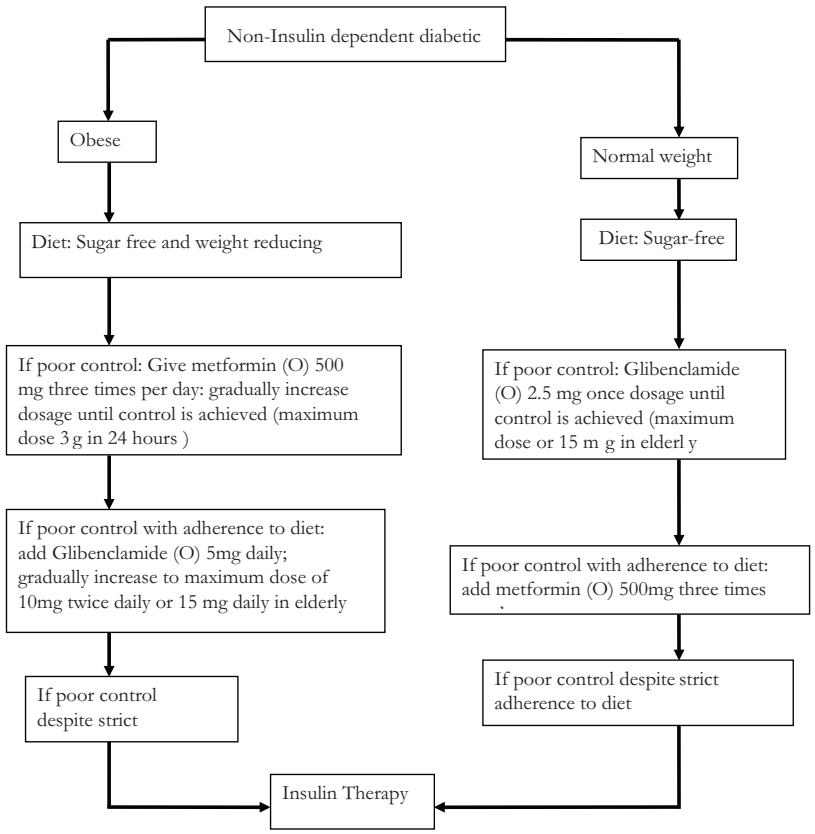
CAUTION: Chlorpropamide not to be used in elderly since it has long half life and not to be taken with alcohol

(b) Biguanides

Metformin 500 - 2000 mg in 2 – 3 divided doses (with or after meals, often used for obese patients)

NOTE: Treatment for diabetes mellitus is for life

14.1.1 PROTOCOL FOR TREATMENT WITH ORAL ANTIDIABETICS



14.2 Hyperglycemic Pre-coma and Coma in Adults

Pass a nasogastric tube and allow free drainage in the unconscious or semiconscious patient. Search for cause and treat infections promptly.

(a) Fluid replacement (Adults)

Normal saline is the recommended IV fluid; as much as 8 litres may be required in 24 hours:

Sodium chloride 0.9% (IV infusion) according to the following schedule;

First litre	over 30 minutes
Second litre	over 1 hour
Third litre	over 2 hours
Fourth litre	over 4 hours
Fifth litre	over 6 hours

Give subsequent litres of normal saline every 8 hours.

The above regimen may be modified depending on the state of hydration. When blood sugar falls to **14 mmol/l, change to dextrose 5% or dextrose-saline**

NOTE: 18mg/dl equals 1 mmol/l

CAUTION: Fluid overload is dangerous in elderly patients

(b) Potassium Replacement

In conditions where blood potassium levels cannot be determined add it to IV fluid. **Potassium chloride** 20 mmol with every litre of IV fluid after the first litre. Increase to 40 mmol with each litre given over 8 hours.

Where serum potassium levels are available; start replacement of potassium at a rate of 20 mmol per litre of IV fluid as soon as insulin has been started. Assess serum potassium regularly and adjust replacement as needed to maintain potassium at 4.0-5.0 mmol/L. Continue with oral replacement for one week.

Potassium chloride (O) 1-2 tablets of 600 mg twice daily.

(c) Insulin Therapy (Adults)

Initially give by intramuscular injection;

Soluble insulin (IM) 10 units as a single dose, then 5 units every hour until blood sugar is down to 16mmol/L.

When blood sugar is 14mmol/L or less ad clinical condition shows clear improvement, change to subcutaneous administration;

Soluble insulin (SC) every four hours; dose based on a sliding scale.

Blood sugar (mmols/L)	**Units of Insulin**
>16	12 units
>12-16	8 units
<8	0 units

NOTE: Use blood sugar reagent strips, "Dextrostix" or glucometer blood sugar readings. Sliding scales using URINE glucose tests are unreliable and should be avoided where possible.

An alternative to the sliding scale is to use an empirical dosage:

Soluble insulin (SC)

A reasonable starting dose is 10 units three times a day

Insulin doses and frequency may need to be adjusted to achieve glycaemia control. As soon as the patient's condition is stable, start appropriate maintenance therapy.

On this regimen, most cases show definite clinical improvement within 6-10 hours. Clinical and (if available) biochemical reassessments should be made at frequent regular intervals during treatment. Modifications of the fluid and electrolyte therapy should be made as necessary.

CAUTION: Sodium bicarbonate injection should be used ONLY in cases of acidosis and if complete biochemical data are available and where blood pH determination facility are avaiabale.

14.3 Hypoglycaemia

Hypoglycaemic symptoms include excision sweating, awareness of heartbeats impaired mental state to frank coma.

Medicines for hypoglycaemic coma

- Dextrose Infusions
- Glucagun 1mg in stat

14.4 Diabetes in Children

A significant number of new cases of insulin dependent diabetes occurs in children who usually present with classical features of diabetic ketoacidosis with polyuria, polydipsia etc.

Hyperglycaemic Pre-coma and Coma

(a) Fluid Replacement (children)

Approximately 200 ml/kg in 24 hours is required for hydration. Start with rapid infusion of:

Sodium chloride 0.9% at 20 ml/kg for the first hour; then for the remaining volume give: 1/3 over next 4 hours
1/3 over next 8 hours
1/3 over next 12 hours
After the first hour, **Add**
Potassium chloride 20mmol/L

When Blood sugar is less than 14 mmol/L change to:

Dextrose 5% (IV infusion)
Or
Half strength Darrows solution
Plus
Potassium chloride 40mmol/L

(b) Insulin Therapy (Children)

Initially by intramuscular administration;

Soluble insulin (IM) 0.1 units/kg every hour; reduce to 0.05 units/kg every hour when blood sugar fall below 15 mmols/L;

When condition stabilizes change to subcutaneous administration:

Soluble insulin (SC) 0.75-1 units/kg/day in 3 divided doses before meals.

Later, change dose to twice daily, applying the rule of thirds (see "Maintenance Therapy" above).

Honeymoon period: In the months after initial diagnosis, insulin requirements may decline to less than 0.5 units/kg/day as the pancreas continues to produce some endogenous insulin. Requirements invariably revert to higher doses as endogenous insulin levels decline.

NOTE: Diet control is important in children but a too rigid control may prove to be counter-productive. The diabetic child should be allowed to indulge in normal activities at school. Teachers need to be informed about the condition

(c) Diabetic Diet

Ideally a dietician should calculate dietary requirements for individual patients.

Aim of diet control is to reduce the blood sugar to normal and to maintain a constant blood sugar level.

- 45-50% of energy intake should be in the form of carbohydrates; the amount of carbohydrates should be consistent from day to day
- Complex carbohydrates are preferable to simple sugars.
- Carbohydrates and calories should be evenly distributed through the day. Meals must not be missed. An insulin dependent diabetic may have snack between meals
- Alcohol is not allowed.
- Sugar and sugar-containing food/drinks should be totally avoided. They only exceptions are when a patient feels faint, or is ill and cannot eat normally
- Exercise should be encouraged. A snack should be taken before and after playing sport

14.5 General Advice for Diabetics

NOTE: All diabetic patients should be advised to have a "medic-alert" bracelet or necklace and to join the Tanzania Diabetic Association

Syringes/insulin Storage

Sterile disposable syringes should be used. Insulin should be stored in a cool dry place.

Injection technique

Clean and dry skin. Inject subcutaneously NOT intradermally. The site of injection should be varied (abdomen and thighs are the most suitable sites).

Foot Care for Diabetics

Advice about foot care is important: keep clean and dry, wear well-fitting shoes, take care to avoid burns.

14.6 Thyroid Disease

Clinical features: Diseases of the thyroid gland are manifested by qualitative or quantitative alterations in hormone secretion or enlargement of the thyroid gland or both. Enlargement of the thyroid gland may result in normal, increased, or decreased hormone secretion.

14.6.1 Hyperthyroidism

Clinical features: Hyperthyroidism (thyrotoxicosis) results from an excess of circulating thyroxine or liothyronine or both. It is usually due to diffuse hyperplasia and hypertrophy of the thyroid gland (Graves's disease). Hyperthyroidism is characterized by an increased metabolic rate, which causes weight loss, increased appetite, fatigue, emotional disturbances, heat intolerance, sweating, muscle weakness and diarrhoea.

Graves' disease
Carbimazole (O) initially 40mg once daily for 3 weeks then 20 daily for 3 weeks

Toxic Nodular Goitre
Can be treated with antithyroid drugs and surgery or radioiodine

Carbimazole (O) initially 40mg once daily for 3 weeks then 20mg daily for 3 weeks.

WARNING: Carbimazole may induce bone marrow suppression. Patients should be told to report any type of infection especially sore throat like symptoms. The drug should be stopped immediately if neutropenic.
Check iodine function at 5 -6 weeks. Continue with 5mg Carbimazole after the situation has normalized for up to one year

14.6.2 Hypothyroidism

Clinical features: Hypothyroidism is a deficiency of circulating thyroid hormones. It may occur congenitally (cretinism) or may arise later in life. Early symptoms in neonates are non-specific and vague but include constipation, lethargy, jaundice or respiratory distress. Symptoms in adult cases include gradual increase in fatigue and cold intolerance, weight gain an constipation, alopecia, angina pectoris, anaemia, depressive disorders, goiter, heart failure and myalgia.

Treatment Guidelines

- **Iodised salt** may not provide sufficient iodine and should therefore not be prescribed alone.
- **Lugol's solution** is too concentrated for daily use, and should be diluted by a factor of 30 to give 4.2 mg/ml (**Schiller's iodine)**.

Treatment Age under 45 years

First choice **Schiller's iodine** 2 drops (460 micrograms) once daily for one year. Response may be obtained within 6 months.

Second choice: Lugol's solution 3 drops (21mg) once each month for up to one year. Lugol's solution is stronger then schiller's iodine (see above)

Third choice Patient within this age usually responds poorly to iodine treatment and there is a risk of iodine induced thyrotoxicosis. Iodine therapy is therefore **not recommended**

14.6.3 Post thyroidectomy

Iodine should be given daily indefinitely to prevent recurrence, following dosing schedule given above.

On Iodine use:

- Physiological doses of iodine can be given even in pregnancy. It is actually necessary to provide the therapy to avoid iodine deficiency to the foetus
- Patients should continue taking iodized salt indefinitely (Ref. National Policy on Nutrition) after the completion of treatment begin giving 1 drop (7 mg) at Lugol's sol per month.
- All salts sold for human consumption in Tanzania are required to be iodized (Govt. law)

Treatment guideline

In autoimmune thyroiditis and hypothyroidism following radioiodine or total thyroidectomy, treat with:-

Levothyroxine (O)

Start dose 100 micrograms once daily (give half the dose to the elderly) increasing by 25-50 micrograms every four weeks as may be required.

15. NERVOUS SYSTEM DISEASE CONDITIONS

15.1 Infections

15.1.1 Bacterial Infections

Acute bacterial Meningitis is an inflammation of the membranes of the brain or spinal cord, i.e. of the dura matter or the pia-arachnoid matter in response to bacterial infection. It is mainly caused by *Neiseria meningitidis*, *Streptococcal pneumoniae*, and *Haemophilus influenzae*. Salmonella is less common.

Clinical Features: The disease is characterized by an intense headache, fever, intolerance to light and sound and rigidity of muscles, especially those in the neck. Also the disease causes acute confusional state where all mental functions are reduced especially alertness, attentiveness and the ability to grasp the more immediate situation. Reactions are slow and indecisive, and the patient sleeps long hours. There is a marked disturbance of perception. As the confusion deepens, stupor and coma ensure.

In infants under 1 year diagnosis is much more difficult therefore always think of it in a sick child if:

- Refusal to eat and or suckling, drowsiness and weak cry
- Focal or generalized convulsions
- Fever may be absent
- Irritability
- Infant may be hypotonic, neck is often not stiff
- Bulging fontanelle

NOTE: A lumbar puncture is essential to confirm diagnosis

Treatment guidelines

Where the organism is not known, **Chloramphenicol** in combination with **Benzyl penicillin** are recommended.

Adults

Chloramphenicol — Give 1 g every 6 hours IV initially and after a good clinical response continue with oral treatment at the same dose for 14 days in **combination with**

Benzyl penicillin 5MU IV every 6 hours initially and after good clinical response (i.e. 48 hours after fever settles) give same dose IM for 10 days.

Children

Chloramphenicol — Give 25 mg/kg body weight every 6 hours initially I.V and after a good clinical response give orally the same dose for a total period of 14 days in **combination with**

Ampicillin 50 mg/kg body weight every 6 hours initially IV and after good clinical response give orally for a total period of 14 days.

Where the patient has convulsions:

Diazepam Give 0.25-0.5 mg/kg body weight by slow IV until control is achieved

Where the organism is known the following is advised:

(a) Meningococcal meningitis and Pneumococcal meningitis

Prevention

- Vaccination – for group A & C
- Household and close contacts should be given prophylaxis

Adults

Ciproflaxin 500mg stat

Children Rifampin

3-12 months 5mg/kg 12 hrs for 2 days

> 1yr 10mg/kg for 2 days

(b) *Haemophilus influenzae* **meningitis**

Adults **Ampicillin** give 3 g IV every 6 hours initially, then change to oral dose medication as soon as possible.

Or

Chloramphenicol give as above

Children 50 mg/kg body weight every 6 hours for 10 days

NOTE: Neonates require treatment for 3 weeks and the recommended treatment is: Chloramphenicol 6 mg/kg body weight every 6 hours, intravenously.

15.1.2 Cryptococcal Meningitis

It is chronic Meningitis caused by Cryptococcal neoformans. It develops in patients who are immunocompromised e.g. patients with HIV having low CD count.

Clinical Features:

The disease is characterized by headache, (in 75%), fever (in 65%), intolerance to light and sound and rigidity of muscles, especially those in the neck, vomiting, seizures, deafness and blindness. In advanced stages in addition to exacerbation of mentioned features, the disease causes confusional state where all mental functions are reduced especially alertness, attentiveness and the ability to grasp the more immediate situation. Reactions are slow and indecisive, and the patient sleeps long hours. There is a marked disturbance of perception. As the confusion deepens, stupor and coma ensure.

Treatment Guidelines:
Fluconazole 400 – 800 mg/day (O) for 6 – 10 weeks, then 200 mg/day (O) indefinitely
Concurrent treatment with ARV does improve the overall prognosis of such cases

Alternative Treatment

Amphotericin B, 0.7 – 1 mg/kg/day by slow infusion IV for 2 weeks

Plus

Flucytocine, 25 mg/kg (IV) 4 times daily for 14 days

15.1.3 Other CNS Infections

Table 30: treatment Guidelines for other CNS Infections in Adults and Children

Condition	Treatment	Age	Duration
Brain Abscess (bacterial)	Benzyl penicillin (IV) 5 MU every 6 hours Plus Chloramphenicol (O) 1 g every 6 hours	Adult Adult	4-6weeks 14 days
	Benzyl penicillin (IV) 125,000 IU/ kg/24 hours Plus Chloramphenicol (O) 100 mg/ kg/24 hours	Child Child	5weeks 14 days
Brain abscess (staphylococcus aureus)	Flucloxacillin (IV) 2g every 6 hours Plus Sodium fusidate (O) 750 to 100mg every 8 hours	Adult Adult	6weeks 6 weeks
	Flucloxacillin (IV) 50 – 100 mg/ kg/24 hours 250 mg every 8 hours 500 mg every 8 hours Plus Sodium fusidate (O) 50 mg/kg/24 hours	Up to 1 year 1-5 years 5 years and above	5 weeks

NOTE:
- Where the patient is allergic to penicillin, Choramphenicol 500 mg every 6 hours can be used instead.
- Sodium fusidate should NEVER be given alone

15.1.4 Tetanus

Clinical Features:
It is an acute, often fatal disease caused by an exotoxin. In the case of neonates, infection is through the umbilical stump, it results in tetanus neonatorum. The main clinical features are generalized increased rigidity and convulsive spasm of skeletal muscles.

Treatment guidelines

a) Prevention of further absorption of toxin from wound

Human tetanus immunoglobulin

Adult Give 1000 – 3000 IU if available. However horse serum is an alternative after a test dose

Children same dose as adults

Adult **Benzyl Penicillin** give 1.2 MU. IV every 6 hours for 24 **and thereafter**
Procaine Penicillin 1.2 MU I.M once daily for 7 days.

Children **Benzyl Penicillin** 250,000 IU IV. Every 6 hours for 24 hours **and thereafter**
Procaine Penicillin 0.4 – 0.8 MU I.M every 24 hours for 7 days

Surgical toilet must be done at least 1 hour after the injection of antitoxin.

b) control of spasms:

Adult **Diazepam** 10-30 mg IV every 6 hours
Chlorpromazine give 100 mg I.V every 6 hours alternating it with diazepam
Phenobarbitone give 50 – 100 mg I.V every 12 hours

Children **Diazepam** give 0.5 mg/kg body weight I.V every 6 hours
Chlorpromazine Give 2 mg/kg body weight I.V every 6 hours alternating it withdiazepam 0.5 mg/kg body weight every 6 hours.

Phenobarbitone Give 6 mg/kg body weight every 12 hours

Table 31: Guidelines for Dosage Administration**

Time (Hours)	0	3	6	9	12	15	18	21	24
Diazepam	*	*		*		*		*	*
Chlorpromazine		*		*		*			
Phenobarbitone	*		*					*	

****** These are general guidelines; however, frequency and route of drug administration should be titrated versus clinical conditions

c) General measures

Provide nutrition, fluids and intensive nursing care

d) Prevention

On admission to hospital give tetanus (toxoid) vaccine 0.5 ml s.c. Repeat dose after 4 weeks and after 6-12 months.

15.1.5 Rabies

Clinical features: Rabies is an acute viral disease of the central nervous system that affects all mammals and is transmitted to man through infected secretions, usually saliva. Early or prodromal clinical features of the disease include, apprehensiveness, restlessness, fever, malaise and headache. The late features of the disease are excessive motor activity and agitation, confusion, hallucinations, excessive salivation, convulsions and hydrophobia. Mortality rate is very high.

Treatment guidelines

- Local wound therapy

Wash wound thoroughly with water and soap and repeat process with 1% cetrimide solution or apply tincture of iodine.

- Passive immunization

Anti rabies human immunoglobulin Give by careful instillation in the depth and around the wound (dose 20 IU/kg body weight half the dose given parentrally and the other half injected into and around the wound)

- Active immunization

Human Diploid Cell Vaccine (HDCV) give 1 ml I.M as soon as possible after exposure. Subsequent doses of HDCV are given on days 3, 7, 14, 21, 28 and 90

- Tetanus toxoid vaccine: give 0.5 ml I.M on days. 1 month and 6-12 months

Adults **Procaine penicillin** 1.2 MU I.M daily for 5 days If patient is sensitive to penicillin, give Erythromycin 500 mg 8 hourly for 5 days

- **Children** **Procaine Penicillin** 0.4 – 0.8 MU I.M. every 24 hours if patient is sensitive to penicillin, give **Erythromycin** 10mg/kg body weight every 6 hours both for five days

15.2 Vascular Headaches

Migraine

This is characterised by a trial of paroxysmal headache, vomiting and focal neurological events (usually visual). It is more common in females than in males often there is a family history of migraine.

Associated precipitants include:-

- dietary (cheese, chocolate or red wine)
- psychological stress

General Measures

- Avoidance precipitants
- Relaxation to reduce stress

Medicines

Acute attack		
Analegesia	-	Paracetamol
	-	Aspirin
Antiemetine	-	Metroclopranizale
Severe attack	-	Sumatriptan

Prevention

Propranolol	80-160mg/daily
Amitryptiline	10-50mg at right.

15.3 Anxiety Neurosis

Clinical features: Anxiety neurosis is a neurotic disorder characterized by a chronic, unrealistic/exaggerated anxiety often punctuated by acute attacks of anxiety or pain.

Anxiety neurosis which afflicts 5% of the population is characteristically a disorder of young adults and affects women twice as often as men.

The illness may take many forms. Acute anxiety attacks are characterized by sudden onset of tension, restlessness, tremor, breathlessness, tachycardia and palpitations. Chronic anxiety state presents with persistent diffuse anxiety, motor tension, autonomic hyperactivity, unpleasant anticipation and irritability.

Treatment guidelines

Medicines do not resolve the causes of the illness but may reduce anxiety. The patient needs understanding and sympathy – Psychotherapy. Drug therapy include:

Diazepam give 5 – 10 mg every 8 hours.
Or
Chlorpromazine 50 – 75 mg daily and increase gradually to 300 mg daily
Or
Thioridazine give 50mg once a day and increase gradually to 300mg a day if necessary
Or
Amitriptyline give 25 mg every 8 hours.

15.4 Depressive Psychosis

Clinical features:
Depressive psychosis or schizophrenic disorders is a serious mental illness that involves changes of mood for duration of six months or more. It can be divided into two forms; biporal affective disorder (Manic depression) and major depression without manic episodes. It includes insomnia characterized by early waking after 2-3 hours of sleep, variation of mood, ideas of guilt, unworthiness and self-blame often delusional in intensity.
In manic depressive psychosis, patients can suffer form abnormal elation and hypersensitivity in addition to attacks of depression.

Treatment Guidelines

Medicine of choice **Amitriptyline** 50 – 75 mg at bed time and increase gradually to a maximum of 150 – 200 mg. Maintenance dose for 3-6 months 50 – 100 mg in 24 hours.

Or

Imipramine 75 – 100 mg at night until neurosis is controlled

For manic attack

Haloperidol 3-5 mg I.M and increase to 30 mg every 4-8 hours till acute attack is controlled. Then give by mouth 3-4.5 mg every 8 hours

15.5 Epilepsies

Clinical feature: Epilepsies are disorders of the central nervous system (CNS) which are characterized by chronic spontaneous recurring seizures.

Control of Epilepsy (excluding petit mal) in Adults and Children.

Schedule of Treatment

- Make sure that all other causes (alcohol, eclampsia, meningitis, hypoglycaemia etc) are excluded
- Patients with more than one fit should be considered for treatment
- Treatment should be started with phenobarbitone alone. Full effect can be experienced usually after two weeks.
- Phenobarbitone can be increased to maximum if seizures persist (refer to a table below)
- When no improvement is obtained change to phenytoin, tapering phenobarbitone by reducing the dose by 30 mg every week. If seizures persist, increase phenytoin by 50 mg increment to a maximum dose of 600 mg daily
- If no appreciable improvement, change to carbamazepine, stopping phenytoin by reducing dose by 50 mg per week. Increase the dose to maximum. (refer to table below)
- If possible the combination of these drugs should be avoided
- Patients still having seizures despite having the above treatment, should be referred to a higher level for treatment.

Table 32: Dosages for epilepsy Treatment

	DRUG/INITIAL DAILY DOSE	DAILY MAXIMUM DOSE
	Phenobarbitone (O) as a single dose at night	
Adults **Children**	60 to 90 mg 3mg/kg/24 hours	240 mg 8 mg/kg/24 hours
	Phenytoin (O) once daily at night or twice daily when required	
Adults **Children**	200mg 5mg/kg/24 hours	600mg (2 divided doses) 8mg/kg/24hrs (2 divided doses)
	Carbamazepine (O) as 2 divided doses	
Adult **Children**	200 mg 10mg/kg/24 hours	1200 mg(3dvided doses) 20 mg/kg/24 hours

Epileptic seizures may be classified as follows:

15.5.1 **Status Epilepticus**

Treatment guidelines

Adults:

- Protect airway, give oxygen
- Give dextrose 5%, 80 ml as bolus
- Give anticonvulsant

Medicine of choice — **Diazepam (**IV) slow, initial dose 10 mg IV. NOT IM. Repeat when necessary to a maximum of 200 mg in 24 hours; monitor respiration

Second choice — **Phenobarbitone** (IV) initial dose 200mg slowly. Repeat after 10 minutes, thereafter it may be repeated every 30 minutes to a maximum of 15mg/kg/24 hours

Third choice — **Phenytoin** (IV) initial dose 150-250 mg at a rate not exceeding 50 mg/minute. Continue with 100 mg every 6 hours, but do not exceed 15mg/kg/24 hours

NOTE: These drugs when given together may cause serious respiratory depression

Children:

- Protect airway, give oxygen:
- Give dextrose 50% (I.V) 15 ml (1ml/min) as a bolus:
- Give anticonvulsant

Diazepam (slow I.V) 5 mg/minute, dose 0.25 mg/kg body weight.

15.5.2 Serial Epilepsy

Patient gets frequent seizures but regains consciousness between attacks:

Phenobarbitone (I.M)

Adult	400 mg (maximum 15 mg/kg/24hours)
Children	5 mg/kg/24 hours as loading dose

Febrile Convulsions in Children aged 1-5 years

No anticonvulsant except to known non-febrile convulsion cases or neurological abnormalities.

Sponging and antipyretics should be given.

For prolonged or recurrent febrile convulsions, **Diazepam** should be administered rectally by using a syringe.

15.6 Schizophrenia

Clinical features: Is a group of mental disorders characterized by altered thinking process, emotions, drive, behavior and withdrawal from reality. Symptoms vary from patient to patient and from time to time. These include bizarre appearance, reduced motor activity, withdrawal, flattened effect and mood disturbance, delusions and hallucinations.

Treatment guidelines

In acute attacks: **Chlorpormazine** 100 – 150 mg 6 – 8 hourly IM

For maintenance: **Chlorpromazine** 100 – 600 mg (O) daily in divided doses (a dose should not exceed 200 mg)
Or
Haloperidol 3-45 mg (O) or I.M every 8 hours

Adjunct treatment

Antiparkinsonian drugs should only be used if reaction occur or at higher doses of antipsychotics likely to cause reactions. Any of the following can be used:

Trihexyphendyl (Benzhexol) 5mg once to three times daily (O)

Biperidine, 2 mg once to three times daily (O)

Biperidine, 2mg SLOWLY IV 2 -4 minutes for acute dystonic reactions

Levodopa with Carbidopa

15.7 Alcohol Dependence Syndrome

Clinical features: Alcoholism is a syndrome consisting of two phases: problem drinking and alcohol addiction. Problem-drinking is the repetitive use of alcohol, often to alleviate tension or solve other emotional problems. Alcohol addiction is a true addiction similar to that which occurs following the repeated use of barbiturates or similar drugs.

Treatment Guidelines

a) Alcohol-related withdrawal syndrome

- Give adequate nutrition and rest, give vitamin B especially thiamine 50 – 100 mg every 24 hours.
- For the CNS symptoms

Diazepam (O) 10 mg every 406 hours on the first 24 and reduce by 20% over 3-5 days.

b) Rehabilitation

- Educate the alcoholic and family about alcoholism
- Encourage the alcoholic to re-establish a functional life-style through counselling, vocational rehabilitation and sexual counselling.

15.8 Substance Abuse

Clinical Presentation: Non-medical use of drugs, i.e. any use of drugs for other than recognized therapeutic purposes, commonly abused drugs include, marijuana, diazepam, alcohol etc.

Medicine associated problems can be divided into:

a) Individual problems
- Periods of black out
- Argumentative bouts
- Less productivity
- Withdrawn/depressed

b) Social-cultural
- Marriage difficulties
- Problems on the job

c) Social-legal
- Driving related problems
- Conflicts with others
- Violence versus members of the society

Treatment guidelines

- Supportive therapy e.g. I.V fluids, chlorpromazine for acute confusional state
- Management of acute problems depends on the substance of abuse being identified.
- Rehabilitation.

15.9 CNS Toxoplasmosis

An opportunistic infection of CNS in HIV individuals that cuses a severe neurological disease.

Treatment guidelines

A combination of sulphadiazine 2gm daily and pyrimethamine 25mg daily for four weeks.

- Sulphadiazine 2gm daily 4/52
- Pyrimethamine 250mg daily 4/52

16. OTHER DISEASE CONDITIONS

16.1 Leishmaniasis

Clinical features: This group of diseases is caused by protozoa of the genus Leishmania. It can take two forms i.e. generalized visceral infection (kala-azar) or a purely cutaneous infection (oriental sore). Onset of kalaazar is shown by low grade fever, splenomegaly, enlarged liver and lymphadenopathy. In the cutaneous form, single or multiple lesions are found on exposed parts, from where Leishman Donovan bodies can be demonstrated.

Treatment guidelines

Visceral/cutaneous leishmaniasis

Medicine of choice:	**Sodium stibogluconate**
First choice	**Sodium stibogluconate** 20mg (IM) per kg body weight per day for 30 consecutive days or slow IV daily for 30 days. Do not exceed 850 mg per day. If parasites persist, treatment may be repeated, two to three times with a ten day interval in between.
Second choice	**Pentamidine Isethionate** give I.M at 2 to 4 mg/kg body weight every 48 hours for a total of 10 injecitons. It is less effective than sodium stibogluconate. Since an immediate hypotensive reaction may occur, patients should lie down during the injection and adrenaline should be at hand. Pentamidine like Suramin, is contraindicated in renal disease. Further, due to possible nephrotoxicity, urine must be examined for albumin and/or casts. The presence of either contraindicates continued use of **pentamidine.**
Children	The same dosage as above

CAUTION: Close medical supervision is necessary during treatment

16.2 Trypanosomiasis

Clinical features: The causative organisms are the parasitic protozoa of *Tryponosoma brucei gambianse* and *T. brucei rhodesience.* Clinical features include fever, lymphadenopathy and CNS involvement like headache, mental confusion, tremors and pyresis. However for relevance in treatment, two clinical divisions are noted, that is, there are patients with no CNS involvement and those with CNS signs/symptoms.

Treatment guidelines

Medicine of choice	**Suramin** is the medicine of choice for the early stages of African trypanosomiasis (T.b.g.) before there is CNS involvement. Give **20mg/Kg** (to a max. of 1g in adults) (IV) given every week for 5 – 6 weeks

Second choice **Melarsoprol**

Recommended dose is as follows:

Give 100mg (children 20 mg) I.V as a test dose then if there is no reaction give 20mg/kg body weight single dose, freshly prepared (maximum 1 g) every 5 – 7 days.

NOTE:
- Usual course is 5 doses (don not exceed 7 doses or a total of 6 g)
- Suramin may cause renal toxicity therefore it is contraindicated in renal diseases
- Further, due to possible nephrotoxicity, urine must be examined for albumin and/ or casts the presence of either contraindicates continued use of Suramin.

Pentamidine In Trypanosomiasis due to T.b gambianse without CNS involvement the recommended drug is freshly prepared pentamidine.
Give **Pentamidine isethionate** freshly prepared 4 mg/kg body weight I.M every 24 hours for 7 days (do not exceed 300 mg/dose).

CAUTION: In patients with CNS involvement:
Start treatment with Suramin (day 1 and 2) for a total of two doses to clear blood of trypanosomes in order to avoid a Jarisch-Herxheimer reaction which will be precipitated by destroying both CNS and peripheral trypanosomes by melarsoprol. Then give melarsoprol 3.6 mg/kg body weight in IV infusion dissolved in 200 ml of dextrose 5% given over a 2 hour period for 3 consecutive days. The patient should lie supine during injection and for five hours afterwards.
The patient is then rested for 5-7 days and then the above regime of melarsoprol is repeated. This is done once again after a further rest of 5-7 days, thus completing 3 courses of melarsoprol. Blood film and CSF are then examined for trypanosomes.

16.3 Anthrax

Clinical features: Anthrax is a disease of animals. However, man is infected directly through contact with infected hides or inhalation of spores in the lungs or ingestion of infected meat. Hence it can be cutaneous, pulmonary and/or intestinal. The main clinical features are itching, a malignant pustule, pyrexia and rarely pulmonary and gastrointestinal signs.

Treatment guidelines

Medicine of choice	**Benzylpenicillin**
Adult	0.6 MU I.V every 6 hours until local oedema subsides then Continue with **Phenoxymethylpenicillin** 250 mg 6 hourly for 7 days.

Children

Premature infant and neonate	6mg/kg body weight every 6 hours until local oedema subsides then continue with **Phenoxymethylpenicillin** 62.5 mg 6 hourly for 7 days.
Infants (1-12 months)	75 mg/kg body weight daily 8 hourly until local oedema subsides then Then continue with **Phenoxymethylpenicillin** 62.5 mg 6 hourly for 7 days
Infants (1-12 years)	100 mg/kg body weight daily 6 hourly until 1 local oedema subsides **Then give Phenoxymethylpencillin** as follows: For child 1-5 years 125 mg 6 hourly for 7 days For child 6-12 years 250 mg 6 hourly for 7 days
Second choice	**Erythromycin (O)**
Adult	500 mg 8 hourly orally for 10 days
Children	10 mg/kg body weight 8 hourly for 10 days

16.4 Mastitis (Breast Abscess)

Clinical features: Mastitis is an inflammation of the breast. The common causative organisms of the disease are either staphylococcus or streptococcal bacteria. The breast becomes red, swollen and painful. In breast abscess, there is a collection of pus in the breast. Clinical features of a breast abscess are tenderness, swelling, red, warm, fever and painful lymph nodes.

General: In mastitis stage the treatment is antibiotics and antiflogistics. In abscess satge treatment is both surgical and antibiotics.

Treatment guidelines

Flucloxacillin 500 mg orally every 6 hours for 7 days in an empty stomach.
Or
Erythromycin 500 mg orally on the first day then 100mg daily for further 6 days
and
Acetylsalicylic acid 600 mg orally, after food, every 6 hours as needed. Instruct the patient to apply hot compresses and a constriction bandage to relieve pain in the affected breast, and to express milk if applicable to reduce engorgement.

17. VIRAL INFECTIONS

17.1 Measles

Clinical features: Measles is an acute infectious disease caused by a paramyxovirus which is spread by droplets. It usually occurs in children under five who have not been immunized or have been incompletely or unsuccessfully immunized. The main clinical features are indistinguishable from an upper respiratory tract infection i.e. fever, conjunctivitis with lacrimation, photophobia, cough and nasal discharge. Koplic spots are small red, irregular lesions appearing in the mouth 1-2 days before rash and are diagnostic of measles. Red maculopapular rash appearing first behind the ears and spreading to rest of body is a feature of the disease.

Treatment guidelines

Adults	**Paracetamol** 1 g every 8 hours for 5 days
	Vitamin A 200,000 IU orally stat against vitamin A deficiency
	Tetracycline eye ointment 1% apply once daily for 7 days
Children	**Paracetamol** 10mg/kg body weight every 8 hours for 5 days. **Vitamin A** if less than 1 year give 100,000 IU stat and if over 1 year give 200,000 IU

NOTE: Give extra fluid and food

17.2 Poliomyelitis

Clinical features: Poliomyelitis is a disease caused by one of the three related polio viruses, types 1, 2 and 3 which comprise a subdivision of the groups of enteroviruses. Clinical features of the disease can be divided into three groups:

- Non-specific febrile illness of 2-3 days duration without CNS involvement
- Aseptic meningitis include features mentioned above
- Paralytic poliomyelitis – which is the major possible outcome of the infection but occurs in less than 10% of those infected.

Treatment guidelines

Give supportive therapy

Prevention

- This disease is preventable by immunization with polio vaccine starting at birth. Give 4 doses at intervals of 4 weeks.
- Parents should be told about the World program to eliminate Polio and the importance of actively participating.

17.3 Viral Hepatitis

Clinical features: Viral hepatitis is a systemic infection predominantly affecting the liver. It is caused by the hepatitis viruses A, B, non-A, non-B and delta viruses (E). The clinical spectrum of the disease due to viral hepatitis is variable. It ranges from asymptomatic and

inapparent to fulminates and fatally acute infections. Subclinical persistent infections with hepatitis virus B, non-A, and non-B, may progress to chronic liver disease, cirrhosis and possible hepatocellular carcinoma.

Treatment guidelines

Mainly supportive Therapy

Prevention:

Hepatitis types A and B are preventable by immunization. Vaccines for other types should be made available.

17.4 Human Immunodeficiency Virus (HIV)

Clinical features: The spectrum of disease due to HIV infection ranges from mild, non-specific conditions (e.g. persistent generalized lymphadenopathy - PGL, herpes zoster, seborrheic aczema) to its sever form i.e. Acquired Immuno Deficiency Syndrome (AIDS). Infection by the human immunodeficiency virus lead to gradual and progressive destruction of the cell mediated immune system.

The clinical features may be due to HIV per se or as a result of immune system destruction. Prolonged fever, diarrhoea, weight loss, skin rashes, sores, generalized pruritis, altered mental status, persistent severe headache, oral thrush or Kaposi's sarcoma may be found in patients with advanced disease. Most patients, however, present with symptoms due to opportunistic infections (which are usually curable) e.g. tuberculosis, candidiasis or pyogenic infections.

Treatment in Adults and Adolescents using Antiretroviral Medicines (ARV)

HIV positive patients should be referred to Care and Treatment Clinics. The initial management requires a complete work up of the patient. A complete blood count, renal and hepatic chemical function tests, urine pregnancy test and viral load where applicable should be done at baseline.

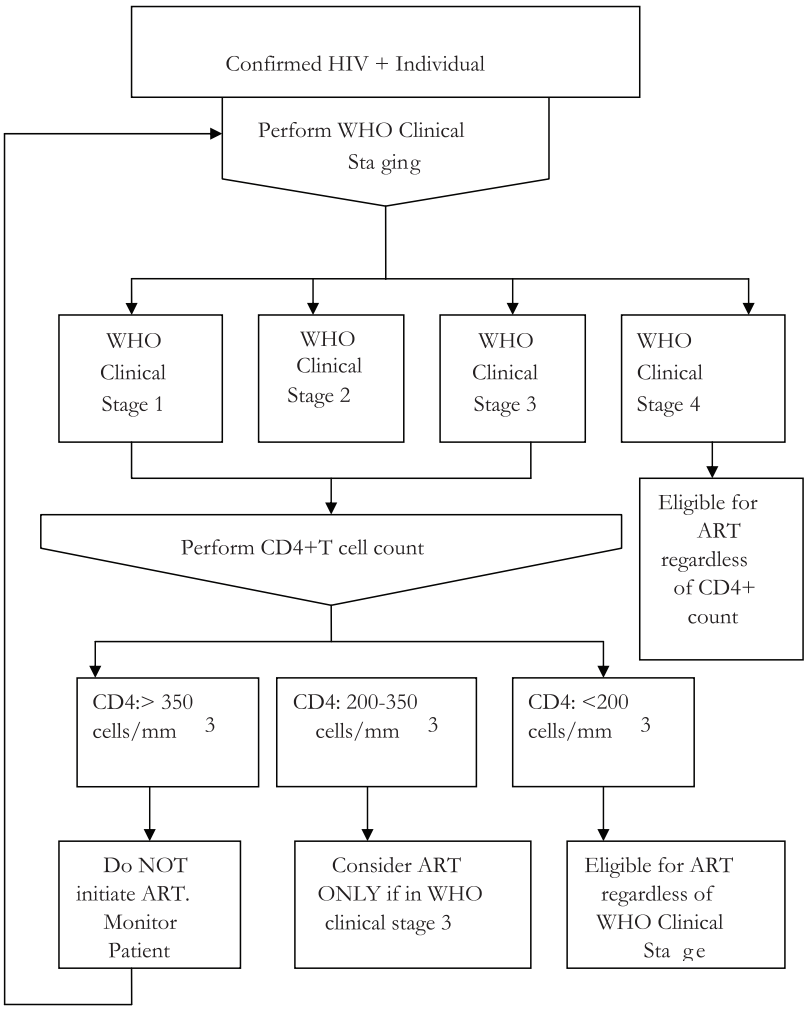
Initiation of treatment should be based on the extent of clinical disease progression. CD4+ T lymphocytes counts remain the standard for evaluating immune function.

Criteria for initiation for Antiretroviral Therapy

There are three classes of individual who are clinically eligible to begin treatment

- All who are in WHO stage 4 clinical criteria regardless of CD4+ cell count
- Those in WHO stage 3 and CD4+ cells less or equal to 350/mm cubed as an indicator of their progression to AIDS
- All who have a CD4+ count less or equal to 200 cell/mm cubed regardless of symptoms

17.4.1 **Clinical Criteria for ART in Adults and Adolescents**



Before initiating therapy in any patient, apart from clinical eligibility, it is important to assess the patient's willingness, readiness and ability to be on ART adherently. In this regard, the following evaluation should be done:

- Laboratory tests which include complete blood count, chemistry profile (serum transaminases, creatinine and lipid profile) CD+T –lymphocyte count
- Chest X-ray
- Hepatitis C serology
- Ophthalmology examination
- Educate patient and family members on HIV and AIDS
- Measure viral load (where possible)

Treatment guidelines

Antiretroviral therapy both in naïve patients and those who had received treatment before, involves the use of combination of drugs. The use of single drugs (monotherapy) in the treatment of HIV/AIDS is not recommended. It is recommended to use the following triple therapy consisting:

- 2 Nucleosides Reverse Transcriptase Inhibitors (NRTI) + 1 Non Nucleoside Reverse Transcriptase Inhibitors (NNRTI)

Or

- 2 Nucleosides Reverse Transcriptase Inhibitors (NRTI) + 1 Protease Inhibitors (PI)

It should be noted that there is no single combination that is best for every patient and that can be tolerated by all. Therefore, treatment regiments should be based on patient's clinical condition, lifestyle, and ability to tolerate the regimen.

Treatment Regimen

First Line ARV Combination Regimen for Adults and Adolescents

The combinations should be used according to indications and contraindications that govern the use of ARVs to minimize side effects and drug-drug interactions as follows:

1. Stavudine (d4T) + Lamivudine (3TC) + Nevirapine (NVP)

For the first two weeks, the daily dose for Nevirapine should be 200mg. Therefore one fixed dose combination (d4T+3TC+NVP) in the morning, and then only d4T and 3TC tablets be taken in the evening. If well tolerated, continue at full dose of d4T+3TC+NVP every 12 hours

- Below 60kg - Use Stavudine (d4T) 30mg + Lamivudine (3TC) 150mg + Nevirapine (NVP) 200mg irrespective of body weight.

2. Zidovudine (AZT) + Lamivudine (3TC) + Nevirapine (NVP)

For the first two weeks, the daily dose for Nevirapine should be 200mg. Therefore one fixed dose combination (AZT+3TC+NVP) should be taken in the morning, and then only AZT and 3TC tablets in the evening. If well tolerated, continue at full dose of AZT+3TC+NVP every 12 hours. However, it is advisable to check liver function test

3. Stavudine (d4T) + Lamivudine (3TC) + Efavirenz (EFV)

- Use Stavudine (d4T) 30mg Lamivudine (3TC) 150mg every 12 hours and efavirenz 600mg at night.
- Note: The dose for efavirenz should be less than 600 for body weight less than 40 kg.

4. Zidovudine (AZT) + Lamivudine (3TC) + Efavirenz (EFV)

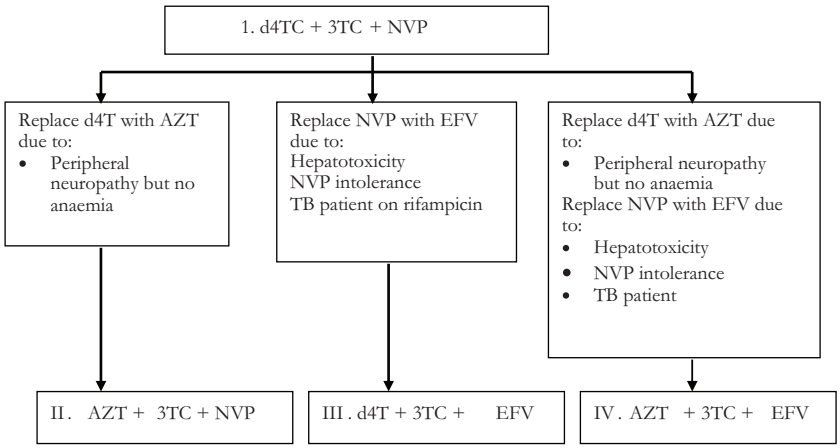
- Zidovudine 300mg (AZT)/Lamivudine 150mg (3TC) every 12 hours and efavirenz 600mg at night. Note

NOTE: The dose for adolescents of body weight 20 – 40kg for AZT should be 200mg every 12 hours and that of efavirenz should be less than 600mg for patients with body weight less than 40 kg.

First Line Regimen of ARV is summarised as follows:

- d4T+3TC+NVP
- AZT+3TC+NVP if there is peripheral neuropathy
- d4T+3TC+EFV if the patient is on Rifampicin containing antiTb regimen or has Nevirapine intolerance/hepatotoxicity and anaemia less than 7.5g/decilitre
- AZT+3TC+EFV if there is Tb and no anaemia

17.4.2 First line ARV Regiment Flow Chart



Changing of Antiretroviral Therapy

There are multiple reasons that may lead to changing of ART which include:

- Intolerable side effects
- Medicine interactions
- First Trimester of pregnancy when the patient so elects

ART should be stopped and or changed when there is evidence of the following:

- Toxicity or intolerance to one or all medicines
- Failure as evidence by the patient becoming symptomatic and progressive decline of CD4+ count and/or rise of viral load despite the good adherence to ARVs

Changing of Antiretroviral Therapy because of Toxicity

The general clinical recommendation is that when changing patient's regimen due to toxicity, only the toxic medicine(s) should be replaced, if possible as indicated in table 16

Table 33:

First Line Regimen	Problem	Substitution
D4t + 3TC + NVP	Hypersensitivity due to NVP	D4T + 3TC + EFV*
D4t + 3TC + NVP or EFV*	Severe peripheral neuropathy due to d4T	AZT + 3TC + NVP or EFV*
AZT + 3TC + NVP or EFV*	Anaemia due to AZT	D4T + 3TC + NVP or EFV*
D4T + 3TC + NVP or EFV*	Intolerant to NVP and EFV	D4T + 3TC + LPV/r**

* only if patient is older than 3 years of age and a woman with no risk of pregnancy

** Follow up liver function tests (LFTs) closely.

Changing of Antiretroviral Therapy because of Treatment Failure

Treatment failure results from failure to suppress viral replication with the development of viral resistance. Clinical failure is progression of disease with the development of opportunistic infections or malignancy occurring three months or more after initiation of ART.

Second Line Antiretroviral Therapy Regimen for Adults and Adolescents

Before treatment failure is presumed and a particular regimen discarded, every effort should be made to rule out causes other than medicine resistance. Patients should be evaluated for correctable factors such as:

- Inappropriate dosing schedule
- Medicine interaction that may reduce the efficacy of some of the ARV medicines
- Non adherence due to side effects
- Evidence of malabsorption

Before changing to second line medicine regimen, the patient should go through the treatment readness and education process again. This would need to be carefully monitored as some patients might hide their non adherence.

The second line regimen for adults and adolescents include the following medicine combinations:

- Abacavir 300mg every 12 hours, Lopinavir/ritonavir 133.3/33.3mg (Kaletra®) three tablets every 12 hours and didanosine 200mg two tablets once per day on empty stomach

NOTE: Didanosine (ddl) dosage is 250-300mg once daily for patients with weight less that 60kg and 400mg once daily for patients with body weight more than 60kg.

Alternatively the following regimen can also be used:

- Abacavir (ABC) 300mg every 12 hours/saquinavir/ritonavir (SQV 5x200mg or 100mg every 12 hours plus ritonavir 100mg capsules every 12 hours) and Didanosine 200mg, 2 tablets once per day.

Women of Childbearing and Pregnant Women

The first line treatment of women of childbearing and pregnant women should be based sorely on their need and eligibility for Antiretroviral Therapy.

- The first line regimen for this patient subgroup is AZT+3TC+NVP.
- The second line regimen is ABC+ddl+SQV/r or NFV
- Pregnant women who are not eligible for Antiretroviral Therapy should receive prophylasix according to PMTCT guidelines

Treatment in Infants and Children using Antiretroviral Medicines

Determination of HIV infection in infants/children under 18 months possesses special diagnostic challenges. The pathogenisis of HIV infection and the general virological and immunological principles underlying the use of ART are similar for all HIV infected persons. However, when prescribing ARVs in children, the following consideration should be made namely:

- Possible in utero exposure to ARV medicines
- Difference in immunological markers among children of different age groups
- Change in pharmacokinetic parameters with age caused by the continuing development and maturation of organ systems involved in drug metabolism and clearance
- Differences in the clinical virological and immunological parameters between children and adults and among children of different age group
- Adherence to treatment for children is influenced by parents/guardians

Criteria for initiation for Antiretroviral Therapy in Children

There are difficulties in making laboratory diagnosis of HIV infection in infants aged less than 18 months due to persistent of maternal antibody, thus requiring virological testing

to make definitive diagnosis of HIV infection in this age group. The recommendations for initiation of Antiretroviral therapy in children is divided into categories related to:

- Age
- Availability of virological diagnostic tests

When CD4+ cells assay are available, use of CD4+ cell percentage is recommended for decision making on ART.

The availability of virologic testing is desirable, but not absolutely necessary to the development of recommendation for the initiation of therapy in infants

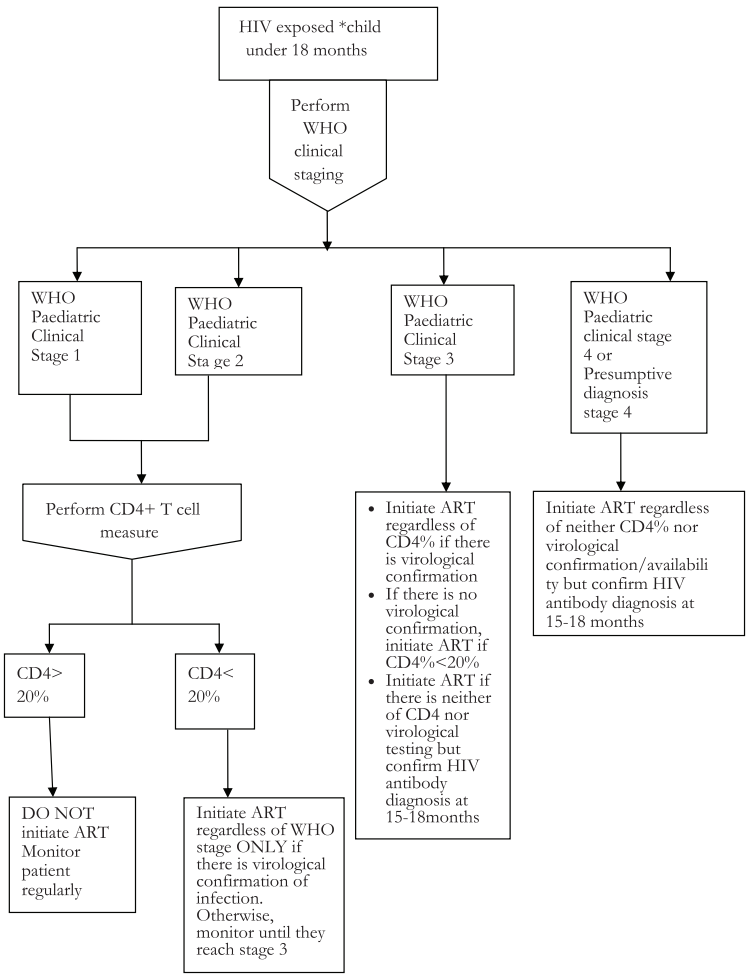
Initiation of Treatment for Infants under 18 months

Initiation of Antiretroviral therapy in infants under 18 months is recommended in:

- Infants with WHO stage 3 or 4 disease, initiate ART regardless of neither CD4 percentage nor virological confirmation/availability but confirm HIV antibody diagnosis at 15-18 months
- Infants with virological proven infection and have WHO paediatric stage 3
- Infants are in WHO paediatric stage 1 or 2 disease with CD4 less than 20% and virological confirmation
- Infants less than 18 months with neither virological confirmation nor CD4 percentage available, with WHO paediatric stage 3 or 4.

In these cases, HIV antibody testing must be repeated at age 18 months to definitively confirm that the child is HIV infected. Only infants/children with confirmed infection should have ART continued.

17.4.3 CLINICAL ELIGIBILITY CRITERIA FOR ART IN CHILDREN UNDER 18 MONTHS



Initiation of Treatment for Infants above 18 months

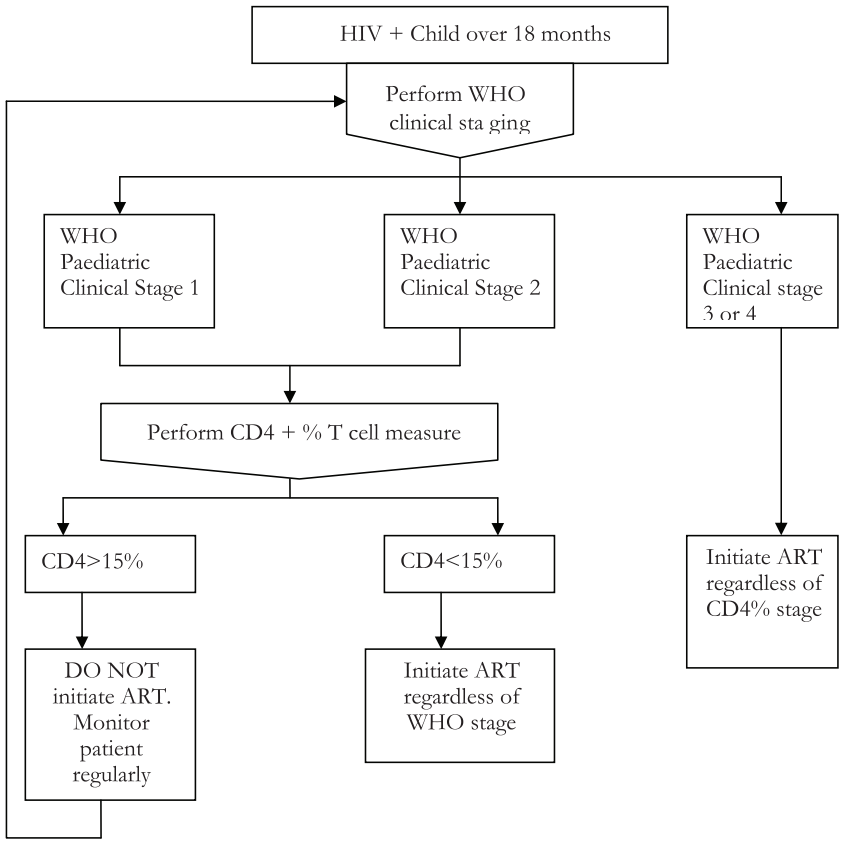
Clinical features

For children above 18 months of age, a positive antibody test is an indication of HIV infection since any acquired antibodies from mother would have degenerated, and breast feeding has typically stopped. Initiation of ART is therefore recommended if:

- WHO paediatric stage 3 or 4 HIV disease irrespective of CD4 percentage
- WHO paediatric stage 1 or 2 HIV disease and CD4 less than 15%

All children in stage 3 could be started on ART even if a CD4 percent is not available, but attempt should be made to do a CD4 percent as soon as possible for monitoring.

17.4.4 CLINICAL ELIGIBILITY CRITERIA FOR ART IN CHILDREN ABOVE 18 MONTHS



Treatment Regime for Infants and Children

- **First line ARV Regimen**

For children under 3 years of age: AZT+3TC+NVP
For children 3 years or more: AZT+3TC+EFV or NVP

NOTE: d4T is an alternative for AZT in case of anaemia (Hb less than 7.5g per decilitre. The product in liquid formulation requires refrigeration

- **Second line ARV Regimen**

The recommended second line regimen for infants and children who have failed first line is as follows:

Didanosine (ddl) +Abacavir (ABC)+ Lopinavir /Ritonavir (LPV/r)

NOTE: Given the bitter taste of LPV/r, children sometimes refuse it because of the taste. Nelfinavir (NFV) may be used as a substitute for LPV/r

USE OF ARV IN SPECIAL CIRCUMSTANCES

Treatment of People with Tuberculosis and HIV Co-infection

The recommended first line regimen is (AZT or d4T) +3TC+EFV in which the dose of EFV is 800mg.

Patients who develop Tb while on ART, treatment should be continued through Tb treatment with changes as follows:

- First line medicines: Substitute EFV with NVP. If this is not possible, substitute NVP with ABC or SQV/r
- Second line medicine: Subsitute Lopinavir/ritonavir with Saquinavir/ritonavir (dose 400/400mg every 12 hours- 3 extra capsules of ritonavir). This should be continued until two weeks after completion of Tb treatment, when the extra ritonavir can be stopped.

Treatment of People with Tuberculosis before commencing ART

- If the patient has CD4+ count of more than 350 cells/mm cubed, ART is not yet needed. The need for ART should be reassessed on completion of TB treatment.
- If the patient has a history of WHO stage 4 illness and/or a CD4+ count of 200 -350 cells/mm cubed, complete 2 months of Tb therapy before commencing ART
- If the patient has a CD4+ count of less than 200 cells/mm cubed or other serious HIV related illness, make sure that the patient is tolerating Tb treatment before initiating ART. Patients in this group should be started on the first line therapy consisting of d4T/3TC/EFV

SPECIAL CONSIDERATIONS OF ART IN TB AND HIV CO-INFECTED PATIENTS

CD4>200 or CD4>15%	Treat TB firs
CD4 50 – 200 or CD4 5% - 15%	Treat TB first at least for 2 months before ART (but evaluate case-by-case)
CD4<50 OR CD4<5%	Can begin ART as early as 2 weeks after TB treatment initiation

POST EXPOSURE PROPHYLAXIS (PEP)

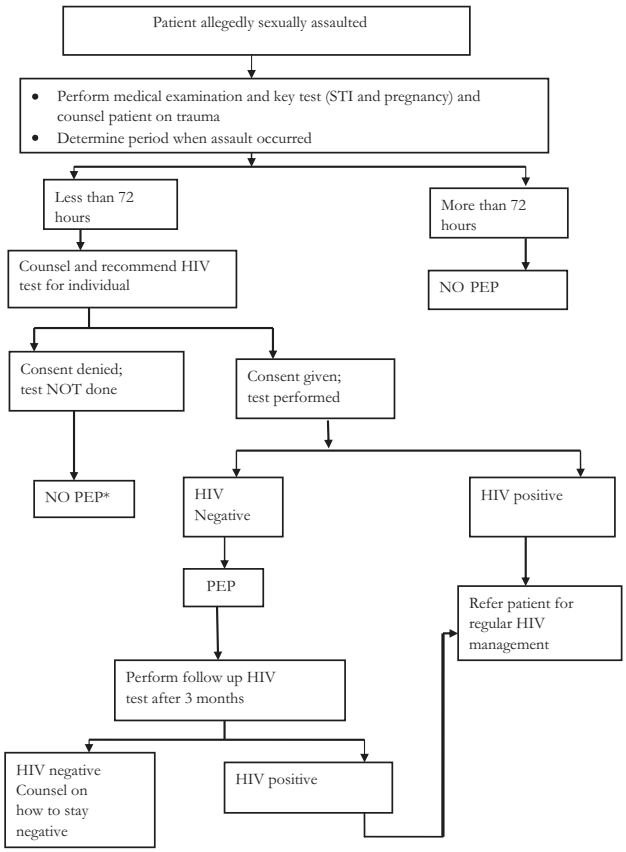
The most common mode of exposure to HIV is in hospital setting where hospital workers are at increased risk of HIV infection through exposure to body fluids through accidents or when safety precautions are not followed. However, the other most common cause of exposure is through sexual assault

Treatment guidelines:

The recommended treatment regimen is:

- AZT 300 mg every 12 hours + 3TC 150mg every 12 hours for 4 weeks
- A third medicine, EFV or NVP (proposed Indinavir) should be added if there have been multiple perpetrators, anal penetration occurred, trauma to the genital areas, if one of the perpetrators is known to be HIV positive

17.4.5 ELIGIBILITY FOR PEP FLOW CHART



*Administering PEP on an HIV+ individual could lead to resistance development

18. ALLERGIC REACTIONS

18.1 Anaphylaxis (Acute Hypersensitivity)

Anaphylaxis is a life threatening clinical response that appears within minutes after administration of substance(s) to which the subject has been sensitized. Common offenders are drugs (e.g. penicillin), vaccines, insect stings, blood products and food like seafood, nuts, etc.

Clinical features: These include respiratory distress due to oedema of the hypopharynx and larynx or bronchospasm and vascular collapse (shock with hypotension). Others include pruritus and urticaria.

Treatment Guidelines:

Any delay in recognition/diagnosis and prompt treatment may lead to death. Immediately do the following

- Adrenaline 0.5-1 mg I.M. repeated every 15 minutes until improvement occurs
- Laying of patient flat and elevating feet
- Restoration of blood pressure – with I.V fluids (sodium chloride 0.9%)
- Chlorpheniramine 10-20 mg I.V stat or Promethazine 25mg I.M. every 8-12 hours
- Oxygen may be required in severe respiratory embarrassment (4-6 1/min)
- Hydrocortisone 200 mg I.V every 6 hours for 24 hours would prevent further deterioration
- If asthma develops, give Aminophylline I.V or nebulised Salbutamol
- Prevention can be achieved by taking relevant history before administering materials known to produce a high rate of anaphylaxis. Skin test should be done when in doubt
- Write the name of the drug or substance that caused the reaction and educate the patient and relatives on future avoidance. Patients should be asked to always mention allergies for drugs when visiting a clinic/prescriber.

19. HAEMATOLOGICAL DISEASE CONDITIONS

19.1 Anaemia

Clinical features: Anaemia is a state in which the level of haemoglobin in the blood is below the expected value for age and sex. Anaemia may be due to blood loss, haemolysisi or decreased production of red blood cells.

The clinical presentation of anaemia depends on the underlying disease, severity and abnormality of the anaemia. These may include, fatigue, palpitation, headache, pallor and features of heart failure may occur in sever cases.

Treatment guidelines

(a) General

- Treat the cause, for example in iron deficiency anaemia due to hookworm, deworm the patient.
- Blood transfusion is only indicated where it is life saving.

(b) Iron deficiency anaemia

Adult **Ferrous sulphate (O)** 200 mg every 8 hours

Children **Ferrous sulphate (O)** 5 mg/kg body weight every 8 hours.

Continue for 3 months after the normal haemoglobin level has been achieved.

(c) Folic Acid deficiency

Folic acid (O) 2.5 – 5 mg- once daily for at least 2 months

(d) Vitamin B 12 deficiency anaemia

Hydroxocobalamin 1 mg daily parenterally for one week and 1 mg every 2-3 months thereafter for life.

19.2 Sickle Cell Anaemia

Clinical features: Sickle cell anaemia is a hereditary disease resulting form inherited haemoglobin S. In the homozygous state there may be sickle cell anaemia. Onset of symptoms is usually after 6 months of life. Symptoms may include anaemia, dactylitis, recurrent infections, impaired growth and development.
Sickle cell disease may present with crises. Crises may be in the form of thrombotic crises precipitated by cold, infection, physical exertion etc which cause pain often in the bones. Other types of crises may also occur. These include haemolytic, aplastic and sequestration crises. In aplastic crises there is anaemia with a low reticulocyte count. In sequestration crises, the spleen and liver enlarge rapidly due to trapping of red blood cells. Anaemia is very severe in this case.

Treatment Guidelines

Treat symptomatically. Therapeutic objective is to prevent the development of crises and to treat crises and complications. Give

- **Folic acid** give 5 mg daily
- **Chloroquine** give as required
- **Acetylsalicylic acid** give as required

In crisis

- Prompt determination and treatment of precipitating cause eg Malaria infection
- Give intravenous fluid and electrolyte therapy

Adults	**5%Glucose in 0.9% Sodium Chloride**
Children	**4.3% Glucose in 0.18% Sodium Chloride**

- Give pain relievers eg Paracetamol. In severe pain (with no difficulty in breathing) give Pethidine IM

Adults	25-100 mg repeated every 4 hours as required
Children	0.5-2 mg/kgbody weight repeated every 4 hours as required

19.3 G6PD deficiency

Clinical features: G6PD is an inherited X-linked recessive genetic disorder. Usually asymptomatic but liable to haemolysis if causative drugs or foods are taken (e.g. sulphonamides or proguanil).

Treatment Guidelines

- Avoid causative agents/foods or drugs
- Transfusion of packed cells volumes in severe anaemia. Give 2-3 ml/kg body weight over a period of 8 hours once every 24 hours for 3 days.

19.3.1 Bleeding Disorders

Hereditary bleeding disorders

Precaution and Management

- Avoid I.M injections
- Avoid use of aspirin, instead use paracetamol
- Inform the patient thoroughly on the problem, and provide means of alerting other medical/pharmaceutical personnel
- Once you know make early referral of such patients for specialist management.
- For haemarthrosis – **AVOID** to incise joint. Treat by replacement of specific factor, joint support and I.V or oral morphine.

19.3.2 Haemophilia A (Factor VIII deficiency)

Amount of factor VIII given depends on assessment of severity of bleeding. Use table to determine dosage, for both children and adults according to body weight.

Table 34: Dosage Schedule of Factor VIII

	Severity of bleeding	Required Factor VIII level	Factor VIII Concentrate 500IU/bottle	Cryoprecipitate 80IU/bag
1	Mild bleed (nose, gums etc)	14 IU/kg	1-2 bottles adult	1 bag/6kg
2	Moderate bleed joint muscle, GIT, minor surgery	20 IU/kg	2-4 bottles adult	1 bag/4kg
3	Major bleed (eg cerebral)	40 IU/kg	4-6 bottles adult	1 bag/2kg
4	Prophylaxis for major surgery	60 IU/kg	6 – 10 bottles adult	1 bag/kg

NOTE:

- For 1, 2, 3 above repeat dose 12 hourly if bleeding persists or swelling is increasing. With more severe bleeds it is usually necessary to continue treatment with half of total daily dose 12 hourly for 2-3 days, occasionally longer.
- For 4, start therapy 8 hours before surgery, continue 12 hourly therapies for 48 hours post-operatively and if NO bleeding occurs, scale down gradually over next 3-5 days.
- As adjunct to factor replacement in mucosal or gastro-intestinal bleeding and surgery give fibrinolytic inhibitor:
- Tranexamic acid (O) 500 - 1000 mg three times a day. DO NOT use for haematuria
- In an emergency, fresh frozen plasma can be used to treat bleeding in haemophiliacs

19.3.3 **Haemophilia B (Factor IX deficiency)**

(a) Mild bleed

Factor IX concentrate 2 bottles (500 IU/bottle) in adults

Or

Fresh frozen plasma (FFP) 1 bag/15 kg body weight (4-5 bags for average adult)

(b) Major bleeding

Factor IX concentrate 3-6 bottles (500IU/bottle) in adults

Or

Fresh frozen plasma (FFP) 1 bag/7.5 kg body weight (8-10 bags in adults). Repeat in 24 hours if bleeding continues.

(c) **As adjunct to replacement therapy**

Tranexamic acid (O) 500 – 1000 mg three times a day as for Haemophilia A

- For children use appropriate proportions.
- Factor VIII concentrate and cryoprecipitate are not useful for Haemophilia B, so accurate diagnosis is essential.
- Some Haemophlia A and B patients are on recommended dosage but may require assistance form health personnel

19.4 Von Willebrand Disease (VWD)

Treat as for mild or moderate bleeding of Haemophilia A except that the haemostatic dose may be repeated not 12 hourly but after 24 – 48 hours since therapeutic response is more sustained in VWD.

19.5 Acquired Bleeding Disorders/Platelet Disorders

Disseminated Intravascular Coagulation (DIC)

- Monitor prothrombin time (PT), international normalized ratio (INR), activated partial thromboplastin (APTT), platelet count and fibrogen.
- Identify if possible and treat/remove cause of DIC
- If PT/APTT prolonged and patient is bleeding give, fresh frozen plasma (FFP) 1 bag/15 kg body weight (4-5 bags in adults). Repeat FFP after 24 hours if indicated
- If platelet count < 50000 and patient is bleeding give: platelet concentrate 4-6 bags (adults)
- If fibrogen is low and/or APTT prolonged give (to supply fibrogen and FVIII): cryoprecipitate 1 bag/6kg (8-10 bags in adults).
- The use of heparin is NOT recommended in bleeding patients with DIC

19.6 Haemorrhagic Disease of the Newborn

The policy is to give vitamin K routinely to all newborns as a preventive measure. However, if haemorrhaging occurs, give

Vitamin K (I.M) 1 mg once daily for 3 days

19.7 Idiopathic thrombocytopenic Purpura (ITP)

Prednisolone (O) 1 mg/kg once daily, gradually reducing the dose over subsequent weeks. Consider splenectomy for those in whom steroids fail to achieve adequate control or who relapse after treatment.

19.8 Anticoagulation

Duration of treatment

- Deep vein thrombosis (DVT): 6 – 8 weeks except in pregnancy, or if there is another reason for prolonged treatment
- Pulmonary embolism (PE): 3 months
- Atrial fibrillation: life long treatment
- Heart valve prostheses: life long treatment.
- After DC cardioversion, duration 4 weeks

(a) Heparin Treatment

Prophylaxis against DVT
Following surgery and immobility e.g. cardiac failure:
Heparin (SC) 5,000 units every 8 hours until ambulant

Treatment of DVT/PE

Heparin (IV) 10,000 units every 6 hours
Monitor APTT – aim for 2-3 times control
Continue until warfarin is effective, usually 3-5 days.

If facilities for monitoring APTT and INR are not available, DVT, may be treated with:
Heparin (SC) 10,000 units twice daily
Or
Warfarin after first trimester (12 weeks) keeping INR in the range 2-3. At 32-34 weeks stop **Warfarin** and change to **Heparin** as above

CAUTION Warfarin may harm the foetus and should not be used under 12 weeks. Monitor closely whichever method is used. Specialist supervision is recommended

Heparin Over dosage

If bleeding occurs, stop heparin and give:
Protamine sulphate (slow IV) 1 mg neutralizes 100 units of **Heparin.**
Maximum doses 50 mg (in excess protamine is also an anticoagulant).

(b) Oral Anticoagulation

Warfarin (O) loading dose 10mg once daily for 2 days. Check INR on 3rd day and dose accordingly. The drug should be taken at the **same** time each day.

Therapeutic range for **Warfarin** use
DVT/PE: INR 2-3, heart valve prothesis: INR 3-4.5

There is great individual variation in dose (average daily dose 3-9 mg). Monitor INR regularly, initially daily/alternate days then increase interval gradually to a maximum of 8 weeks. Reduce loading dose in elderly and in patients with renal/hepatic impairment.

Drug Interacting with Warfarin

CAUTION Drug interactions are common and can be dangerous

Below are few examples:

Warfarin Inhibition	**Warfarin Potentiation**
Barbiturates	**Alcohol**
Oral contraceptives	**Chloramphenicol**
Griseofulvin	**Cimetidine**
Rifampicin	**Erythromycin**
Carbamazepaine	**Co-trimoxazole**
Vitamin K	**Acetylsalicylic acid**

Warfarin Overdosage:

If INR 4.5 – 7 without haemorrhage – withhold **Warfarin** for 1-2 days then review
If INR > 7 without haemorrhage – withhold Warfarin and check INR daily.
Consider giving:
Vitamin K (slow IV) 0.5 – 1 mg injection (not IM)
If INR>4.5 with haemorrhage, give:

Fresh frozen plasma (FFP) 2-4 bags, then check INR and repeat infusion if bleeding continues.

Plus

Vitamin K (Slow IV) 0.5 – 1 mg (higher doses **Vitamin K** will prevent adequate anticoagulation for up to 2 weeks).

(c) Streptokinase Treatment

Life Threatening Myocardial infaction and Pulmonary Embolism/Arterial Embolism
Streptokinase (IV) loading dose of 250000 units over 30 minutes, then 100000 units every hour for 24-72 hours

CAUTION: Allergic reactions may occur before infusion give: hydrocortisone (IV) 100 mg.

20. NUTRITIONAL DISEASE CONDITIONS

20.1 Avitaminosis

20.1.1 Vitamin A Deficiency

Clinical features: Vitamin A deficiency is usually associated with protein energy malnutrition and measles infections. It most commonly affects the eyes when the condition is called xerophthalmia. The most common clinical features of Vitamin A deficiency are: night blindness, photopobia, conjunctival xerosis, bitot's spots, corneal xerosis, corneal ulceration and keratomalacia.

Treatment guidelines

Adult **Vitamin A** 200,000 IU orally on days 1, 2, 7 and 14.

Infants Give half the adult dose for the same duration.

20.1.2 Vitamin D Deficiency

Clinical features: Rickets is a disease of bones in infants and children the development of which requires the simultaneous lack of dietary vitamin D and sunlight.

Treatment guidelines

- Prevent deficiency by exposing skin to sunlight
- Ergocalciferol give 1000-5000 IU per day orally for 2 weeks and then follow up this with 4000 IU per day for two months.

20.1.3 Nicotinic Acid Deficiency (Pellagra)

Clinical features: Pellagra is a disease characterized by the triad of dermatitis, diarrhoea and dementia.

Treatment guidelines

Nicotinamide

Adult 100 mg every 6 hours for 7 days followed by a multivitamin preparation containing 50 - 60 mg of nicotinamide daily for one month.

Children 10-25mg every 8 hours for 7 days followed by multivitamin preparation as above.

20.1.4 Thiamine Deficiency (Beriberi)

Clinical features: The primary disease of thiamine deficiency is beriberi. There are four principal types; acute and wet beriberi; infantile beriberi, chronic or dry beriberi and the Wernicke-Korsakoff syndrome. In Tanzania beriberi is commonly caused by consumption of highly meal cereals or food containing thiaminase (anti-thiamine factors) and in alcoholics.

Treatment guidelines

Thiamine 5-25 mg IM every 12 hours for three days followed by the same dose orally for four weeks.

20.1.5 Riboflavin Deficiency

Clinical features: The deficiency syndrome is characterized by sore throat, pharyngeal and oral mucous membrane hyperaemia, angular stomatitis, cheilosis, glossitis, and anaemia. Riboflavin deficiency almost invariably occurs in combination with other vitamin deficiencies.

Treatment guidelines

Vitamin B complex (O) one tablet every 8 hours for 1 month

20.1.6 Pyridoxine Deficiency

Clinical features: As in Riboflavin deficiency, specific disease or clinical features associated with Vitamin B deficiency is rare. However it may occur during isoniazid therapy where peripheral neuritis may develop.

Treatment Guidelines

Pyridoxine (O) 50 mg every 8 hours until recovery

For **Isoniazid** induced B1 deficiency replace **Isoniazid** with **Ethambutol.**

20.1.7 Ascorbic Acid Deficiency

Clinical features: Scurvy is the primary deficiency disease. Clinical features of scurvy include follicular hyperkeratosis, swollen, purple and spongy gums which bleed easily. Haemorrhages may occur in other sites.

Treatment guidelines

Ascorbic Acid 100 mg orally every 8 hours until a maximum of 4 g and then 100 mg orally for one month.

A diet rich in Vitamin C eg Oranges and other citrus fruits and vegetables should be recommended

20.1.8 Vitamin K Deficiency

Clinical features: Vitamin K is essential for the synthesis in liver for prothrombin; factor VII, IX and X. Primary deficiency occurs only in neonates. Secondary Vitamin K deficiency may be associated with malabsorption syndromes, liver cirrhosis and the use of **Coumarin** derivatives like **Dicumarol, Warfarin** and other analogues.

Treatment guidelines

Phytomenadione 10mg IV stat (neonates 1 mg IM)

20.1.9 Protein energy maultrition

Clinical feature: Marasmus

21. MALIGNANT DISEASE CONDITIONS

21.1 Hepatoma

Clinical features: This is a malignant neoplasma of the liver which may occur either with or without accompanying hepatic cirrhosis. There is a strong association of this cancer and hepatitis B infection.

Clinical features of the condition include a history of right upper abdominal pain often associated with weight loss and fever. There may be considerable abdominal swelling due to liver enlargement with or without ascites.

Prevention
Vaccination by Hepatitis B

Treatment Guidelines

General supportive measures **Paracetamol (O)** 500mg every 4-6 hours for the duration of pain

Detailed overall management guidelines will appear in the Oncology Manual prepared by the Tanzania Tumour Centre (TATUC).

21.2 Cancer of the Cervix

Whereas the aetiology of cancer of the cervix is unknown, identified predisposing factors include, human papilloma virus infection, there is a strong association with HIV infection.

Prevention
Routine screening through visual inspection of cervix plus Iodine painting of cervix and acetic acid; Pap smear and colposcopy.
Vaccination if available

Clinical features: Abnormal vagina bleeding or vaginal discharge associated with contact e.g. sexual intercourse.

Treatment Guidelines

- Stage 1a cancer of the cervix is best treated by total hysterectomy and/or radiotherapy
- Stage 1b and above are primarily treated with radiotherapy.
- Early detection and referral to Tumour Centre, at Ocean Road Hospital is important

21.3 Cancer of the Breast

It is a malignant tumour of the glandular tissue of the breast

Clinical features: A solitary lump in the breast must be regarded as breast cancer until proved otherwise. Hardness, attachment to skin or deeper tissues, skin ulceration, nipple retraction or presence of axillary lymphadenopathy are features pointing towards malignancy.

Treatment Guideines

- Early detection and referral to a Tumor centre

21.4 Kaposi's Sarcoma

Kaposi's sarcoma is a malignant tumour of angio-formative cells usually starting from the skin but occasionally involving many other organs of the body. There are three epidemiological variants-sporadic, endemic and epidemic form which is associated with infection with the human immunodeficiency virus (HIV)

Clinical features: It is present as firm-dark brown nodules or plaque in the skin usually on the limbs. In young children and those with immunodeficiency, wide spread lymphadenopathy with or without skin lesions.

Treatment guidelines

Early detection and referral to tertiary centre. Mainstay of treatment is chemotherapy. Where chemotherapy is not beneficial palliative radiotherapy may be given.

21.5 Leukaemia

The leukaemia is a heterogenous group of neoplasms arising from malignant transformation of the haematopoietic cells.

Clinical features: The leukemias may be acute or chronic. The clinical presentation will depend on the state and type of leukemia.

Treatment guidelines

- Early detection and referral to tertiary centre
- Treatment with chemotherapy may be useful in some types of leukemias. Large spleens benefit from radiotherapy.

21.6 Burkitt's Tumour

Burkitt's tumour is an undifferentiated lymphoblastic lymphoma. It shows close association and infection with the Epstein Barr virus.

Clinical features: The clinical picture varies with age of the patient, the typical jaw tumour being the commonest in the younger patient.

Treatment guidelines

- Early detection and referral to tertiary centres
- Curative treatment comprises of combination chemotherapy. Paliation with cyclophosphamide is of good but temporary benefit.

22. BITES

22.1 Animal Bites

Clinical features: Animals that bite man include both wild and domesticated ones. Thus lion, tiger, leopard, hyena, bear, hippopotamus, wolf and wild pig are examples of the wild animals that have bitten man but human bites also occur. Others are fish, crocodiles and dogs. Clinical features of these bites arise from the pathology inflicted by teeth, tusks, claws and horns. They produce lacerations, penetrating and crushing injuries. Severe facial and eye injuries are common and pneumothorax, hemothorax, bowel perforation and compound fractures have occurred.

Treatment Guidelines

Emergency surgery is often needed. Replacement of blood loss may be necessary.. Treatment of other of injuries may be required as necessary e.g. resultant rabies, tetanus, pneumothorax.

Prevention and treatment of complication is also mandatory eg prevention of rabies, tetanus and HIV (human bite)

Treat infection with relevant antibiotics.

Tetanus Toxoid 0.5ml start. Repeat after 4 weeks and then 6-12 months later

22.2 Insect Bites

Common insect bites include scorpions, bees and spiders.

Clinical features included pain, swelling, local and systemic allergic reactions.

Treatment Guidelines

Give appropriate analgesics

Where there is an anaphylactic reaction treat according to guidelines.

22.3 Snake Bites

Clinical features: Contact with snakes, scorpions and other insects result in two types of injuries: those due to direct effect of venom on victim and those due to indirect effect of poison e.g. hypersensitivity reaction to bee sting.

Less than 10% of 3500 snake species are poisonous and they include cobras and mambas (Elapidac). Sea snakes (hydrophidac) and the boomslang and vine snakes (columbidac). Clinical condition depends on the type of snake bite and amount of poison (venom) injected. Hence envenomation (poisoning) will be neurotoxic in Cobras and Mambas and sea snakes and haemotoxic in Vipers and Boomslang.

Treatment guidelines

- Reassure the patient
- Clean bitten site with clean water to remove any poison and remove any fangs.

- Remove any tourniquets and assess degree of envenomation. By vipers rapid swelling for 24 hours. In severe envenomation by vipers rapid leg swelling from hemorrhage into anterior compartment of lower limb may contain as much as 2 units of blood
- Rarely will there be need to use specific antivenom
- When indicated (by the degree of envenomation) use **polyvalent anti-snakes venom** (PAV)
- Infuse 80-100ml of (PAV) diluted in 500ml normal saline and start drip very slowly
- Watch for persensitivity reaction and be prepared with already drawn out 100mg **hydrocortisone** and **Adrenaline.** If reaction occurs, stop drip and give **Hydrocortisone** and **Adrenaline** and re-start drip after 1 hour and again watch for reaction.
- Debridement of necrotic tissue where necessary.

NOTE: Reaction is from horse serum contained in the polyvalent serum

- Dose of polyvalent serum will depend on degree of envenomation. Same for both adults and children. The SAMRI variety of polyvalent is best compared to others. Use polyvalent since often the type of snake is unknown. There are specific monovalent sera where type of snake is known.
- Analgesics, antihistamines, blood letting are all absolute. With reassurance, competent clinical observation, very few cases need active treatment since envenomation is rare.
- Snake venom spat into eyes must be washed thoroughly with water.

23. BURNS

Clinical features: It is thermal trauma to the skin, mucosae and deeper tissues. Classification depends on depth and extent. If area burnt is larger than 10% of body surface area then this is extensive because of fluid loss, catabolism, anaemia and risk of secondary infection.

The 'rule of 9' to calculate % of body surface burned, can be used.

Table 35: Rule of Nine for calculating % of Body surface burned

Body Areas	Adult (%)	Child %
Entire head	9	18
Upper limb	9	18
Anterior or posterior surface of trunk	18	18
Lower limb	18	14
Perineum	1	1

Treatment Guidelines

Ensure that there is an adequate airway, adequate breathing and adequate circulation

- Immerse burnt area in cold water for 10 minutes
- Clean with **Normal saline** or **Chlorhexidine – cetrimide** solution
- Apply oxytetracycline + hydrocortisone spray
- Calculate fluid requirement per 24 hours **weight x% of surface burnt x 2 = quantity of fluid**
- Give 75% of fluid requirement as **sodium lactate compound solution and 25% as 6% Dextran 70** as blood/plasma expanders. Give first half in 8 hours and the rest within 24 hours.
- Give appropriate analsegic and sedation
- Give tetanus toxoid 0.5 ml. stat
- Immobilize in position of function and change dressing whenever necessary
- Debridement where indicated
- Give **Procaine Penicillin** 1.2 MU IM every 24 hours or Erythromycin or Flucloxacillin where indicated **but not** antibiotic ointment
- In full thickness burns, skin grafting may be indicated to speed wound healing. In such cases refer to secondary or tertiary level health care centre

Children **Paracetamol** 10 mg/kg body weight every 8 hours
Procaine Penicillin 0.4 – 1.2 MU IM once daily

24. FOREIGN BODIES

Foreign bodies may be introduced into any of the body orifices nose, ears, vagina and urethra. Foreign bodies introduced through the mouth (or nose) may be arrested in the larynx, bronchial tree, oesophagus or stomach.

Clinical features: Depends on the affected site. The symptoms may be due to obstruction or inflammation around the foreign body.

Treatment Guidelines

Foreign bodies into the ears, nose, urethra, vagina, larynx and bronchial tree should be removed at adequately equipped facility.

Foreign bodies in the stomach rarely produce symptoms and active treatment is usually not required.

25. PAIN

Clinical features: Pain is the most common symptom of disease. For most patients, correct treatment of self-evident, limited disease process (e.g. broken bone) alleviates the pain. In some disease conditions, for examples cancer, pain is the most important symptom particularly if it is irrationally treated. 60 – 100% of patients with advanced or terminal cancer experience severe pain.

Treatment Guidelines

General

- Treat the cause of pain

Specific guidelines

- **For Acute somatic pain give**

Adults	**Acetylsalicylic acid**	600 mg every 4 hours util pain subsides
	Or	
	Paracetamol	500 – 1000 mg every 6 – 8 hours
Children	**Paracetamol**	250 – 500 mg every 6-8 hours.

- **For severe pain**

  Tramadol give 50 – 100 mg every 4 - 6 hours until pain is controlled. In the event of failure of this dose give:

Morphine	
Adult	10 mg IV every 6 hours on a "when necessary" basis
Children	0.2 mg/kg body weight IV every 4-6 hours

For surgery and obstetric conditions give pethidine 100 mg IM or IV every 6 hours on a "**when necessary" basis.**

- **Cancer pain**

  Give narcotic analgesics e.g. morphine 10mg every 4 hours on a "**when necessary"**basis. Because the patients suffer from continuous or recurrent acute pain, tolerance to narcotics is common therefore doses must be increased. In cases of intractable pain, give morphine through spinal epidural or through an intrathecal catheter. Adequate cancer pain relief requires careful titration of morphine with slowly increasing doses. Also remember to use laxatives concurrently.

26. POISONING

Poisoning can be accidental or intentional and may be due to various substances.

Clinical Features: For the majority of poisons, the clinical features are non specific and may include: coma, convulsions, acute confusion, hepatic and/or renal failure, skin eruption, psychiatric or neurologic disturbance of acute onset. Relevant history should be elicited from patient, relatives or friends.

Treatment Guidelines

Optimal management of a poisoned patient required correct diagnosis (and identification of the poison).

- Maintain adequate respiration (clear airway) and circulation
- Gastric wash out with 0.9 Sodium Chloride if poison ingested within 3-4 hours
- Inactivate poison where specific antidote exist.
- Activated charcoal (up to 50 gm suspended in clean water) for adults.

  For children 6-12 years 25gm activated charcoal suspended in clean water
  For children 0-6 years 12.5 gm activated charcoal suspended in clean water
  If necessary give via G.I tube.

- Induce emesis with Syrup Ipecacuanha.

NATIONAL ESSENTIAL MEDICINE LIST FOR TANZANIA (NEMLIT)

Name of medicine
Route of administration
Pharmaceutical forms and strengths
A letter before the name of each medicine indicates the lowest health care facility where the medicine may be available.

A) Dispensary B) Health Centre C) District Hospital D) Regional and Referral Hospital

1.0	**ANAESTHETICS**		
1.1	**Anaesthetics, General**		
	C	Ether anaesthetic	Liquid for inhalation, bottle 500ml
	C	Halothane	Liquid for inhalation, bottle 250ml
	C	Ketamine	Injection (hydrochloride), 10mg/ml in 20ml
	C	Thiopental	Powder for injection (sodium salt), 0.5g, in 20ml
	C	Oxygen	Cylinder (medical gas) for inhalatio
1.2	**Anaesthetics, Local**		
	C	Bupivacaine	Injection 0.5% (hydrochloride) in 7.5% dextrose heavy spinal
	A	Lignocaine	Injection (hydrochloride), 1% in 10ml vial
	B	Lignocaine	Injection (hydrochloride), 2% in 2ml vial
	C	Lignocaine in Dextrose	Injection (hydrochloride), 5% and 7.5% dextrose, in 2ml ampoules for spinal anaesthesia
	B	Lignocaine	Injection (hydrochloride) 2% with adrenaline 1:100,000 in 2ml ampoule for dental use
	C	Lignocaine	Jelly (hydrochloride) 2%, 5% in 30g tube
2.0	**MUSCLE RELAXANTS AND CHOLINESTERASE INHIBITORS**		
	D	Gallamine	Injection (triethiidide) 40mg/ml in 2ml ampoule
	C	Neostigmine	Injection (hydrochloride or hydrogen tartarate),1mg/ml in 1ml ampoule, Injection (hydrochloride or hydrogen tartarate), 2.5mg/ml in 1ml ampoule
	D	Pancuronium	Injection (bromide) 4mg/ml in 2ml ampoule
	C	Suxamethonium	Powder for injection (bromide or chloride) 50mg/ml in 2ml vial
3.0	**ANALGESICS, ANTIPYRETICS, NON-STEROIDAL ANTI-INFLAMMATORY MEDICINES AND MEDICINES USED TO TREAT GOUT**		
	A	Acetylsalicylic acid	Tablets 300mg
	D	Allopurinol	Tablets 100mg
	B	Diclofenac	Tablets (sodium/potassium salt) 25mg, 50mg

	C	Diclofenac	Injection (sodium salt), 25mg/ml in 3ml ampoule
	A	Diclofenac	Gel
	C	Diclofenac	Tablets 100mg (Slow release)
	C	Diclofenac	Rectocaps 100mg
	C	Ibuprofen	Tablets 200mg
	C	Indomethacine	Capsules 25mg, 50mg
	A	Mefenamic acid	Tablets/Capsules 500mg
	A	Paracetamol	Tablets 500mg
	A	Paracetamol	Syrup 125mg/5ml
	C	Tramadol	Tablets 50mg, 100mg
	C	Tramadol	Injection 50mg/ml in 2ml
4.0	**ANTI-MIGRAINE MEDICINES**		
	A	Acetylsalicylic acid	Tablets 300mg
	A	Paracetamol	Tablets 500mg
5.0	**ANALGESICS NARCOTICS AND ANTAGONISTS**		
	C	Morphine	Injection (sulfate) 10mg/ml in 1ml ampoule
	C	Naloxone	Injection (hydrochloride) 0.4mg/ml in 1ml ampoule
	C	Pethidine	Injection (hydrochloride) 50mg/ml in 1ml and 2ml ampoule
	C	Pethidine	Capsules 50mg
6.0	**ANTI-ALLERGIES AND MEDICINES USED IN ANAPHYLAXIS AND CARDIOGENIC SHOCK**		
	A	Chlorpheniramine	Tablets (maleate) 4mg
	A	Chlorpheniramine	Injection (maleate10mg/ml in 1ml ampoule)
	A	Chlorpheniramine	Elixir (maleate) 2mg/5ml
	C	Loratadine	Tablet 10mg
	C	Loratadine	Syrup 5mg/5ml
	C	Cetrizine	Tablets (hydrochloride) 10mg
	C	Cetrizine	Oral solution 5mg/5ml
	A	Adrenaline (Epinephrine)	Injection (as hyrochloride or hydrogen tartarate) 1mg/1ml ampoule
	D	Dopamine	Injection (hyrochloride) 40mg/ml in 5ml ampoule
	A	Hydrocortisone	Powder for injection (as sodium succinate) 100mg in vial
	A	Promethazine	Tablets (hydrochloride) 25mg
	A	Promethazine	Injection (hydrochloride) 25mg/ml in 2ml
	A	Promethazine	Syrup 5mg/5ml
	C	Dexamethasone	Injection (phosphate as sodium salt) 4mg/ml

7.0	**ANTIDOTES**		
7.1	**Antidotes (Non specific)**		
	C	Ipecacuanha	Syrup, containing 0.14% Ipacacuanha alkaloid
	A	Charcoal, activated	Tablets or Powder, 50g
	C	Magnesium sulphate	Powder, 5g
7.2	**Antidotes (Specific)**		
	B	Atropine	Injection (sulphate) 600mcg/ml in 1ml ampoule
8.0	**ANTI-EPILEPTICS AND ANTI-CONVULSANTS**		
	C	Carbamazepine	Tablets 200mg, 400mg
	C	Carbamazepine	Syrup 100mg/5ml
	C	Diazepam	Tablets 2mg, 5mg
	A	Diazepam	Injection 5mg/ml in 2ml ampoule
	A	Phenobarbital	Tablets (as sodium) 30mg, 100mg
	C	Phenobarbital	Injection (as sodium salt), 200mg in 2ml ampoule
	C	Phenobarbital	Injection (as sodium salt), 100mg in 2ml ampoule
	A	Phenytoin	Tablets/Capsules (as sodium salt) 50mg, 100mg
	A	Phenytoin	Suspension (as sodium salt) 30mg/5ml
	C	Magnessium sulphate	Injection 50mg/ml in 10ml vial
9.0	**ANTI-INFECTIVE MEDICINES**		
9.1	**Amoebicides**		
	B	Metronidazole	Tablets 200mg
	B	Metronidazole	Suspension (as benzoate) 200mg/5ml in 100ml
	C	Tinidazole	Tablets 500mg
	D	Secnidazole	Tablets 1000mg
9.2	**Anthelminthics**		
	A	Albendazole	Tablets 200mg, 400mg, chewable
	A	Albendazole	Suspension 100mg/5ml in 30ml bottle
	A	Ivermectin	Tablets 3mg, 6mg
	A	Levamisole	Tablets (as hyrdochloride) 40mg
	A	Levamisole	Suspension as hydrochloride 40mg/5ml
	A	Mebendazole	Tablets 100mg, chewable
	A	Mebendazole	Suspension 100mg/5ml in 30ml bottle
	B	Niclosamide	Tablets 500mg, chewable
	C	Thiabendazole	Tablets 500mg, chewable
9.3	**Anti-bacterial Medicines**		
	A	Amoxycillin	Capsules (as trihydrate) 250mg, 500mg
	A	Amoxycillin	Powder for suspension (as trihydrate), 125mg/5ml in 100ml bottle

	C	Amoxycillin + Clavulanic acid	Tablets (as trihydrate) 500mg + 125mg clavulanic acid (as potassium salt)
	C	Amoxycillin + Clavulanic acid	Powder for suspension (as trihydrate) 125mg+ 31.25mg (as potassium salt) in 5ml, 100ml bottle
	C	Ampicillin	Powder for injection (as sodium salt) 250mg, 500mg in vial
	D	Azithromycin	Tablets (as dihydrate) 250mg
	C	Ceftazidime	Powder for injection (as pentahydrate) 250mg in vial
	C	Ceftriaxone	Injection 250mg, 1g in vial
	C	Ceftriaxone	Infusion 2g
	A	Chloramphenicol	Capsules 250mg
	A	Chloramphenicol	Powder for injection (as sodium succinate) 1g in vial
	B	Chloramphenicol	Oily injection (as sodium succinate) 1g in vial
	A	Chloramphenicol	Suspension (as palmitate), 125mg/5ml injection (as phosphate), 150mg/ml in 2ml ampule
	C	Ciprofloxacin	Tablets (as hydrochloride) 250mg, 500mg
	C	Ciprofloxacin	IV solution (as lactate) 2mg/ml in 100ml bottle
	D	Clindamycin	Capsules 150mg
	D	Clindamycin	Injection (as phosphate) 150mg/ml in 2ml ampule
	C	Cloxacillin	Capsules (as sodium salt), 250mg
	C	Cloxacillin	Powder for injection (as sodium salt) 250mg, 500mg in vial
	C	Cloxacillin	Powder for suspension (as sodium salt), 125mg/5ml in 100ml bottle
	A	Co-trimoxazole	Tablets 480mg (sulphamethoxazole 400mg/ trimethoprim 80mg)
	A	Co-trimoxazole	Suspension (sulphamethoxazole 200 mg/5ml + trimethoprim 40mg/5ml in 100ml bottle
	A	Doxycycline	Tablets/capsules (as hydrochloride), 100mg
	A	Erythromycin	Tablets (as stearate or ethyl succinate), 250mg, film coated
	A	Erythromycin	Powder for suspension (as ethylsuccinate), 125mg/5ml in 100ml bottle
	C	Flucloxacillin	Capsule (sodium) 250mg
	C	Flucloxacillin	Syrup 125mg/5ml
	C	Flucloxacillin	Injection (sodim) 250mg
	A	Gentamicin	Injection (as sulphate) 40mg/ml in 2ml ampoule
	D	Kanamycin	Powder for injection, 1g
	C	Metronidazole	Tablets 200mg

	C	Metronidazole	Suspension as (benzoate) 200mg/5ml in 100ml
	C	Metronidazole	Injection (I.V) 5mg/ml in 100ml bottle
	C	Nalidixic acid	Tablets 500mg
	A	Nitrofurantoin	Tablets 100mg
	A	Penicillin, benzyl	Powder for injection (as sodium or potassium salt) 3g (5,000,000 IU) in vial
	C	Penicillin, benzathine benzyl	Powder for injection 1.44g (2,400,000 IU) in vial
	A	Penicillin, phenoxy methyl-	Tablets (as potassium salt), 250mg
	A	Penicillin, phenoxy methyl-	Powder for suspension 125mg/5ml in 100ml bottle
	A	Penicillin, procaine benzyl	Fortified powder for injection 4g (4,000,000 IU)
	C	Sulphadiazine	Tablets 500mg
	C	Sulphasalazine	Tablets 500mg
	C	Trimethoprim	Tablets 100mg, 200mg
9.4	**Anti-filarials**		
	A	Ivermectin	Tablets 3mg, 6mg.
	B	Diethylcarbamazine	Tablets (dihydrogen citrate) 50mg
9.5	**Anti-leishmaniasis Medicines**		
	D	Pentamidine	Injection (di-isethionate) 200mg vial
	D	Sodium stilbogluconate	Injection 10% (equivalent to pentavalent antimony 100mg/ml) in vial
9.6	**Anti-malaria Medicines**		
	A	Artemether/ Lumefantrine (Alu)	Tablets 20mg/120mg
	A	Chloroquine	Tablets 150mg base
	B	Quinine	Tablets (as sulphate or bisulphate) 300mg
	A	Quinine	Injection (as dihydrochloride) 300mg/ml in 2ml ampoule, 25ml vial
	A	Sulfadoxine + Pyrimethamine	Tablets Sulfadoxine 500mg + Pyrimetheamine 25mg
	C	Sulfamethoxyprazine + Pyrimethamine	Tablets Sulfamethoxypyrazine (salfalene) 500mg+ pyrimethamine 25mg
9.7	**Anti-schistosomals**		
	A	Praziquantel	Tablets 600mg
9.8	**Anti-trypanosomals**		
	C	Melarsoprol	Injection 3.6% solution (in propylene glycol containing 5% water)
	C	Suramin sodium	Powder for injection 1g in vial

9.9	**Anti-leprosy Medicines**		
	A	Clofazimine	Capsules 100mg, tablets 300mg
	A	Dapsone	Tablets 50mg, 100mg
	A	Sodium fusidate	Tablets 250mg
	A	Sodium fusidate	Suspension 250mg/5ml in 100ml bottle
9.10	**Anti-tuberculous Medicines**		
	A	Ethambutol	Tablets (hydrochloride) 400mg
	A	Ethambutol + Isoniazid	Tablets 400mg + 100mg
	A	Isoniazid	Tablets 100mg
	A	Pyrazinamide	Tablets 500mg
	A	Rifampicin + Isoniazid	Capsules/Tablets 150mg + 75mg
	A	Rifampicin + Isoniazid	Capsules/Tablets 150mg + 150mg
	A	Streptomycin	Powder fo rinjection (as sulphate) 1g in vial
	A	Rifampicin + Isoniazid + Pyrazinamide + Ethambutol	Tablets 150mg + 75mg + 400mg + 275mg
9.11	**Antiviral Medicines**		
	C	Abacavir	Tablets 300mg
	C	Abacavir	Syrup 20mg/ml, 240ml
	C	Acyclovir	Tablets 400mg, 800mg
	C	Acyclovir	Cream 5%
	C	Didanosine	Tablets 100mg, 200mg, 400mg
	C	Efavirenz	Capsules 200mg, 600mg
	C	Ganciclovir	Capsules 250mg
	C	Ganciclovir	Powder for injection, 500mg/vial
	C	Idoxuridine	Topical ointment 5%
	C	Idoxuridine	Eye solution 5%
	C	Indinavir	Capsule 400mg
	C	Lamivudine	Tablets 150mg
	C	Lamivudine	Syrup 10mg/ml, 100ml bottle
	C	Lamivudine + Zidovudine	Tablets 150mg + 300mg
	C	Lopinavir/Ritonavir	Capsules 200mg, 400mg
	C	Nelfinavir	Tablets 250mg(mesylate)
	C	Nelfinavir	Oral powder (mesylate) 50mg/g
	C	Nevirapine	Tablets 200mg
	C	Nevirapine	Syrup 10mg/5ml
	C	Ritonavir	Capsules 100mg,
	C	Ritonavir	Syrup 600mg/7.5ml
	C	Saquinavir	Capsules 200mg (mesylate)
	C	Saquinavir/Ritonovir	Capsules 200mg, 400mg

	C	Stavudine	Tablets/Capsules 15mg, 20mg, 30mg, 40mg
	C	Stavudine + Lamivudine + Nevirapine	Tablets 30mg + 150mg + 200mg
	C	Stavudine + Lamivudine + Nevirapine	Tablets 40mg + 150mg + 200mg
	C	Zidovudine	Tablets 100mg, 300mg
	C	Zidovudine	Syrup 10mg, 100ml bottle
9.12	**Fungicides (Systemic and Mucosal)**		
	D	Amphotericin B	Powder for injection 50mg in vial
	B	Clotrimazole	Vaginal cream (nitrate) 2%, 10%
	A	Clotrimazole	Pessaries 100mg
	C	Fluconazole	Capsules 50mg, 150mg, 200mg
	C	Fluconazole	Suspension 50mg/5ml
	C	Fluconazole	I.V infusion 2mg/ml in 25ml and 100ml bottle
	B	Griseofulvin	Tablets 500mg
	B	Griseofulvin	Suspension 125mg/5ml
	C	Ketoconazole	Tablets 200mg
	C	Ketoconazole	Suspension 100mg/5ml in 30ml bottle
	C	Miconazole	Oral gel
	A	Nystatin	Tablets 500,000 IU
	A	Nystatin	Suspension oral 100,000 IU/ml in 30ml bottle
9.13	**Medicines for Opportunistic Infeciton**		
	B	Co-trimoxazole	Tablets 480mg
	C	Dapsone	Tablets 50mg, 100mg
	C	Fluconazole	Capsules 50mg, 150mg, 200mg
	C	Fluconazole	Suspension 50mg/5ml
	C	Fluconazole	I.V infusion 2mg/ml in 25ml and 100ml bottle
	C	Flucytocine	I.V infusion 10mg/ml 250ml bottle
10.0	**ANTI-NEOPLASTIC, IMMUNOSUPPRESSIVE AND RELATED MEDICINES**		
	D	Cyclophosphamide	Tablets 50mg
	D	Cyclophosphamide	Powder for injection 100mg, 200mg, 500mg, 1000mg in vilal
	D	Prednisolone	Tablets 5mg
11.0	**ANTI-PARKINSONISM MEDICINES**		
	C	Benzhexol	Tablets (hydrochloride) 2mg, 5mg
	D	Biperidine	Tablets 2mg/5ml injection 1ml ampoule
	D	Levodopa	Tablets/capsule 125mg, 250mg, 500mg
	D	Levodopa+Carbidopa	Tablets 100mg + 25mg

12.0	**MEDICINES AFFECTING THE BLOOD**		
	A	Ferrous sulphate + folic acid	Tablets 200mg + 0.25mg
	A	Ferrous sulphate	Tablets 200mg (equivalent to 60mg iron)
	A	Ferrous fumarate	Syrup 20mg/ml (equivalent to 6.5mg iron/ml)
	A	Folic acid	Tablets 5mg
	C	Hydroxocobalamin (Vit B12)	Injection 1mg/ml in 1ml ampoule
	C	Iron dextran	Injection 5% (equivalent to 50mg iron/ml) in 5ml and 20ml ampoule
13.0	**ANTI-COAGULANTS AND ANTAGONISTS**		
	D	Acetylsalicylic acid	Tablets 75mg,
	D	Heparin	Injection (sodium salt) 1,000 IU/ml in 5ml ampoule, flashes
	C	Phytomenadione (Vit. K_1)	Injection 10mg
	C	Phytomenadione (Vit. K_1)	Injection 0.5 mg/ml, 2mg/ml in 2ml ampoule
	D	Protamine sulphate	Injection 10mg/ml in 5ml ampule
	D	Tranexamic acid	Tablets 500mg
	D	Tranexamic acid	Injection 100mg/ml in 5ml ampoule
	D	Tranexamic acid	Syrup 500mg/5ml in 300ml bottle
	D	Warfarin	Tablets (sodium salt) 5mg
	D	Streptokinase	Powder for injection 250,000 unit or 750,000 unit vial
	D	Low molecular Heparin	Injection, equivalence of Enoxaparin(sodium) 6000-8000 IU/ml
	D	Low molecular Heparin	Injection, equivalence of Edalteparin (sodium) 10,000IU/ml
	D	Factor VIII concentrate	500IU
	D	Factor IX concentrate	500 IU
	D	Fresh frozen plasma (FFP)	Bags
14.0	**PLASMA SUBSTITUTES**		
	C	Dextran 70	IV solution 6% in sodium chloride bottle of 500ml
	C	Polygeline	IV solution 3.5%, 500ml bottles
15.0	**CARDIOVASCULAR MEDICINES**		
15.1	**Anti-anginal Medicines**		
	C	Glycerly trinitrate	Tablets 500 mcg sublingual
	C	Isosorbide Dinitrate	Tablets 10mg, 20mg
	D	Nifedipine	Capsules/tablets 10mg, sublingual
	C	Propranolol	Talets 40mg

15.2	**Anti-arrhythmic Medicines**		
	D	Amiodarone	Tablets (hydrochloride) 100mg
	D	Amiodarone	Injection (hydrochloride) 30mg/ml in 10ml ampoule
	D	Verapamil	Tablets 40mg 80mg
	D	Verapamil	Injection 2.5mg/ml, 2ml ampule
15.3	**Anti-hypertensive Medicines**		
	A	Methyldopa	Tablets 250mg
	C	Captopril	Tablets 12.5mg, 25mg
	C	Nifedipine	Tablets 10mg, sublingual
	C	Nifedipine (retard)	Tablets 20mg, 30mg
	C	Atenolol	Tablets 50mg, 100mg
	A	Propranolol	Tablets 40mg
15.4	**Hypertensive Emergencies**		
	C	Hydralazine	Powder for injection (hydrochloride) 25mg/ml ampoule
	C	Hydralazine	Tablets 25mg
15.5	**Cardiac Glycosides**		
	C	Digoxin	Tablets 0.25mg (250mg)
	C	Digoxin	Injection 250mg/ml in 2ml ampoule
15.6	**Diuretics**		
	B	Frusemide	Tablets 40mg
	C	Frusemide	Injection 10mg/ml in 2ml ampoule
	A	Hydrochlorthiazide	Tablets 25mg, 50mg
	C	Mannitol	IV solution 10% in 200 ml bottle
	D	Spironolactone	Tablets 25mg, 50mg
	A	Bendrofluazide	Tablets 5mg
15.7	**Lipid Lowering Medicines**		
	D	Simvastatin	Tablets 10mg
	D	Atorvastatin	Tablets 10mg
16.0	**DERMATOLOGICAL MEDICINES**		
16.1	**Antiseptic/Disinfectants**		
	A	Povidone-iodine	Solution 10% (250ml bottle)
	A	Chlorinated lime+Boaric Acid	Solution (prepare from raw materials) (eusol)
	A	Gentian violet	Soluiton 0.5% in water (prepare from raw materials)
	B	Potassium permanganate	Solution 1:1000 (prepare from raw materials)
	B	Potassium permanganate	Solution 1:2000 (prepare from raw materials)
	B	Potassium permanganate	Solution 1:4000 (prepare from raw materials)

16.2	**Anti-inflammatory (steroidal) Medicines and Anti-pruritic Medicines**		
	C	Bethamethasone	Skin cream or ointment (valerate) 0.1% in 15g tube
	C	Bethamethasone	Lotion (valerate) 0.1% in 30ml bottle
	C	Hydrocortisone	Cream 0.5%
	A	Calamine	Skin ointment/lotion
	C	Para aminobenzoic Acid (PABA)	Cream/lotion 5%
	C	Tretinoin acid	Topical cream 0.025%, Gel 0.01%
16.3	**Fungicides (topical)**		
	A	Benzoic acid Compound	Ointment (prepare from raw materials) (whitfied's)
	C	Clotrimazole	Cream 1% in 20g tube
	C	Clotrimazole	Powder 0.01g/g
	C	Clotrimazole	Vaginal pessaries 100mg, 500mg
	C	Nystatin	Cream 100,000 IU/g in 15g tube
	C	Nystatin	Pessaries 100,000 IU
	C	Miconazole	Pessaries (nitrate) 1.2g
	C	Miconazole	Vaginal cream (nitrate) 2%
	C	Miconazole	Spray (nitrate) 0.16% + oral gel
	D	Tolnaftate	Solution 1% 10mg/ml
	D	Terbinafine	Cream 1%, 15 and 30g Tube
16.4	**Keratoplastic and Keratolytic Agents**		
	C	Silver nitrate	Stick
	C	Podophylin	Solution 10-25% (prepare from raw materials)
	C	Coaltar	Ointment 5% (prepare from raw materials)
	C	Salicylic acid	Topical solution 5% (prepare from raw materials)
	A	Emulsifying agent	Cream - the equivalent to E45 or sofderm
	C	Imiquimod	Cream 5%
16.5	**Anti-infective Agents (topical)**		
	B	Oxytetracycline + hydrocortisone	Spray 150mg + 50mg
	B	Oxytetracycline + hydrocortisone	Ointment 3%+1%
	A	Benzoyl peroxide	Ointment/cream 2.5%, 5% and forte
	A	Chloramphenical	Ointment 1%
	C	Mupirocin	Ointment 2%
17.0	**GASTRO-INTESTINAL MEDICINES**		
17.1	**Antacids and Anti-ulcer Agents**		
	C	Cimetidine	Tablets 200mg, 400mg

	C	Cimetidine	Injection 100mg/ml in 2ml ampoule
	C	Famotidine	Tablets 40mg
	C	Famotidine	Injection 100mg/ml in 2ml ampoule
	C	Lansoprazole	Capsule, 30mg
	A	Magnesium trisilicate co.	Tablets (250mg magnesium trisilicate + 120mg dried aluminium hydroxide)
	C	Omeprazole	Tablets 20mg
	C	Ranitidine	Tablets 150mg
	C	Ranitidine	Injection 50mg/2ml
	C	Cholestyramine	Sachet 4g
17.2	**Anti-spasmodics**		
	A	Hyoscine butylbromide	Tablets 10mg
	C	Hyoscine butylbromide	Injection 20mg/ml; 1ml ampoule
17.3	**Anti-emetics**		
	A	Promethazine	Tablets (hydrochloride/theoclate) 10mg, 25mg
	A	Promethazine	Injection (hydrochloride) 25mg/ml in 2ml ampoule
	A	Promethazine	Elixir (hydrochloride) 5mg/5ml
	D	Metoclopramide	Tablets 10mg
	D	Metoclopramide	Injection 5mg/2ml
	C	Prochlorperazine	Tablets 5mg, 25mg
	C	Prochlorperazine	Injection (as mesylate) 12.5mg/ml ampoule
17.4	**Cathartics**		
	A	Bisacodyl	Tablets 5mg
	A	Bisacodyl	Suppositories 5mg, 10mg
	C	Lactulose	Solution 3.1 - 3.7g/5ml, 200ml bottle
17.5	**Anti-haemorrhoids**		
	C	Local anaesthetic + astrigent and anti inlfamatory	Suppositories/ointment (Bismuth oxide 25mg + Bismuth subgallate 59mg + Peru balsam 49mg+Zinc oxide 296mg) equivalent to Anusol suppositories
	C	Local anaesthetic + astrigent and anti inlfamatory	Suppositories (Cinchocaine hydrochloride 5mg + Hydrocortisone 5mg) equivalent to Proctosedyl^{R}
	C	Local anaesthetic + astrigent and anti inlfamatory	Cream/ointment containing (Benzyl benzoate +1.2%Bismuth oxide 0.875%+Hydrocortisone acetate 0.5%+Peru balsam 1.85%) equivalent to Anulgesic
	C	Local anaesthetic + astrigent and anti inlfamatory	Suppositories containing (benzyl benzoate 33mg+bismuth oxide 24mg+bismuth subgallate 59mg+hydrocortisone acetate 5mg+Peru balsam 49mg+bromocaine HCl 27mg+Zinc oxide 296mg) equivalent to Anugesic

17.6	**Medicine Used in Diarrhoea**		
	A	Oral Rehydration Salts (ORS) low osmolarity	Sachet to make 1 litre of solution containing Sodium chloride 2.6g, Sodium citrate 2.9g, Potassium chloride 1.5g and Glucose 20.5g) repalcement solution
	C	Loperamide	Tablets/capsules (hydrochloride) 2mg
	A	Zinc	Tablets dispersible (equivalent to 20mg elemental zinc)
18.0	**HORMONES AND ANTIDIABETIC AGENTS AND RELATED MEDICINES**		
18.1	**Adrenal Hormones and Sysnthetic Substitutes**		
	D	Dexamethasone	Tablets 5mg
	D	Dexamethasone	Injection (as sodium phosphate) 4 mg/ml in 1 ml ampoule
	C	Hydrocortisone	Powder fo rinjection (as sodium succinate)
	C	Prednisolone	Injection 100mg in vial
	C	Prednisolone	Tablets 5mg
18.2	**Oestrogens**		
	D	Ethinyloestradiol	Tablets 50 mcg
18.3	**Insulin and Anti-diabetic Agents**		
	C	Chlorpropamide	Tablets 250mg
	C	Glibenclalmide	Tablets 2.5mg, 5mg
	D	Gliclazide	Tablets 40mg
	C	Tolbutamide	Tablets 500mg
	C	Metformin	Tablets 500mg
	D	Glucagon	Injection powder for reconst 10mg/vial
	D	Glipizide	Tablets 2.5mg, 5mg
	C	Insulin-short acting (human) soluble	100 IU/ml100
	C	Insulin-intermediate acting (human)	100 IU/ml
	C	Insulin-long acting (human) lente	100 IU/ml
18.4	**Ovulation Inducers**		
	C	Clomiphene	Tablets 50mg
18.5	**Oral Contraceptives**		
	A	Ethinyloestradiol + Norgestrel	Tablets 0.03mg + 0.3mg
	A	Ethinyloestradiol Levonorgestrel	Tablets 0.03mg + 0.15mg
	A	Ethinyloestradiol Desogestrel	Tablets 0.03mg + 0.15mg

18.6	**Barrier and Other Contraceptives**		
	A	Intra Uterine Devices (IUD)	Coper T 380A
	A	Condoms male	Latex
	A	Condoms female	Polyurathane sheet 15cm x 7cm
18.7	**Progesterone**		
	A	Levonorgestrel	Tablets 0.03mg, 0.07mg
	A	Medroxyprogesterone	Injection acetate (depot) 150mg
	D	Hydroxyprogesterone	Injection (coproate) 200mg/ml in 1ml
	A	Levonorgesterol	Implant 36mg (set)
	D	Norethisterone	Tablets 5mg
18.8	**Thyroid, Parathyroid Hormones and Antagonists**		
	C	Carbimazole	Tablets 5mg
	A	Iodine (Lugol's solution)	Solution, Iodine 2mg + Potassium Iodide 4mg/g in water (prepare from raw material)
	D	Levothyroxine	Tablets (sodium salt) 0.05g
	A	Iodized oil	Capsules with nipple 240mg/0.5ml and 480mg iodine/ml
19.0	**SERA AND IMMUNOGLOBULINS**		
	D	Gamma - Globulins	Injection I.V 500mg, 2.5g, 5g
	C	Anti-D(Rho) Immunoglobulin	Injection 0.25 mg/ml in set of 5ml
	C	Anti-rabies Immunoglobulin	Injection 1000 IU/5ml ampoule
	B	Snake venom polyvalent	Antiserum injeciton (|Central African type) in vila
	B	Tetanus Immunoglobulin (human) - ATS	Injection 1,500 IU in vial
	B	Tetanus Immunoglobulin (human) - ATS	Injection 10,000 I.U in vial
	B	Tetanus Immunoglobulin (human) - ATS	Injection 100,000 I.U in vial
	B	Tetanus Immunoglobulin (human) - ATS	Injection 500,000 I.U in vial
20.0	**VACCINES**		
20.1	**For Immunisation**		
	A	BCG Vaccine (Bacillus Calmette Guerin)	Injection 20 doses in 10ml vial
	A	DPT Vaccine (Diphtheria-Pertussis-Tetanus)	Injection 20 doses in 10 ml vial
	A	DPT Vaccine (Diphtheria-Pertussis-Tetanus) + Hepatitis Injection	Vaccine injection

	A	Measles Vaccine (Live attenuated)	Injection 10 deses in vial
	A	Poliomyelitis Vaccine (Live attenuated)	Oral solution 20 doeses in container
	A	Tetanus (toxoid) Vaccine	Injection 20 doses in 10ml vial
20.2	**For Specific Groups or Individuals**		
	D	Hepatitis B Vaccine	20mg/ml 1ml 1ml vials
	D	Meningitis vaccine A & C	Vaccine injection
	B	Human Diploid Cell Rabies	Freeze dried rabies vaccine
	D	Yellow Fever Vaccine	Injection 10 doses in vial (with diluent)
	C	Pneumococcal vaccine	Vaccine injeciton 0.5ml vial
21.0	**OPHTHAMOLOGICAL PREPARATIONS**		
21.1	**Anti-infective Agents**		
	C	Acyclovir	Eye ointment 3%
	C	Chloramphenicol	Eye drops 0.5%, 1%
	A	Chloramphenicol	Eye ointment 1%
	D	Gentamicin	Eye drops 0.3%
	C	Idoxuridine	Eye ointment 0.5%
	A	Oxytetracycline	Eye ointment 3%
21.2	**Steroidal Anti-inflammatory Agents**		
	C	Hydrocortisone	Eye Drops (acetate) 0.5%
21.3	**Antiinfective and Antiinlamatory Agents**		
	D	Oxytetracycline + Hydrocortisone + Polymycin B (Equivalent of Terracotril)	Eye drops
	D	Sodium cromoglycate	2% eye drops
21.4	**Anti Allergy:**		
	D	Loratadine	Tablets 10mg
	C	Cetirizine	syrup 5mg/5ml (100ml)
	C	Sodium Cromoglycate	Tablets 10mg
	C	Sodium Cromoglycate	Solution 5mg/ml (200ml)
	C	Sodium Cromoglycate	Eye drops
21.5	**Drugs for Trachoma & Onchocerciasis**		
	B	Azithromycin	Tablets 500mg
	B	Azithromycin	Capsule 250mg
	B	Ivermectin	Tablets 3mg, 6mg.
22.0	**MEDICINES USED IN EAR DISEASES**		
22.1	**Ear Drops**		
	B	Chloramphenicol	Ear drops 5% in 10ml
	D	Dexamethasone + Neomycin	Ear drops

	A	Ciprofloxacin	Ear drops
	A	Aluminium diacetate	Ear drops 3%
22.2	**Oral Antiseptics**		
	A	Chlorhexidine gluconate	Solution 0.1%;prepare from concentrated solution
	C	Potassium permanganate	Solution 1:4000; prepare from powder/crystals
22.3	**Nasal Preparation**		
	D	Beclomethasone	Spray 0.05% (50mcg/d0se)
	C	Ephedrine	Nasal drops 0.5% and 1%
23.0	**OXYTOCICS, MYOMETRIAL RELAXANTS (TOCOLYTICS) AND RELATED MEDICINES**		
	C	Salbutamol	Tablets 4mg
	C	Salbutamol	Injection 100mcg/ml, 10ml vial
	A	Ergometrine	Injection (mealeate) 0.5mg/ml in 1ml ampoule
	C	Oxytocin	Injection 10 IU in 1ml ampoule
	D	Misoprostol	Tablet 200mcg (rectal, sublingual)
	D	Magnesium sulphate	Injection 50%
24.0	**PSYCHOTHERAPEUTICS AND RELATED MEDICINES**		
	D	Carbamazepine	tablets 200mg, 400mg
	A	Phenytoin	Tablets 50mg, 100mg
	A	Phenobarbitone	Tablets 30mg, 100mg
	A	Phenobarbitone	Injection 200mg/ml in 1ml ampoule
	C	Amitriptyline	Tablets (hydrochloride) 25mg
	A	Chlorpromazine	Tablets (hydrochloride) 25mg, 100mg + 250mg
	B	Chlorpromazine	Injection (hydrochloride) 25mg/ml in 2ml ampoule
	C	Fluphenazine decanoate	Injection 25mg/ml in 1ml ampoule
	B	Haloperiodol	Tablets 1mg, 5mg
	D	Haloperiodol	Injection 5mg/ml in 1ml ampoule
	B	Imipramine	Tablets 25mg, 50mg
	C	Thioridazine	Tablets 25mg
25.0	**MEDICINE ACTING ON RESPIRATORY TRACT**		
25.1	**Anti-asthmatics**		
	A	Aminophylline	Tablets 100mg
	A	Aminophylline	Injection 25mg/ml in 10ml ampoule
	C	Beclomethasone	Inhalation (dipropionate) 0.05mg per dose (aerosol inhaler)
	A	Ephedrine	Tablets (hydrochloride) 30mg
	A	Ephedrine	Injection (hydrochloride) 30mg/ml in 1ml ampoule
	A	Cromoglycate	Nasal spray (di-sodium salt) 2% (sprayer with pump)
	C	Salbutamol	Tablets (as sulfate) 4mg

	C	Salbutamol	Syrup (as sulfate) 4mg
	D	Salbutamol	Inhalation (as sulfate) 0.1mg per dose (aerosol inhaler)
	A	Adrenaline	Injection 1m/1ml ampoule
25.2	**Antitusives**		
	A	Codeine	Syrup/Linctus
26.0	**SOLUTIONS, CORRECTING WATER ELECTROLYTE AND ACID BASE DISTURBANCES**		
26.1	**Large Volume Intravenous Solutions**		
	B	Darrow's half strength	500ml
	A	Dextrose	5%; 500ml, 1000ml
	B	Dextrose	10%; 500ml
	C	Dextrose	25%, 50%; 50ml, 100ml
	B	Sodium lactate compound (Ringer's solution)	500ml, 1000ml. Each litre provides approximately Na^+ 131 mmol, K^+ 5mmol, Ca^{++}2mmol, C1-111mmol and HCO_3^- (lactate) 29mmol
	A	Sodium chloride+Dextrose	0.9%+5%; 500ml, 1000ml
	B	Potassium chloride	Solution 7.4% 10ml Vial
	C	Potassium citrate	Oral solution containing potassium citrate 30% + citric acid monohydrate 5%
	A	Water for injection	5ml, 10ml vial
27.0	**DISINFECTANTS AND ANTISEPTICS**		
27.1	**Disinfectants**		
	A	Sodium hypochlorite	Solution 10% (250ml bottle)
	A	Hydrogen peroxide	Solution 6%
	A	Chlorhexidine + Cetrimide	Solution concentrated containing chhlorhexidine digluconate 1.5%+ 15% cetrimide in 1litre and 5 litre
	A	Chlorhexidine	Solution 4% in litre and 5 litres
	A	Chloroxylenol	Solution 4.9% BP in litre and 5 litre
	A	Cresol	Solution 3% BP in litre and 5 litre
	C	Formaldehyde	solution 36 - 37% stabilised in 1 litre
	C	Glutaraldehyde	Activated solution 2% in 1 litre, 5 litres for scopes sterilization)
	A	Providone iodine	Solution 10% in water 250ml, 500ml, 1 litre
	A	Methylated spirit	70% in 1 litre, 5 litre
	A	Sodium Dichloroisocyanurate (NODCO)	Tablets, 1.67g (equal to 1g available chlorine)
27.2	**Antiseptic**		
	A	Providone-Iodine	Solution (1 litre bottle)
	A	Chlorinated lime + Boric Acid Solution	Prepare from raw materials
	C	Potassium permanganate	Solution 1: 1000

	C	Potassium permanganate	Solution 1: 2000
	C	Potassium permanganate	Solution 1: 4000
28.0	**VITAMINS/MINERALS**		
	A	Retinol (Vitamin A)	Gelatin Capsules (with nipple to allow administration drop by drop) 50,000IU, 100,000IU 200, 000IU
	C	Ascorbic acid (Vitamin C)	Tablets 100mg and 500mg
	C	Calcium gluconate	Injection 100mg/ml in 10ml ampoule
	D	Ergocalciferol (vitamin D)	Capsules 1.25mg (50, 000IU)
	D	Ergocalciferol (vitamin D)	Oral solution 0.25mg/ml (10,000IU/ml)
	C	Nicotinamide (Vitamin B_3)	Tablets 50mg
	C	Pyridoxine (Vitamin B_6)	Tablets (hydrochloride) 25mg
	A	Thiamine (Vitamin B_1)	Tablets (hydrochloride) 50mg, 100mg
	C	Thiamine (Vitamin B_1)	Injection (hydrochloride) 1000mg/ml in 1ml ampoule
	D	Vitamin B_{12}	Tablets (hydrochloride) 50mcg
	A	Vitamin B complex	Tablets BP (contains per tablet: nicotinamide 15mg, riboflavin 1mg, thiamine 1mg)
	A	Vitamin B complex	Syrup (contains per tablet: nicotinamide 15mg, riboflavin 1mg, thiamine 1mg)
	C	Vitamin B complex	Injection BP in 10ml vial (contains nicotinamide 200mg, pantothenol 30mg, pyridoxine 20mg, riboflavine 20mg, thiamine 50mg per 1 ml)
	C	Potassium chloride	Tablets (slow release) 600mg

STANDARD TREATMENT GUIDELINES AND THE NATIONAL ESSENTIAL MEDICINE LIST MODIFICATION FORM

Please return the completed form to:-

The Assistant Director, Pharmaceutical Services
Ministry of Health and Social Welfare
P.O. Box 9083
DAR ES SALAAM

Submission received from:

Name: ……

Address: …….

Telephone:……..

Signature:…….

Date: ……...

PLEASE INDICATE THE NATURE OF MODIFICATION BY MARKING THE APPROPRIATE BOX

☐

Additional of new disease to the list (Please include epidemiological data as well as a treatment guideline)

☐

Replacement of a listed medicine.(Please include data on the proven benefits of the recommended medicine in relation to the listed medicine to be replaced).

☐

Inclusion of a new medicine (Please include data on the benefits of such an addition)

PROPOSED MODIFICATION

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