ET
STG

EAST TIMOR STANDARD TREATMENT GUIDELINES

1ST EDITION 2004

Ministério da Saúde

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This is the first edition of standard treatment guidelines for use in East Timor. These guidelines have been developed with the participation of many of our health workers. Several drafts have been circulated for reading and comment, and valuable additions have been made.

Many countries around the world have now moved towards using standard treatment guidelines and essential medicines lists e.g. Australia, Denmark, Britain, Uganda, Malawi, and South Africa amongst others.

Health policy managers have observed the advantages of standard treatment guidelines and essential medicines lists from other countries and learning from this has been included in the National Medicine Policy for East Timor.

Advantages of the standard treatment guidelines (STG) and the essential medicines list (EML)

STG and Elm provide advantages for the patients, the providers of healthcare, and the medical supply staff and for health policy makers.

Advantages for the patient

- There will be reduced confusion and improved compliance with prescribed medicines if there is consistency between prescribers. The confidence of the community will also be obtained and strengthened.
- Patients will be prescribed the most appropriate and effective treatment
- There will be improved supply if medicines are prescribed only when needed.

Advantages for the providers of health care

- Health care workers can prescribe treatment with confidence as the STG's represent expert consensus on the most effective and economical treatment for East Timor.
- Health workers can concentrate on making the correct diagnosis and not on remembering the best treatment – this has already been provided by the STG.
- STG's provide a standard from which the quality of care can be assessed.
- Trainers and supervisors of health workers can use the STG's for training, monitoring and supervision.

Advantages to the medical supply staff

- The staff at the Autonomous Medical Stores can plan the requirements more easily for the country when STG's are used. The demand becomes more predictable and reliable purchasing plans can be made.

Advantages to health policy makers

- Expenditure for medicines can be controlled.

- Quality of care can be monitored and improved.
- Development and implementation of a single set of standard treatments is a way to integrate special programs e.g. TB control, Malaria, Diarrhoea disease control etc.

Standard treatments guidelines allow the health worker to concentrate on careful identification of signs and symptoms of disease, correct diagnosis and effective patient counselling on the proper use of medicine and non-medicine medicine treatment that will truly benefit the patient.

As part of the National Medicine Policy the STG's and EML will undergo a constant review process to ensure that the most appropriate medicines and treatment regimens are available to meet the healthcare needs of the population of East Timor.

Selection of the medicines to be included

The medicines that have been included in the STG's and EML for East Timor have been selected based on the World Health Organization (WHO) essential medicines list. This list is frequently reviewed and only includes medicines that fit the following criteria:

- Relevance to the pattern of prevalent diseases
- Proven safety and efficacy
- Evidence of performance in a variety of settings
- Adequate quality, including bio-availability and stability
- Favourable cost benefit ratio in terms of total treatment cost
- Preference for medicines that are well known, with good pharmacokinetic properties and possibilities for manufacture
- Single compounds are preferred.

The selection of medicines to be included for the STG's and medicines list for use in the East Timor health facilities has been based on the skills of the staff working in these facilities as well as the availability of support services for these facilities.

Generic names

As a policy in East Timor the generic name for medicines will be used.

Every medicine has a chemical name and an international non-proprietary name (INN). The INN or generic name is the official name of the medicine regardless of who manufactures or markets it. An additional brand name is chosen by the manufacturer to facilitate recognition and association of the product with a particular company for marketing purposes.

Many medicines are manufactured and marketed by several different companies and under several different brand names e.g. the local MIMS publication has more than 40 brand names of amoxicillin.

In East Timor, health workers should use the generic name whenever medicines are prescribed or dispensed. The reasons for this are:

- There will be no confusion about which medicine is being prescribed
- Generic medicine products are generally cheaper than products sold by brand name
- Generic names are more informative than brand names and facilitate purchasing of products from multiple suppliers, whether as brand name or generic products.
- Generic prescribing also facilitates product substitution whenever appropriate.

It may take a little time to get used to the generic names for medicines however; once learned the generic name does not change – unlike the many brand names.

It is very important to choose the most economical dosage form, if possible. Tablets and capsules are the cheapest medicine forms, whereas syrups, suppositories, ampoules and vials are more expensive. The following examples will show this

Example: Measles
Treatment of fever in a child (3 years up to 5 years, 14 - <19 kg)
Paracetamol‡P

Medicine form	*Dosage per day*	*Costs per day*	*Costs per 5 days*
Tablet 500 mg	4 x ½ tablet	0,008	0,04
Syrup 120 mg/5 ml	4 x 10 ml	0,240	1,20
Suppository 100 mg	4 x 2 suppositories	1,200	6,00

1. MAJOR HEALTH PROBLEMS & DISEASES

1.1 Immunisation

1.1.1 Immunisation Schedules

The Expanded Program on Immunisation is aimed at the following target groups:

- All children under 1 year of age (0-11 months)
- All women of childbearing age (including pregnant women)

The recommended vaccines are the following:

BCG	Bacillus of Calmette and Guerin
OPV	Oral Polio Vaccine
DPT	Diphtheria, Pertussis, Tetanus
DT	Diphtheria, Tetanus
TT	Tetanus Toxoid
Measles	Measles vaccine

Schedule 1(a) infants

Immunisation of infants (at birth to 11 months of age)

Type of Vaccines	***When administered?***
BCG, OPV 1, hep b 1	At birth or as soon as possible after birth
DPT 1, OPV 2, hep b 2	At 6 weeks of age / or 4-6 weeks after BCG1, OPV 0
DPT 2, OPV 3	At 10 weeks of age / or 4-6 weeks after DPT 1, OPV) 1
DPT 3, OPV 4 hep b 3	At 14 weeks of age / or 4-6 weeks after DPT 2, OPV 2
Measles, yellow fever	At 9 months of age

Note:

a) The first dose of DPT) 1 can be given as early as 4 weeks of age but not when an infant is less than 1 month of age due to sub-optimal antibody response;

b) The minimum interval between doses of DPT (i.e. DPT 1 – 3) and OPV (i.e. OPV 0 – 3) should be at least 4 weeks apart. If a child failed to come back for his / her subsequent doses of DPT or OPV as scheduled, it is the responsibility of the health staff to follow-up and to give the next dose of vaccinations as soon as possible until the child completes the full course of the immunisation. In cases where the subsequent doses of DPT and OPV are delayed, there is no need to repeat the (previous) dose.

Schedule 1(b) Preschool children

Immunisation of preschool children or children aged 1-5 years

a) Without previous immunisation (1-5 years of age)

Children aged 1-5 years with no history or record of previous immunisation must complete all vaccinations as soon as possible.

Type of Vaccines	*When administered?*
Measles, DPT 1, OPV 1	At first visit
DPT 2, OPV 2	4-6 weeks after Measles, DPT 1, OPV 1
DPT 3, OPV 3	4-6 weeks after DPT 2, OPV 2

Note:

a) BCG and OPV 0 (at birth) are not given in this age group.
b) All EPI antigens are safe even if administered simultaneously at the same day but should be injected into different sites.
c) Two live vaccines (such as BCG, OPV and Measles), if not administered on the same day, should be spaced at least 4 weeks apart.

a) With incomplete immunisation (1-5 years of age)

Children with incomplete immunisation record must complete their vaccinations as soon as possible. There is no need to start the whole schedule again if some vaccines have already been given.

Schedule 2(a) Booster Doses

Children who completed the primary series of immunisation may receive booster doses of the following vaccines to maintain or prolong the immunity against the antigens:

Type of Vaccines	*When administered?*
DT booster 1	After a year of DPT 3 or at 2 years of age
DT booster 2	At primary school entry or at 6 years of age
OPV booster	At primary school entry or at 6 years of age

Schedule 2(b) incomplete immunisation

School age children with incomplete immunisation record

When there is not a complete record for DPT, OPV and Measles vaccinations, a full course of DT, OPV and Measles vaccines should be completed. There is no need to restart the whole schedule again if some vaccines have been given already.

Type of Vaccines	When administered?
Measles, OPV) 1, DT 1	At first visit
DT 2, OPV 2	4 weeks after the first dose
DT 3, OPV 3	4 weeks after the second dose

Note:
DPT should not be given to children over five years of age due to the pertiussis component that may cause some adverse reactions. For children over five years of age, DT vaccine may be given, when available.

Schedule 3 Tetanus toxoid)

Immunisation for women
Immunisation for women if there is no record of previous vaccination; all pregnant women should follow the following schedule

Type of Vaccine	*When administered?*
TT 1	At first contact or as early as possible during pregnancy
TT 2	At least 4 weeks after TT 1
TT 3	At least 6 months after TT 2
TT 4	At least 1 year after TT 3 or during subsequent pregnancy
TT 5	At least 1 year after TT 4 or during subsequent pregnancy

Table 2(a) Tetanus toxoid

Immunisation for women of childbearing age

Dose	When to give	Expected duration of protection
TT 1	At first contact or as early as possible in pregnancy	None
TT 2	At least 4 weeks after TT 1	1-3 years
TT 3	At least 6-12 months after TT 2	5 years
TT 4	At least 1 year after TT 3 or during subsequent pregnancy	10 years
TT 5	At least 1 year after TT 4 or during subsequent pregnancy	All child-bearing years

Table 2(b) Tetanus toxoid

Guidelines for immunisation of women who were immunised in the past

Age of last TT immunisation	Previous TT immunisations	Recommended immunisations	
		At present contact / pregnancy	Later (at intervals of at least 1 year)
Infancy	3 DPT	2 TT*	1 TT
Childhood	4 DPT	1 TT	1 TT
School age	3 DPT + 1 DT	1 TT	1 TT
School age	4 DPT + 1 DT	1 TT	None
Adolescence	4 DPT + 1 DT at 4-6 years + 1 TT at 14-16 years	None	None

*At least 4 weeks between doses

1.2 Integrated management of childhood illnesses

I.2.1. Background information...

WHO and The Ministry of Heath of East Timor have already developed **a manual for the management of childhood illness**. (IMCI) guidelines. This is a logical policy in dealing with child health.

The child presented to the doctor or health worker with an illness, the health status of the child must be assessed as a whole. Childhood illness that causes the most morbidity and mortality of the under five in the developing world, have different symptoms than those in the adult and the disease also have some common diagnostic features. Such as diarrhoea is a common symptom of chest and other infectious diseases including malaria, ENT infection, and malnutrition and each cause leads to the other in a vicious circle... The Guide lines thus mentioned explains the logical approach in managing child health illness.

In this guide lines (**East Timor Treatment Guide Lines for Primary Health care)** will summaries those steps and will refer to the treatment in the appropriate monograph of the particular disease. So as this manual not to loose its intention to be as a pocket book for the health worker. But, it is highly recommended that the doctor and the Health worker should always refer to the "Integrated **Management of Childhood illness Guide line"** and should be considered. The approach is as follows:

1. Assessing and classifying the sick child age 2 months to 5 years:
Assess, Classify and Identify treatment.

Follow the chart in the IMCI guidelines for symptoms and Treatment and to the monograph in this treatment guide lines.

Check for danger signs

a. Fast breathing = (50/min, 2 mon. – 6 yrs=40/min
b. Chest indrawing
c. Skin of abdomen does not go back in < 1 second
d. Sunken eyes
e. Stiff neck.

Classify dehydration (Follow the Chart)

If fever, Classify, Malaria, Dengue (Follow Chart)
Ask about main symptoms
Look for sever visible, wasting, (Weight for age), malnutrition
Check Vitamin. A
Check, Helminthes & parasites
See Immunizations schedule

1.2.2 Treatment

1.2.3 The Integrated management of childhood illnesses guidelines

Treatment. (Look for the individual monographs in this manual &MIC manual**.0**

What the Health worker should do.:

Teach to give oral drug at home

Oral antibiotics
Oral antimalarial
ORS
Iron
Paracetamol

Teach the mother to treat local infections at home:

Infection of the
Dry the ear by wicking
Treat mouth ulcer, impetigo by Gentian violet
Soothing the throat by steam.

To give these treatments at the clinic only:

Intramuscular antibiotics
Quinine for sever malaria
Vitamin A for treatment
Prevent low blood sugar
Give extra fluids for diarrhoea

Give Pre-referral care

Pneumonia
Persistent diarrhoea
Malaria
Measles with eye or mouth complication
Ear infection
Feeding problem
Very low weight for age.

Counsel the mother to :
Increase fluid intake during the illness
Advice the mother when to return
Counsel the mother about her health
Record all findings in the appropriate form for the different ages
WEGHT FOR HIGHT CHART

1.3 Lep

Leprosy is a chronic disease caused by *Mycobacterium leprae*. It affects the peripheral nervous system, the skin, and some other tissues. It is transmitted from person-to-person, when bacilli are shed from the nose and skin lesions of infected patients, but most individuals are naturally immune, and symptoms are suppressed. Clinical leprosy may be regarded as a consequence of deficient cell-mediated immunity in susceptible individuals. For the purpose

of grouping patients for chemotherapy, leprosy may be classified as Multibacillary of Paucibacillary.

Multibacillary leprosy occurs when cellular immunity is largely deficient.
Paucibacillary leprosy results when cellular immunity is only partially deficient.

For the purpose of treatment, WHO now classifies patients with more than 5 skin lesions as Multibacillary, and those with 1 to 5 skin lesions as Paucibacillary? It further classifies patients with only one skin lesion as having Paucibacillary single-lesion leprosy.
The use of this clinical classification avoids the necessity to provide facilities for bacteriological examination of skin smears.

1.3.1 Signs & symptoms

A leprosy patient is someone who:

- has a skin patch or patches with a definite loss of sensation and
- Has not completed a full course of treatment with multidrug therapy.

Leprosy patches

- can be pale or reddish or copper-coloured
- can be flat or raised
- do not itch
- usually do not hurt
- lack sensation to heat, touch or pain
- can appear anywhere
-

Signs, which are <u>not</u> leprosy

- skin patches present from birth (i.e. birth marks)
- where there is normal feeling
- skin patches that itch
- that are white, black or dark red;
- with scaling skin;
- That appears or disappears suddenly and spread fast.

1.3.2 Multi drug Therapy (MDT)

Cures leprosy, stops transmission and prevents disabilities!
MDT blister packs are ideal for the patient. Give the first dose at the health centre. Show the patient which drugs should be taken once a month and which every day. MDT is safe during pregnancy (MDT RENDER REDUCES THE EFFECT OF CONTRACEPTIVES PILLS & INJECTIONS)

MDT blister packs are available for Adults:

Paucibacillary ADULT treatment		
Once a month: Day 1	***Once a day***: Days 2 - 28	**Full course**
2 capsules of rifampicin (300 mg x 2)	1 tablet of dapsone (100 mg)	6 blister packs
1 tablet of dapsone (100 mg)		

Multibacillary ADULT treatment		
Once a month: Day 1	***Once a day***: Days 2 - 28	**Full course**
2 capsules of rifampicin (300 mg x 2)	1 capsule of clofazimine (50 mg)	12 blister packs
3 capsules of clofazimine (100 mg x 3)	1 tablet of dapsone (100 mg)	
1 tablet of dapsone (100 mg)		

MDT blister packs are available for CHILDREN:

Paucibacillary CHILD treatment (10-14 years)		
Once a month: Day 1	***Once a day***: Days 2 - 28	**Full course**
2 capsules of rifampicin (300 mg + 150 mg)	1 tablet of dapsone (50 mg)	6 blister packs
1 tablet of dapsone (50 mg)		

Multibacillary CHILD treatment (10-14 years)		
Once a month: Day 1	***Once a day***: Days 2 - 28	**Full course**
2 capsules of rifampicin (300 mg + 150 mg)	1 capsule of clofazimine every other day (50 mg)	12 blister packs
3 capsules of clofazimine (50 mg x 3)	1 tablet of dapsone (100 mg)	
1 tablet of dapsone (50 mg)		

Paucibacillary CHILD treatment) (below 10 years)		
Once a month: Day 1	***Once a day***: Days 2 - 28	**Full course**
1 capsule of rifampicin (300 mg)	1 tablet of dapsone (25 mg)	6 blister packs
1 tablet of dapsone (25 mg)		

Multibacillary CHILD treatment (below 10 years)		
Once a month: Day 1	***Once a day***: Days 2 - 28	**Full course**
1 capsule of rifampicin	1 capsule of clofazimine (50 mg)	12 blister

(300 mg)	twice a week	packs
2 capsules of clofazimine (50 mg x 2)	1 tablet of dapsone (25 mg)	
1 tablet of dapsone (25 mg)		

1.3.3 Common side effects of MDT

Red coloured urine

This is due to the colour of rifampicin, which is taken once every month. This lasts for only a few hours after taking the drug. Please assure patient that it is harmless.

Darkening of the skin

This is due to clofazimine used daily for treating MB patients. This is harmless and will disappear within a few months after completing the treatment. Please encourage patient to take the medicines regularly.

Allergy

As with any medicine, some patients may be allergic to one of the drugs in MDT. Most commonly there will be severe itching and red/dark spots on the skin. In such cases, ask the patient to stop taking the medicines and refer him or her to the nearest hospital.

1.3.4 Management of complications

Leprosy reactions)

Patients can develop reactions, which are part of the natural course of the disease. Reactions are **not** a side effect of MDT. They are the body's response to leprosy and do not mean that the disease is becoming worse or that the treatment is not working.

Signs of reactions include

- Existing skin lesions become reddish and swollen (tpye1; PB and MB)
- Painful reddish nodules appear (type 2; MB)
- Peripheral nerves become painful, tender an swollen (neuritis)
- Signs of nerve damage such as loss of sensation and muscle
    - Weakness (neuritis)
    - Fever and malaise
    - Hands, face and feet may be swollen

1.3.4 Managing reactions

- Patient must go immediately to a health centre for treatment
- Reactions require urgent treatment with special medicines as they can

Lead to irreversible deformities.

- Give aspirin or Paracetamol to reduce pain and fever
  (Aspirin is more suitable because it has an anti-inflammatory effect)
- Advise the patient to rest as that is essential
- Patient must continue to take MDT during a reaction

Daily doses of prednisolone during a course of treating leprosy reactions and neuritis in particular

Recent loss of sensation and muscle weakness can recover with prednisolone if the duration is less than 6 months.
Note: Maximum dose of prednisolone is 1 mg per kg of body weight
It is important that you examine the patient and reduce the dose of corticosteroid. People still on anti-leprosy treatment (MDT) must continue their treatment while on steroids; however, those who have completed their course of MDT do not need anti-leprosy treatment while on steroids.

Prescribing prednisolone for a severe type 1 reactions
For PB patients the standard treatment is as follows:

Weeks 1 - 2	Weeks 3 - 4	Weeks 5 - 6	Weeks 7 - 8	Weeks 9 - 10	Weeks 11 - 12
40 mg	30 mg	20 mg	15 mg	10 mg	5 mg
The total duration of this course is twelve weeks					

For MB patients the standard treatment is as follows:

Weeks 1 - 4	Weeks 5 - 8	Weeks 9 - 12	Weeks 13 - 16	Weeks 17 - 20	Weeks 21- 24
40 mg	30 mg	20 mg	15 mg	10 mg	5 mg
This course lasts 24 weeks, exactly double the PB course					

Prescribing treatment for severe type 2 reactions
The following regimens (prednisolone + clofazimine) are examples (experienced specialists may prefer different schedules)
Prednisolone

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
40 mg	30 mg	20 mg	15 mg	10 mg	5 mg
The total duration of this short course is six weeks					

Clofazimine
Clofazimine is additionally given in decreasing doses as follows:
300 mg daily for 1 month
200 mg daily for 3-6 months

100 mg daily for as long as symptoms remain

The best way to prevent disabilities is early diagnosis and prompts treatment with MDT

Patients with insensitive hands or feet, often already established long before diagnosis, injure themselves without noticing it. These wounds can get infected and over time, lead to irreversible deformities. The wounds should be managed just as you would any other cuts or wounds, dry skin, or eye problems.

Whenever you refer a patient, write down details of the complaint, when this first occurred and medicines take. Send this note with the patient to show to the doctor.

Care of feet	
Feet with dry cracks and fissures	Advise to soak feet for 20 minutes every day in water and apply cooking oil or Vaseline regularly. Advise to use shoes or slippers to protect their feet from injury
Blister on the sole or betweens toes	Dress blister with clean cloth. Apply cotton wool and bandage.

Recommended treatment regimens from WHO in case of wound infection:
Erythromycin, oral (before food) 500 mg 4 times daily for 7 days OR
Ciprofloxacin, oral, 30 minutes before food

500 mg twice daily for 3 days

Feet with ulcers without any discharge	Clean the ulcer with soap and water. Cover with clean dressing. Advise rest
Feet with ulcers with discharge	Clean the ulcer. Apply antiseptic dressing. Advise rest. If no improvement in 4 weeks, refer to hospital.
Care of hands	
Injury on hand while working/cooking	Clean wound and apply clean dressing. Advise rest. Advise to use a cloth to protect the hands when touching hot or sharp objects.
Hands with dry cracks and fissures	Advise to soak hands for 20 minutes every day in water and to apply Vaseline or cooking oil regularly.
Care of eyes	
Patient presents with red eye, pain, blurring of vision and discharge	Give preferably aspirin or Paracetamol If available apply 1% atropine drops and steroid drops. Keep eye covered with a pad. Whenever possible, advise to go to the hospital.
Patient with injury on cornea (corneal ulcer)	Apply antibiotic ointment. Keep eye covered with a pad. Wherever possible, advise to go to the hospital.

Key points

- Skin patches without sensation, which do not itch, can be leprosy
- Drugs stop the spread of leprosy
- Early treatment prevents disabilities
- Patients who have completed their treatment are cured even if they have deformities
- Patients can lead perfectly normal lives

1.4. Malaria

1.4.1. Malaria Protocol

1.4.1.1. Diagnosis age 2 months up to 5 years

Integrated management of childhood illness guidelines must be used for correct diagnosis and management of a child presenting with fever. Also refer to

If there are signs of -		Then classify as -
Fever (37.5°C or above or feels hot) PLUS any of the following: • Repeated and prolonged vomiting • Lethargic or reduced level of consciousness • Cannot drink or breastfeed • Convulsions / fits • Neck stiffness	→	Severe febrile disease **– Urgent management is needed!**
Fever (37.5°C or above or feels hot) alone	→	Febrile illness

Note: Fever can be caused by a number of different diseases, be sure to assess the child for other causes of fever, such as dengue, pneumonia or measles and treat accordingly.
Children older than 5 years and adults:
Please also refer to

If there are signs of -		Then classify as -
Fever (37.5°C or above or feels hot) PLUS any of the following: • Persistent vomiting • Impairment of consciousness • Fits / convulsions • Dehydration • Jaundice • Breathlessness • Low blood pressure • Bleeding from mucosa • Urine that is dark brown, reduced in volume or absent • Pallor (Anaemia)	→	Severe febrile disease **– Urgent management is needed!**
Fever (37.5°C or above or feels hot) alone	→	Febrile illness

Note: Fever can be caused by a number of different diseases, be sure to assess the patient for other causes of fever, such as dengue or pneumonia and treat accordingly.

Pregnant women:

Early symptoms of malaria may be missed, as they are associated with many of the common complaints experienced in pregnancy. Malaria) in pregnancy increases the risk of maternal death, miscarriage and stillbirth, low birth weight, maternal anaemia and premature labour.

Uncomplicated malaria in pregnancy can progress rapidly into severe malaria. Treatment must be initiated as early as possible.

1.4.1.2 Drug treatment

- **Treat uncomplicated malaria at health centres without referral**
- **For cases of severe febrile disease (severe and complicated malaria) initiate treatment at health centres followed by urgent referral to a doctor.**

General note on drug dosages:

All **chloroquine** doses are expressed as chloroquine **base,** i.e., 150 mg of chloroquine base is equivalent to 200 mg of chloroquine sulphate and 250 mg of chloroquine phosphate.

All **quinine** doses are expressed as quinine **salt** (this is different from chloroquine). Quinine sulphate, quinine dihydrochloride, quinine hydrochloride all contain practically the same amount of quinine, i.e., 600 mg of quinine dihydrochloride is equivalent to 600 mg of quinine sulphate.

Uncomplicated malaria

Where the parasite species cannot be confirmed by a laboratory give:
sulfadoxine/pyrimethamine (one dose) plus chloroquine (for three days)

If reliable laboratory diagnosis is available treat as follows:

P. falciparum - Sulfadoxine/pyrimethamine (one dose)

P. vivax	-	chloroquine (for 3 days) plus premaquine (for 2 weeks)
Mixed Infection	-	Sulfadoxine/pyrimethamine (one dose) plus chloroquine (For 3 days) plus premaquine (for 2 weeks) *Do not use premaquine if patient is pregnant*

For correct dosages consult dosage charts.

Note:

- The treatment of patients should start immediately in all health facilities.
- Give some food before the administration of antimalarials to prevent vomiting. If vomiting occurs within half an hour of administering chloroquine, sulfadoxine/ pyrimethamine or combined chloroquine – sulfadoxine/pyrimethamine, the complete dose of these antimalarials should be repeated.

Supportive Treatment:

Much symptomatic relief can be achieved by lowering fever. Chloroquine is an effective anti-pyretic; when giving sulfadoxine/pyrimethamine alone, i.e., for Paracetamol doses can be repeated at 4-6 hour intervals, with a maximum of 4 doses in 24 hours.

Close attention must be paid to fluid balance. Dehydration can easily occur which may lead to renal insufficiency and failure. IV fluids must be given if the patient is too ill to drink.

A child with fever requires more than normal amounts of fluids. Extra breastfeeding should be encouraged. Give food before administration of antimalarials to prevent vomiting.

Malaria in pregnancy

Treatment:
Pregnant women can rapidly become severely ill with malaria and the provision of early diagnosis and treatment may be life-saving. A pregnant woman with suspected clinical malaria is a medical emergency, because the disease is more severe, associated with high parasitaemia and is thus dangerous for both mother and foetus.

In the absence of laboratory diagnosis, pregnant women should be treated with the above mentioned first line treatment for suspected uncomplicated malaria (Sulfadoxine/pyrimethamine plus chloroquine).

If reliable laboratory diagnosis is available treat as follows:

P. falciparum	-	Sulfadoxine/pyrimethamine (one dose)
P. vivax	-	Chloroquine (for 3 days)

Mixed Infection - Sulfadoxine/pyrimethamine (One dose) plus chloroquine (For 3 days)

Pregnant women with uncomplicated malaria in whom first line treatment failure is suspected, should be started on oral quinine For 7 days.

In case of suspected failure of quinine treatment, pregnant women must be referred to a hospital. In these cases, those who can tolerate oral medication, oral quinine (for 7 days) can be combined with Clindamycin 3 times daily for 5 days. In case the patients cannot tolerate oral administration, quinine should be administered intramuscularly.

For pregnant women with suspected severe continued malaria, treatment must be started immediately while referral is being arranged and during the trip to hospital. In the first trimester give IM quinine, in the 2nd and 3rd trimester give IM artemether if available; otherwise use quinine.

1.4. 2 Prophylaxis against malaria

Non-immune women need to be protected against malaria through prevention of mosquito bites between dusk and dawn (use protective clothing, insect repellents and impregnated mosquito nets), and through regular chemoprophylaxis. Resistance of *P. falciparum* to chloroquine) has been reported in East Timor and chloroquine-only chemoprophylaxis can therefore not be recommended.

Where compliance can be assured, the combination of weekly **chloroquine plus daily proguanil** during the first three months of pregnancy is safe and will offer some protection. Weekly mefloquine prophylaxis can be used from the 4th month onwards for women who have no contra-indications to the drug (i.e., history of allergy to mefloquine, history of severe neuropsychiatric disease, history of mefloquine treatment within the previous 4 weeks); otherwise chloroquine/proguanil chemoprophylaxis should be continued. It is important to continue chemoprophylaxis for the full duration of pregnancy.
Chloroquine prophylaxis is given as 2 tablets of 150 mg base weekly.
Proguanil prophylaxis is taken as 3 mg per kg body weight daily (Body weight 36-50kg: 1.5 tablets daily; Body weight over 50kg: 2 tablets daily)
Mefloquine prophylaxis is taken as a single weekly dose of 1 tablet of 250 mg mefloquine base per week.

Note: Premaquine is contraindicated during pregnancy. Doxycycline is also contra-indicated for treatment or for malaria prophylaxis of pregnant women and nursing mothers.

1.4. 3 Treatment failure

If a patient that has been given anti-malarial drug treatment presents at health facility, assess patient for other possible causes of fever and check what drug therapy the patient has had. If

malaria is still suspected, the patient must be kept under close observation until there is response to treatment

1. If the patient has received Chloroquine:

- In the absence of microscopy, suspect *P. falciparum*, and give one dose of sulfadoxine/pyrimethamine.
- If reliable microscopy is available determine parasite and treat accordingly:
    i. *P falciparum* – sulfadoxine/pyrimethamine (1 dose)
    ii. *P vivax* – continue chloroquine plus premaquine
    iii. Mixed infection – give sulfadoxine/pyrimethamine (1 dose) and
    Continue chloroquine plus premaquine

2. If treatment contains sulfadoxine/pyrimethamine ask patient when treatment was started.

- If less than 24 hours ago then advise the patient to continue treatment (to take Paracetamol to lower temperature), as it is too early to detect improvement because of the delayed action of sulfadoxine/pyrimethamine.
- If at least 48 hours ago then suspect treatment failure, give second line treatment with oral quinine 3 times a day for 7 days.

In cases of suspected quinine treatment failure in patients who can take oral medication, oral quinine can be combined with Doxycycline. Doxycycline should not be used by women who are pregnant or nursing or by children under 8 years of age. They can be treated with quinine in combination with Clindamycin 3 times daily for 5 days (

If the patient does not improve within a further 24 hours, i.e., still has fever, then refer urgently to hospital with inpatient facility for third line treatment.

1.4.4 Severe and complicated malaria

Severe and complicated malaria is caused by *Plasmodium falciparum* infection and usually occurs as a result of delay in treating the patient. In children and pregnant women severe malaria may develop very rapidly. A patient with severe falciparum malaria may present with confusion or drowsiness with extreme weakness (unable to sit or walk). All patients with severe malaria should be referred to hospital. Treatment must be started immediately with quinine or artemether while transfer is being arranged.

Health facilities without doctor

Children age 2 months up to 5 years

- Treat the child with:

Quinine, intramuscular

10 mg per kg of body weight (maximum 600mg)

PLUS

Chloramphenicol, intramuscular

Adults: 1g every 6 hours for 7-10 days

Birth to 12 years of age: 25mg/kg/dose every 6 hours for 7-10 days EXCEPT

Neonates:

Pre-term to week 1 of life: give once a day

Week 2-4 of life: give every 12 hours

40 mg per kg of body weight

If referral is delayed repeat quinine) At 4 and 8 hours and then every 8 hours thereafter, and repeat Chloramphenicol every 12 hours.

- Treat the child to prevent low blood sugar:
  - **If the child is able to breastfeed:**

    Ask the mother to breastfeed the child.
  - **If the child is not able to breastfeed but is able to swallow:**

    Give expressed breast milk or breast milk substitute. If neither of these is available, give sugar water. Give 30-50 ml of milk or sugar water before departure.

    To make sugar water: Dissolve 4 level teaspoons of sugar (20 grams) in a 200 ml cup of clean water**.**
  - **If the child is not able to swallow:**

    Refer urgently
- Give one dose of Paracetamol if fever is 38.5°C or higher.
- Monitor temperature, pulse, respiration, blood pressure and level of consciousness every 4 hours (Glasgow coma scale for adults and paediatric scale for children), check for hypoglycaemia, anaemia.
- Keep a careful record of fluid intake and output. Note appearance of black urine (haemoglobinuria)
- Do not give loading dose if the patient has had quinine or mefloquine in the previous 12 hours.

Children older than 5 years and adults

Start the quinine therapy by giving quinine 10 mg per kg of body weight by intramuscular injection for dosage chart). Repeat the dose at 4 and 8 hours and if referral is further delayed

then continue giving every 8 hours. Dilute the injection with normal saline as per chart. Administer IM into the anterior thigh; divide the dose between two sites.

Health facilities with doctor referral facility

- Make a rapid clinical assessment
- If parasitological confirmation of malaria is not immediately available, take a blood film and start treatment with IV or IM quinine **or** artemether:

Intravenous quinine

> Quinine infusion in 5% dextrose
>
> give loading dose of 20 mg per kg body weight – (max. 1200 mg) over 4 hours, monitor infusion rate carefully
>
> At 8 hours reduce dose to 10 mg per kg body weight (max. 600 mg per dose) over 4 hours, repeat every 8 hours
>
> After total 48 hours of treatment change dose to 5 mg per kg body weight over 4 hours, repeat every 8 hours.

Intramuscular quinine

> If for some reason quinine cannot be administered by infusion, quinine can be given in the same dosages (see above) by IM injection in the anterior thigh (*not* in the buttock). The dose should be divided between the two sites – half the dose in each anterior thigh. If possible, for IM use, quinine should be diluted in normal saline to a concentration of 60–100 mg/salt ml.

> Intramuscular artemether (preferred option for women in their 2nd and 3rd trimester) 1.6 mg/kg daily until patient can tolerate oral medication or to maximum of 7 days; this is followed by a single dose of mefloquine 15 mg/kg (or occasionally, if necessary 25 mg/kg) to effect a radical cure

Or when Artemether is given alone:

> Give IM artemether 3.2 mg per kg body weight loading dose on the first day.
>
> Follow by IM artemether 1.6 mg per kg body weight once a day for 6 days or until the patient is able to begin oral treatment. When Artemether is used alone (seen National formulary)

- Monitor the temperature, pulse respiration, blood pressure and level of consciousness every 4 hours (use Glasgow coma scale for adults and a paediatric scale for children).
- Keep a careful record of fluid intake and output. Note any appearance of black urine (haemoglobinuria).
- Change to oral therapy if the patient can swallow. Give the equivalent dose of quinine salt orally to complete 7 days of treatment.
- Once oral medication can be tolerated give a full treatment dose of sulfadoxine/pyrimethamine.
- Good nursing care can be life saving, especially for the unconscious patient. Maintain clear airways. Nurse the patient in the lateral or semi-prone position to avoid aspiration of fluid. Insert a nasogastric tube and remove the stomach contents to minimize the risk of aspiration pneumonia. Turn the patient every 2 hours.

1.4.5 Adverse Reactions and Contraindications of Antimalarials

Chloroquine

Use: During pregnancy, lactation and in early childhood.

Adverse reactions include: Mild nausea, vomiting, dizziness, gastrointestinal disturbances, pruritus, blurred vision and transient headaches.

Contra-indications: History of epilepsy, psoriasis and hypersensitivity to chloroquine.

Sulfadoxine/pyrimethamine

Use: All except to babies under 2 months of age.

Adverse reactions: Mild headache, occasional vomiting and mucocutaneous reactions, ranging from mild to severe (Stevens-Johnson syndrome and toxic epidermal necrolysis). If skin reactions are observed, stop the medication immediately and seek further advice.

Contra-indications: Allergy to sulpha drugs or pyrimethamine, infants in the first two months of life, severe renal insufficiency or hepatic dysfunction.

Premaquine

Use: Use of this drug for treatment of *P. vivax* and *P. ovale* infections should be limited to two categories of patients:
(I)those residing in low transmission areas,

(ii) Those treated during epidemics and / or malaria programmes aiming at an interruption or drastic reduction of transmission, when mass drug administration could be used as an adjunct to the vector control measures.
It is not necessary to provide antirelapse treatment routinely to patients living in endemic areas with unabated transmission.
In programmes aimed at interrupting transmission of *P. vivax* all persons who are at risk may be treated by premaquine at the end of the period of transmission.

Adverse reactions: Anorexia; nausea, vomiting, abdominal pain, weakness; uneasiness in the chest; gastric intolerance (avoided by administering with food); leukopenia, anaemia, suppression of myeloid activity and methaemoglobinaemia.

The haemolytic action of premaquine is increased in subjects with G-6-PD deficiency. It is usually self-limiting but blood transfusions may be necessary in severe cases.

Contra-indications: Pregnancy and children under four years of age (risk of haemolysis); and conditions predisposing to granulocytopenia, including active rheumatoid arthritis and lupus erythematosus.

Quinine

Use: As second line therapy

Adverse Reactions to oral quinine: 'Cinchonism', characterised by transient hearing loss, tinnitus and sometimes vertigo or dizziness, occurs in a high proportion of treated patients. Dose-related cardiovascular, gastrointestinal and CNS effects may arise from accumulation, following oral administration. Quinine may enhance the effect of cardio suppressant drugs. Quinine can induce hypoglycaemia, particularly in pregnant women who have severe malaria.

Precautions: Careful clinical follow up is required in patients with heart disease, particularly people on digoxin, ß-blockers or calcium channel blockers, and in elderly patients who metabolise quinine less rapidly.

Doxycycline

Use: As third line treatment with quinine combination

Adverse Reactions: Nausea, vomiting, diarrhoea, rash, hepatotoxicity, pancreatitis and antibiotic-associated colitis

Contraindications:

Age < 8 years, renal impairment, liver diseases, pregnancy and breast-feeding.

Clindamycin

Use: as third line treatment with quinine Combination.

Adverse reactions: Diarrhoea, abdominal discomfort, rash, jaundice

Contraindications: Diarrhoeal status

1.4. 6 Appropriate Actions for Complications in Malaria

	Appropriate action
Cerebral malaria	A comatose patient must receive meticulous nursing care.
	Monitor and record consciousness, temperature, respiration rate and depth, blood pressure.
	Insert a nasogastric tube and aspirate stomach contents
	Insert a urethral catheter using a sterile technique
	Convulsions – give Diazepam slow IV (Give over 2 minutes) Adults -0.15 mg per kg body weight up to 10 mg per kg body weight, Children – 0.3 mg per kg body weight. Repeat if necessary. Give rectally if necessary.
	Do NOT give corticosteroids, other anti-inflammatory agents, other agents for cerebral oedema (urea, invert sugar), low molecular weight dextran, adrenaline, heparin, prostacyclin, cyclosporin, and desferrioxamine.
Severe anaemia Hb < 5g/dl	Common in severe malaria, often associated with secondary bacterial infection, particularly in young children and pregnant women.
	Monitor Hb and parasitaemia.
	Indications for blood transfusion are: children Hb <4g/dl or adults Hb < 7g/dl.
	Transfuse whole blood: adults 10mg/kg, children 20mg/kg (bodyweight). Give oxygen, and avoid circulatory overload with small IV doses of frusemide.
	Include volume of transfused blood in fluid balance calculations.
Renal failure	Maintain a strict fluid balance record.

	Exclude dehydration by giving a rapid bolus of fluid sufficient to restore circulating volume (20ml per kg body weight, repeated if necessary).
Hypoglycaemia	Hypoglycaemia can be due to the hyperinsulinaemia associated with quinine treatment.
	If detected or suspected give 50% dextrose 50ml (1ml/kg bodyweight for children). Dilute with equal volume of infusion fluid and infuse over approximately 5 minutes.
	Follow with continuous infusion of 5% or 10% dextrose.
	Continue monitoring blood glucose levels.
Dehydration and acidosis	If evidence of dehydration it can cause acidosis.
	Infuse with Ringers lactate or NaCl 0.9% solution but avoid circulatory overload, which can precipitate fatal pulmonary oedema.
	Children with haematocrit > 15% or HB >5g/dl then infuse 20ml/kg body weight NaCl 0.9% over 30 minutes. If haematocrit < 15% or Hb < 5g/dl in child with signs of metabolic acidosis give whole blood 10ml/kg of body weight over 1-2 hours without diuretic.
	Give oxygen
Acute pulmonary oedema	May be due to over hydration therefore stop all IV fluids and give frusemide IV 1-2mg per kg body weight.
	If no improvement withdraw 250 mg of blood (for adult) by venesection into a blood transfusion donor bag so that it can be given back to the patient later.
Circulatory collapse "algid malaria"	Generally associated with Gram-negative septicaemia. Give penicillin or cephalosporin combined with Gentamicin immediately.
	Correct hypovolaemia with fresh blood or polygeline 3.5%
Spontaneous bleeding and coagulopathy	Transfuse fresh blood 10ml/kg bodyweight over 1-2 hours and give Vitamin K (10mg) by slow intravenous injection.
High fever	Remove patient's clothes, tepid sponge and fanning, give Paracetamol.

1.5 Reproductive Health

1.5.1. Antenatal care

Antenatal care is organised to ensure that the pregnant women goes through pregnancy, delivery and post delivery very healthy and a healthy baby is born. To achieve these women must be encouraged to come to the clinic as soon as they have missed one period or as early as possible and at regular intervals throughout the pregnancy. A minimum of 4 antenatal visits or more frequently is ideal.

Good history taking and examination at each visit to identify problems that are likely to have an adverse effect on the pregnancy is important. Early identification of problems means they can be treated or steps can be taken to reduce the risk during delivery. This section summarises the standard management of antenatal care.

Summary / checklist of investigations for antenatal visits.

Investigation	Action to be taken
Collect urine (mid-stream) specimen and use dipstick to check for ➢ albumin ➢ glucose	Albumin present – Refer for further investigation See section 2.1.3 Hypertension Glucose present – refer for further investigation See section 2.1.5 Diabetes in pregnancy
Record weight.	If no weight gain – give advice about appropriate diet and refer for further investigation
Take Blood Pressure	BP above 140/90 mmHg or 15 mmHg above normal BP See section 2.1.3 Hypertension in pregnancy
Measure blood Hb	See section 2.1.1 Anaemia in pregnancy
Take malaria blood slide	See section 2.1.2 Malaria in pregnancy
Ask what Iron and Folic acid supplements the woman is taking	See section 2.1.1 Anaemia in pregnancy
Carry out physical examination ➢ Check for signs of STDs	See section 2.1.6 Infections in pregnancy
Measure height of fundus	If no growth refer for further investigation

Listen to foetal heart and ask about movement of baby	If no foetal heart or no foetal movement then refer for further investigation
Check immunisation status of woman	See section 2.1.7 –Immunisations

1.5.2 Anaemia during pregnancy

Anaemia in pregnancy is a major health problem impacting on pregnancy and childbirth and requires careful management (including prophylaxis), and investigations to determine the cause.

Carry out an estimation of HB of all pregnant women at the initial antenatal visit and again at 28 weeks.

- Hb < 10 gm/dl is considered anaemia
- Hb between 4-7 gm/dl is considered severe anaemia
- Hb < 4 gm/dl is very severe anaemia

Always check for underlying cause of anaemia, commonly this is malaria!

Symptoms/signs

Women who are anaemic may also experience:

- Dizziness
- Swelling of feet
- General weakness
- Easily tired
- Palpitations
- Mucosal pallor
- Jaundice (may or may not occur)
- Hepatosplenomegaly (may not be present)
- Heart failure in severe anaemia

Non-drug treatment

Educate about appropriate iron and vitamin C rich diet and the need to avoid tea and coffee especially within 1 hour of a meal (Shown to reduce the absorption of iron).[1]

Investigate the possibility of infestation with hookworm or malaria and treat these if necessary. See Chapter 11 – Gastrointestinal and Chapter 16 – Infectious disease (section on Malaria)

Drug treatment

Anaemia prophylaxis in pregnancy gives: Ferrous sulphate (60 mg iron) and folic acid 400 mcg (oral

Iron and folate, 1 tablet = 60 mg, folate = 400 micrograms		
	All women	Women with severe anaemia
	1 tablet	2 tablets
In pregnancy	Throughout the pregnancy	3 months
Postpartum and post-abortion	3 months	3 months

If anaemia. Is suspected

Once daily for at least 90 days

I.e. inner eyelids pale or if HB < 10 g/dl then increase (add to) iron supplementation as follows:

Ferrous sulphate (60 mg iron)

Three times a day for at least 90 days.

If severe anaemia is suspected

i.e. pallor, breathlessness, nail beds cyanosed, inner eyelids very pale or if HB < 7gm/dl then the patient must be referred for further investigation and treatment.

Admit patient

Investigate the cause of the severe anaemia and

Treat severe anaemia with:

Blood transfusion PLUS Oral iron preparations

Key points

- Pregnant women with anaemia should have an assisted delivery and should continue iron supplementation for 4-6 months following delivery.
- Iron preparations should be taken after food to avoid gastrointestinal irritation.
- If vomiting occurs, reduce dosage to that which can be tolerated.

1.5.3 Malaria in pregnancy

In pregnancy the early symptoms of malaria may be missed, as they are associated with many of the common complaints experienced in pregnancy.

Malaria in pregnancy contributes to anaemia and slowing of foetal growth, especially in first time mothers. Refer to Infectious diseases (Malaria section) for more information on diagnosis and management.

Symptoms/signs

- Always check Hb and take a malaria parasite slide during antenatal visits.
- See Chapter 16 Infectious diseases (Malaria) for the symptoms and signs of malaria.

Non-drug treatment

Educate the pregnant woman and family members on malaria prevention i.e.

- Using mosquito nets – if possible impregnate with insecticide (DEET)
- Protective clothing – wear long clothing in the evening
- Mosquito repellents – apply before dark and again just before sleeping
- Screens on buildings
- Avoiding mosquito breeding sites after dark
- Eliminate pools of water around living area
- Burn mosquito coils if possible
- **Seek medical attention at the very first sign of illness.**

Drug treatment

Prophylaxis in pregnancy*:* Where compliance can be assured, give the following in pregnancy:

Chloroquine, oral, with food
5mg/kg (TWO tablets x 150mg) once a week.
PLUS Proguanil, oral, with food
3mg/kg (1.5 – 2 tablets 100mg) once a day

Severe and complicated malaria

Infectious diseases (Malaria Protocol,) for management

Uncomplicated malaria)

1.5.4 Hypertension in pregnancy.

Women who develop hypertension during pregnancy (later than 20 weeks) have pregnancy-induced hypertension (PIH) which is a potentially serious condition possibly requiring early or urgent delivery.

Pregnant women who have essential hypertension may also develop superimposed PIH and need the same treatment.

Symptoms/signs

Blood pressure should be monitored at every antenatal visit.

Make sure the patient has rested for 30 minutes before measuring the BP and if it is high then repeat the BP again in 1 hour (encourage the woman to rest during this time).

Patient is considered hypertensive if BP is raised above 140/90 mmHg or raised 15mmHg higher than the patients normal resting BP.

Look for oedema especially over the shinbones in the legs and sacral area.

Collect a urine (midstream) sample and test for the presence of albumin.

Treatment

Women with:

- Raised BP PLUS albuminuria (with or without oedema)
- Oedema on the back of the hands and/or face which starts suddenly
- BP becomes very high (i.e. above 150/100 mmHg)
- Sudden rise in BP
- Decreased urinary output (small amounts of urine are passed which is dark in colour
- Sudden or severe oedema (especially of the face or sacrum/lower back) or albuminuria

Must be referred to a hospital immediately for further management!

Women with:

- BP slightly raised (BP less than 150/100 mmHg but more than 140/90 mmHg or 15 mmHg above normal) and there is no oedema or albuminuria

Carefully monitor blood pressure if possible in 6 hours or the next day. Check for albuminuria and monitor foetal heart.

If BP remains slightly raised, even if there is no oedema or albuminuria **refer the patient for further investigation and management**.

If BP becomes normal again (or rise is less than 15 mmHg) educate pregnant women and partner about signs of pre-eclampsia i.e. headaches, blurred vision, epigastric pain and sudden swelling of legs/back/face. If these signs develop **refer the woman immediately to hospital for further investigation and management**.

Key points

- Never lay a pregnant woman on her back, this may result in fainting and false reading of BP
- When educating about signs of pre-eclampsia) Try not to alarm the pregnant woman and her partner but stress the need for immediate investigation.

1.5.5 Pre-eclamptic toxaemia and Eclampsia

Pre-eclampsia is a disease specifically associated with pregnancy. It usually occurs in the second half of pregnancy. It is characterised by the presence of two out of three major features:

- Elevated blood pressure
- Oedema or excessive weight gain
- Protein in the urine (albuminuria)

Eclampsia is an obstetric emergency. It occurs when the blood pressure rises rapidly followed by an eclamptic fit which is similar to an epileptic fit with tonic and clonic phases. The fits are often repeated at frequent intervals.

Symptoms/signs Mild pre-eclampsia

The diastolic blood pressure is between 90 and 109 mm Hg

The systolic blood pressure is between 140 and 159 mm Hg

There is albuminuria

Severe pre-eclampsia (imminent eclampsia*)*

The diastolic blood pressure is 110 mm Hg or higher

The systolic blood pressure is 160 mm Hg or higher

There is albuminuria

Impending eclampsia or imminent eclampsia is characterised by:

- Sharp rise in blood pressure
- Frontal headaches

- Vomiting
- Visual disturbances such as double vision, blurred vision, flashes of light in front of eyes
- Epigastric pain with or without liver tenderness
- Decrease in urine production i.e. urine production of 400ml or less in 24 hours
- Increased tendon reflexes with or without clonus

Treatment

For mild pre-eclampsia)

Patient should be admitted for bed rest

Encourage patients to lie on their sides to avoid supine hypotension

Urine proteins must be determined daily

4 hourly BP chart

Weigh patient every other day

If blood pressure rises above 150 mmHg systolic or 100 mmHg diastolic then give:

Methyldopa, oral 250 mg 2-3 times daily; if necessary, increased gradually at intervals of 2 or more days; (maximum 3 g daily) OR Nifedipine, oral, sustained-release (Initial titration 10 mg twice daily); 20 mg twice daily; (maximum 80 mg daily

Monitor foetal growth closely

Severe pre-eclampsia/imminent eclampsia and eclampsia

Monitor progress by ¼ - ½ hourly BP until BP is reduced and the patient is stable. Then monitoring can be done by 2-4 hourly BP reading, daily weighing and urine protein examination

If eclampsia is imminent stabilise mother and deliver her

Initiate Sodium chloride 0.9% or Ringer- Lactate infusion

Give:

Nifedipine, short acting,

10 mg chew and swallow, repeat after 1 hour. If more than 2-3 doses are required in one day – urgent delivery is required[2]

To control blood pressure and allow delay of delivery if necessary give:

Methyldopa, oral

250 mg 2-3 times daily; if necessary, increased gradually at intervals of 2 or more days; (maximum 3 g daily)OR

Nifedipine, oral, sustained-release

(Initial titration 10 mg twice daily); 20 mg twice daily; (maximum 80 mg daily

If patient is not symptomatic and pregnancy is less than 34 weeks, allow pregnancy to continue if the foetal condition would allow.

If the pregnancy is 34 weeks or more, consider delivery after stabilisation

Turn woman on her side and maintain airway

Insert a wide bore IV cannula and take blood for investigation.

Prevent or manage fits by giving:

Magnesium sulphate (IV)

4g slowly over 5-10 minutes (8ml of 50% solution), once only , THEN

5g intramuscularly in each buttock once only (10ml of 50% solution). THEN

5g intramuscularly every 4 hours

Note: this will arrest and prevent convulsions without producing central nervous system depression

Toxicity to magnesium sulphate presents as slowing or arrest of the heartbeat and respiration and loss of deep tendon reflexes. Before repeating a dose check for overdose. Look for:

- Respiratory rate has fallen below 14 per minute
- Urine output is less than 25ml/hour
- knee jerk or other deep tendon reflex is absent

In cases of toxicity to Magnesium Sulphate give:

Calcium gluconate 10% solution, intravenous, (IM causes tissue necrosis) IV access should already be in place for $MgSO_4$ IV (Magnesium Sulphate)

10ml slowly intravenously over 10 minutes

Patient should be kept on her side and turned every hour to prevent aspiration pneumonitis, she is likely to be unconscious or semiconscious (often they regain consciousness fairly early)

Insert an indwelling catheter to measure urinary output and albuminuria. It will prevent the patient from being stimulated by filling bladder

Observe closely for infection of the urinary and respiratory tracts.

If after a few hours there are no further fits, delivery should be done by most appropriate method to ensure both safety to mother and baby.

Midwives at a health centre or health post can give for treatment of convulsions/fits:

Magnesium sulfate (IM)

5g (i.e. 10ml of 50% solution) in each buttock and **refer immediately**.

OR

Diazepam, injection, 10 mg in 2 ml

Draw up in a syringe, remove needle and give rectally

Initial dose: 20 mg = 4 ml,

Second dose: 10 mg = 2 ml

Refer immediately

1.5.6 Diabetes in pregnancy

Diabetes that develops during pregnancy is called Gestational diabetes. Diabetes types 1 and 2 may have been present before the pregnancy.

Pregnant women with glucosurea must be referred for further investigation and management.

Diabetics planning pregnancy or already pregnant should be referred for counselling and pregnancy management planning.

Good blood glucose control with insulin and diet is essential since oral hypoglycaemics are contraindicated in pregnancy and hyperglycaemia itself may be Teratogenic. All known diabetics should be advised to start insulin before conceiving if possible.

Blood glucose should be kept strictly within the range 4-6mmol/L during pregnancy. Take regular blood glucose profiles (Admit and take 4 hourly blood glucose levels for 24 hours).

Insulin) Requirements will increase as pregnancy progresses so profiles will be necessary at intervals of around 2 weeks

Labour should be at a tertiary level hospital.

1.5.7 Infections during pregnancy

1.5.7.1 Urinary tract infection during pregnancy

See chapter 15 – Renal conditions for management

1.5.7.2 Syphilis during pregnancy

See chapter 16 – Infectious diseases (STD section)

Both partners should be counselled and treated with:

Benzathine penicillin, intramuscular 2.4 million Units = 1.8 g once (give half in each buttock)

Pregnant women allergic to penicillin give:

Erythromycin, oral, 30 minutes before food. 500mg four times a day for 15 days

1.5.7.3 Vaginal discharges during pregnancy

Often polymicrobial and requires a combination of drugs. Give:

Erythromycin, oral, 30 minutes before food 500mg four times a day for 7 days PLUS Metronidazole, oral, with food) 500mg 3 times a day, with food, for 7 days or 2G single dose for Trichmonas/bacterial vaginosis PLUS Miconazole 2%, cream Use in the vagina at night for at least 3 nights.

Caution: Avoid metronidazole in first trimester of pregnancy

1.5. 7.4. Pelvic inflammatory disease (PID*)*

Gonorrhoea, Chlamydia, mycoplasma, anaerobic bacteria and gram-negative organisms can cause acute PID.

See Chapter 16 – Infectious diseases (STD section)

1.5.8 Immunisations for pregnancy

Pregnant women and women planning pregnancy should be immunised with tetanus toxoid.

Pregnant women and women of childbearing age who have not been previously immunised should follow the following immunisation schedule:

Tetanus toxoid (TT) Dose	When to give	Expected duration of protection
TT 1	At first contact or as early as possible in pregnancy	None
TT 2	At least 4 weeks after TT 1	1 - 3 years
TT 3	At least 6 – 12 months after TT) 2	5 years
TT 4	At least 1 year after TT 3 or during subsequent pregnancy	10 years
TT 5	At least 1 year after TT 4 or during subsequent pregnancy	All childbearing years

Key points

- An adult woman with a complete course of childhood immunisations including boosters should need only **one** booster dose of tetanus toxoid vaccine (recommended at first pregnancy), which should protect for life.
- For complete immunisations schedule see chapter 17 - Immunisations

1.5.9 Nausea and vomiting in pregnancy

Nausea and vomiting related to pregnancy occur during the first trimester and usually pass after 12 weeks of pregnancy. If not excessive, advice small frequent bland meals and drinks... Antacids may give symptomatic relief if gastritis is present. Give:

Aluminium hydroxide tablets, 500 mg

1 or 2 to be chewed four times a day and at bedtime or as required
OR

Aluminium hydroxide suspension

10ml four times a day and at bedtime or as required

Can cause constipation

Key points

- If vomiting persists always look for an underlying causes e.g. UTI, molar pregnancy, multiple pregnancies, malaria.

1.5.10 Delivery

Episiotomy

Where there are signs of severe foetal distress and the foetal head is visible at the vulva, an emergency episiotomy may be one of the few actions the midwife can take to save the foetus.

Signs of foetal distress are – foetal heart rate below 100 or above 170 or delay in return of foetal heart rate after the contraction, or presence of meconium.

Treatment

ؚ Prepare sterile equipment

If local anaesthetic available and there is time give local anaesthetic. Give:

Lidocaine (lignocaine) 2%, local infiltration

Up to a maximum of (5 ml throughout the entire procedure[3]OR (200MG)

Caution: avoid injecting into a blood vessel! Draw back several times during the infiltration.

Insert needle along the intended incision line. Withdraw plunger to check that the needle is not into a blood vessel. Make a slow instillation of anaesthetic and the same time withdraw the syringe slowly so the incision line is anaesthetised.

1.5.10.1 Retained placenta

Bleeding which occurs before the full expulsion of the placenta and where the uterus is not contracted is usually caused by retained placenta. Bleeding after delivery of the placenta when the uterus is soft may also be due to retained parts of the placenta/membranes and the placenta and membranes should be re-examined for completeness**.**

Treatment

If the placenta fails to deliver after 1 hour following the birth of the baby **or** bleeding occurs whilst the placenta is retained then give: Oxytocin 10 units, intravenous, intramuscular[4]

Ensure that the bladder is empty and wait for a contraction. Then try to deliver the placenta using controlled cord traction.

If placenta will not deliver with controlled cord traction and there is no haemorrhage then **refer**

Once uterus is empty give:

Oxytocin, intravenous, intramuscular
10 units

If bleeding after delivery of the placenta then give:

Ergometrine, intramuscular
200mcg[5]
PLUS
Oxytocin, intravenous infusion
20 units in 500 ml Ringers Lactate – run in fast over 1 hour.

If manual removal or placenta required explain to woman what is about to happen and if available give:

Morphine, intramuscular
10 mg, single dose for analgesia
OR Diazepam injection, intravenous or rectal, 10mg (as a sedative)

After manual removal of placenta give:

Amoxicillin, injection, intramuscular
1g immediately
THEN
Amoxicillin, oral
500 mg three times a day for 5 days
PLUS
Metronidazole, oral, with food (1 tab=250mg on EML)
500 mg three times a day for 5 days

Key points

- If unsure that the entire placenta was removed or if haemorrhage is not controlled then refer immediately

1.5.10.2 Post delivery care

Post partum haemorrhage

Bleeding from the vagina following complete birth of the baby of more than 500ml, or any amount that causes signs and symptoms of shock is considered postpartum haemorrhage.

Primary postpartum haemorrhage

Occurs within the first 24 hours of delivery.

If uterus is not contracted rub or massage to contract, give:

Ergometrine, intramuscular 200mcg[6]
PLUS
Oxytocin, intravenous infusion
20 units in 500mls Ringers Lactate – run in fast over 1 hour.

Monitor closely for signs and symptoms of shock. If shock is noted then commence:

Sodium chloride0.9%, intravenous
Infuse until pulse becomes stronger

If ruptured uterus suspected or shock is not controlled then refer urgently!

Secondary postpartum haemorrhage

Excessive bleeding from the vagina or excessive lochia after 24 hours and up to 42 days following delivery is considered abnormal and requires prompt investigation and treatment.

Monitor at risk women for at least the first 10 days after delivery –

- Retained fragments of placenta and membranes
- Prolonged labour
- Instrumental or complicated deliveries
- Breakdown of wound following caesarean section
- Breakdown of wound following episiotomy

Commence antibiotic treatment. Give:

Amoxicillin, injection, intramuscular
1g immediately
THEN
Amoxicillin,) Oral
500 mg three times a day for 5 days
PLUS
Metronidazole, oral, with food
500 mg three times a day for 5 days

If signs and symptoms of shock present then start IV infusions with:

Sodium chloride 0.9%, intravenous
Infuse until pulse becomes stronger then slowly

Refer the woman with her baby immediately

Key points

- A small amount of blood loss may cause shock in an anaemic woman
- Always treat shock and replace all fluid lost
- Transfer woman with relative for blood donation if possible
- Give iron supplementation following any bleeding
- Bleeding can start at any time after the baby's birth
- Ruptured uterus can occur in labour in which case all blood loss may not be revealed.
- Retained fragments of placenta and membranes are the main cause of secondary PPH
- Women who have secondary PPH will need to help to continue to breastfeed but they must feed more frequently to maintain lactation.

1.5.10.3 Puerperal Sepsis

Fever in a woman who has delivered or miscarried in the previous 6 weeks may be due to puerperal or abortal sepsis and should be actively managed.

Signs & Symptoms/

Observe for signs and symptoms or puerperal sepsis, which is diagnosed early when 2 or more of the following conditions occur anytime between the onset of ruptured membranes and 42 days following delivery:

- Pelvic pain
- Fever
- Abnormal vaginal discharge
- Abnormal smell/foul smelling discharge
- Delay in the rate of reduction in the size of the uterus

Advise woman and her partner to be aware of signs and symptoms and to seek assistance if they suspect problems.

Non-drug treatment

If uterus tender or there is delay in reduction in the uterine size or there is vaginal bleeding – **transfer the woman immediately**

Ensure woman and baby are cared for in isolation/away from other family members until infection is cleared.

Wash hands carefully before and after attending the woman and baby.

Isolate equipment for infected mother (and baby), do not use for another purpose and particularly not for another mother and baby.

Advise on good personal hygiene.

Stress to family need for rest, good nutrition and plenty of fluids.

Drug treatment

If condition is severe and signs and symptoms of septic shock and dehydration – commence IV fluids and give antibiotics, then arrange **immediate referral**

Give:

Amoxicillin, injection, intramuscular 1g immediately
THEN Amoxicillin oral 500 mg three times a day for 5 days
PLUS Metronidazole, oral, with food
500 mg three times a day for 5 days

If condition is mild then give the above antibiotics and manage the patient through the clinic.

If the mother does not improve within 24 hours then refer immediately!

Key points

- Fever plus abdominal pain may also be malaria, always check for malaria.

1.5.11 Neonatal conjunctivitis (Ophthalmia neonatorum)

Purulent conjunctivitis occurs in neonates (i.e. babies less than one month of age) is known as ophthalmia neonatorum. It can be caused by Neisseria gonorrhoea, Chlamydia trachomatis, streptococcal and staphylococcal infections, Klebsiella and Escherichia If not treated early and effectively destruction of the cornea and blindness can occur.

Prevention

Treat maternal infection before labour.

Instil into the conjunctival sacs of all babies as soon as possible after birth:

> Tetracycline 1% eye ointment
>
> Apply to each eye inside the conjunctival sac, three times a day for 5 days?

If there is evidence of conjunctivitis with discharge then treat the baby and the parents with antibiotics. See Chapter 16 – Infectious diseases) (STD section) for the appropriate management.

1.6. RESPIRATORY CONDITIONS

1.6.1 Asthma

A person with asthma has episodes of difficulty breathing caused by reversible obstruction of the small / medium sized airways. Asthma often begins during childhood and often runs in families. It is commonly associated with eczema and other allergies. Episodes may be triggered by external agents like house dust, animal hairs, some drugs, air pollution and climatic changes. Most episodes are triggered by upper respiratory infections but episodes may also occur spontaneously, without any apparent trigger.

(Note – one of the short comings of IMCI is that it doesn't deal with wheeze!)

Symptoms/signs

Cough, Wheeze, Rapid breathing

Breathlessness / difficulty breathing (uses extra muscles to breathe)

Patients can rapidly deteriorate into a severe attack of asthma and this may be life threatening.

Features of a life-threatening attack are:

- difficulty speaking
- Tachycardia (this will vary with age)
- Increasing difficulty breathing – increasing recessions / tachypnoea
- Central Cyanosis
- Silent or increasingly quiet chest on auscultation. Wheezing may or may not be heard in a severe attack as little air is moving in / out due to severe obstruction.
- Increasing agitation / irritability
- Drowsiness or confusion

Drug treatment

There are two aspects to the management of asthma in adults and children to consider:

- Treatment of an acute episode
- Maintenance therapy which is used to prevent recurrent episodes

Treatment of an acute severe (life-threatening) episode (status asthmaticus*)*

NEEDS Urgent treatment is required at the health facility (See Medical Emergencies)

If Oxygen is available, give Initially, oxygen should be given at the highest concentration available – if 100% give 100% with a high flow rate (this depends if use prongs / mask – if prongs use 2L / min in kids – I don't know about adults and if a mask at least 6L in kids) .

Give:

Salbutamol by oxygen driven nebuliser (8L/min)

ADULT: 5mg, if there is no response to initial dose repeat, then repeat every 15 to 30 minutes

CHILD: 5mg every 20 minutes for 3 doses or continuously

If there is no response to the nebuliser therapy then give:
Salbutamol, injection (50mcg/mL)

ADULT: 500 micrograms (500mcg is 10mL!!! IM), intramuscular or subcutaneous injection, repeated every four hours if necessary

OR

250 micrograms, intravenously, repeated every few hours if needed.

CHILD: SC/IM: 10-20mcg/kg every four hours if required Paediatric dose of intravenous salbutamol is 5mcg/kg stat

Give 3 nebs 20minutely / continuously and reassess. If no improvement / worsens need to give the IV salbutamol and consider IV salbutamol infusion (can only give in ICU setting). Continue to give continuous nebs.

If improves after 3 nebs give hourly and gradually increase interval between nebs according to progress.

Prednisolone, oral, with food. (Note tabs are 5mg. May need to get in 20/25mg tabs)

ADULT: 30-60 mg, daily until attack improves

CHILD: 1 mg/kg/day, to a maximum 50mg daily for 3 to 5 days; then stop.

If severe episode need to give intravenous steroids – say hydrocortisone 2-4mg/kg or methylprednisone 0.5-1mg/kg.

Note: Initial daily dose of prednisolone should be continued until the patient is better. If the course of therapy is shorter than 14 days then stop prednisolone without tapering. If the course is longer than 14 days then reduce dose gradually by 5mg daily.

If anaphylaxis or imminent cardio-respiratory arrest give adrenaline 1 in 1000.

Dose of **intramuscular** injection of adrenaline (epinephrine) for anaphylactic shock.

Subcutaneous injection **not** generally recommended		
Age	Dose	Volume of adrenaline 1 in 1000 (1 mg/ml)
Under 6 months	50 micrograms	0.05 ml*
6 months – 6 years	120 micrograms	0.12 ml*
6 – 12 years	250 micrograms	0.25 ml
Adult and adolescent	500 micrograms	0.5 ml

These doses my bee repeated several times if necessary at 5-minute intervals according to blood pressure, pulse and respiratory function.

*Use suitable syringe for measuring small volume

This is not a standard drug to use in paediatric asthma – I guess it would be OK in the arrested state – or in true anaphylaxis. I would put adrenaline at the end.

As an alternative to Salbutamol, and if the patient has **NOT** had theophylline in the last 8 hours then give: If severe asthma ADD aminophylline in kids (it isn't used as an alternative in kids).

> Aminophylline
>
> ADULT: 250 mg, slow intravenous bolus,
>
> CHILD: 4 mg/kg, slow intravenous bolus – usually loading dose for kids (who are not on theophylline / aminophylline tabs) is 10mg/kg over 1 hour in IV fluids

Caution: Aminophylline by intravenous bolus must be administered slowly over at least 20 minutes and **not to be given to patient already receiving theophylline.**

If necessary follow this with:

> Aminophylline, intravenous
>
> ADULT: 0.5mg/kg/hour (slow intravenous infusion) in dextrose 5%
>
> CHILD, 6 months – 9 years: 1mg/kg/hour,
>
> CHILD, 9– 16 years: 0.8 mg/kg/hour (slow intravenous infusion) in dextrose 5%

Key points

- It may take 4 to 24 hours to observe a good clinical response to the use of prednisolone. Hence use IV methyl prednisolone / hydrocortisone in acute status asthmaticus.
- Early intervention is the key to avoid deterioration and to stop an asthma attack. Patients must be educated to recognise the early symptoms of deterioration and to take immediate action – not to "wait and see".

Assessment factor	Mild	Moderate	Severe
Wheeze, chest tightness, cough, dyspnoea	Occasional	Most days	Everyday
Symptoms at night	None	Less than once a week	More than once a week
Symptoms of asthma when waking	None	Less than once a week	More than once a week
Episodes of severe acute attacks	None	Not usually	May have a history
Use of Salbutamol Inhaler	Less than twice a week	Most days	More than 3 or 4 times a day
Forced expiry volume in 1 second (FEV1)	> 80%	60-80%	< 80% (at best)
Morning peak flow on waking	> 90% (recent best)	80-90% (best)	< 80% (best)
Daily maintenance with Beclomethasone inhaler	< 400mcg per day	400-1000mch per day	> 1000mcg per day (or oral prednisolone)

iable indicator of the severity of an asthmatic attack and may be absent in a severe attack.

Maintenance therapy

Long-term treatment of asthma is based on the severity. Assessment of severity of long-term asthma is as follows: Actually I would have said also / more importantly based on frequency of episodes. In kids we would start prophylactic / daily treatment if either 1 severe episode or say > 3 episodes in 3 months (for example):

Inhalation is the preferred route of administration, as this allows the drug to deposit on the bronchi. To manage **mild asthma** gives:

Salbutamol, inhaler **

ADULT and CHILD: 100-200 micrograms as needed, or before exercise

OR

Salbutamol, tablet ADULT: 2 to 4 mg 3 or 4 times a daily

CHILD under 2 years: 0.15mg/kg/dose 4 times daily, CHILD 2-6 years: 1 to 2 mg 3 to 4 times daily

CHILD 6-12 years: 2 mg 3 to 4 times daily.

OR

Theophylline, tablet

ADULT and CHILD over 12 years:

5mg/kg/dose every 12 hours

CHILD (1 year to 12 years) 8mg/kg/dose every 12 hours

To manage **moderate** asthma

Add to the regimen for mild asthma the following:

Beclomethasone, inhaler

ADULT: 200 micrograms twice a day regularly

CHILD: 50 – 100 micrograms 2-4 times daily

As above – need to administer with spacer if < 3 and rota haler if < 6. Otherwise is tricky.

To manage **severe** asthma Refer to Medical Emergencies

Note:

Beclomethasone inhalers should be used regularly to provide long-term prevention of an asthmatic episode.

Long-term prednisolone should be avoided in children unless there is no alternative as it causes growth suppression.

Key points

- Aspirin, Ibuprofen and other non-steroidal anti-inflammatory drugs can provoke an asthmatic attack in some asthmatics. Asthmatics should generally avoid using these.
- Inhalers are only effective if the patient uses the correct inhalation technique. More effective use of inhalers can be achieved by using a spacer device. A spacer device can be made by cutting a hole in the bottom of a 750-1000ml plastic bottle. Cut the hole to ensure that the inhaler fits tightly. Holding the spacer device

horizontally, give one puff into the spacer and breathe normally through the top of the bottle for at least 30 seconds.

- To avoid oral thrush when using inhaled corticosteroids advise the patient to rinse mouth with water and spit out after inhalation.
- The mainstay of severe asthma treatment is the regular use of beclomethasone this is in contrast to the intermittent use of the salbutamol inhaler. Educate patients about the importance of this.
- Patients will adhere to treatment regimens if the treatment has fewer drugs, fewer doses per day and it is understood by the patient.

1.6.2 Bronchitis

Infection of the bronchial mucosa or the tubes that carry air to the lungs. Usually caused by a virus.

Symptoms/signs

Initially dry cough, then it become productive with phlegm or mucus and can be very noisy
Low-grade fever, Normal respiration

Non-drug treatment

Bed rest, Drink plenty of water

Give humidified air if possible (Steam inhalation))

Drug treatment

Treat the fever with:

Aspirin, 300 mg, oral, with food

ADULT: 1 tablet three times a day, increasing to a maximum of 6 tablets daily if needed.

CHILD over 16 years: Half these doses or prefer Paracetamol instead.

OR

Paracetamol, 500 mg, oral

ADULT: 1 to 2 tablets every 4 to 6 hours (not more than 8 tablets in 24 hours) if required.

Paracetamol, tablet or suppository

CHILD: 10 mg/every 4 hours (not more than 4 doses in 24 hours) as above

Most cases do not require antibiotics, but antibiotics should be considered if there is secondary infection. If phlegm presents (thick, coloured mucus) give:

Amoxicillin, oral

ADULT: 250-500mg every 8 hours for 5 to 7 days

BIRTH TO 12 YEARS OF AGE: 7.5mg to 25mg/kg/dose every 8 hours

Key points

- Be suspicious of chronic bronchitis i.e. patients with a productive cough that lasts for months or years. The person may have tuberculosis or asthma. Refer for further investigation. Patients who are (or have been) heavy smokers may also have chronic bronchitis.
- People with chronic bronchitis will probably need antibiotics every time they have a cold or "flu".

1.6.3. Common cold

This is a common viral infection, which is contagious and is spread by airborne droplets (coughing and sneezing). It is self-limiting.

Symptoms

Runny nose, blocked nose

Slight fever

Cough with the cold.

Often starts with a sore throat that resolves quickly.

Often in children this may be the first sign of influenza or measles that may also have an associated conjunctivitis. Otitis media may also be a complication.

Non-drug treatment. , Rest, Encourage patients to drink plenty of water.

To relieve sore throats – gargle with salt and warm water solution.

To prevent cold causing earache – wipe nose, do not blow nose.

Drug treatment

To relieve the fever, headache and associated muscle pain give:

Aspirin, 300 mg, oral, with food

ADULT: 1 tablet three times a day, increasing to a maximum of 6 tablets daily if needed.

CHILD over 16 years: Half these doses or prefer Paracetamol instead.

OR

Paracetamol, 500 mg, oral

ADULT: 1 to 2 tablets every 4 to 6 hours (not more than 8 tablets in 24 hours) if required.

Paracetamol, tablet or suppository

CHILD: 10 mg/kg every 4 hours (not more than 4 doses in 24 hours)

Colds are viral infections therefore: DO NOT GIVE ANTIBIOTIC TREATMENT.

If Otitis media (ear ache) is a complication then treat –

Key points

- Do not give antibiotics or injections to a patient with a simple cold. It will not help and may cause harm.
- If a cold last for more than a week or if the person has fever, coughs up a lot of phlegm (mucus with pus), has shallow fast breathing or chest pain bronchitis or pneumonia may be developing. See section of this chapter on bronchitis and pneumonia.
- Colds are more likely to develop into pneumonia in old people, in those who already have lung problems (e.g. asthmatics), and people who cannot move much.
- If the sore throat is accompanied by fever it may be caused by a bacterial infection and requires antibiotic treatment – See chapter 9 Ear, Nose and Throat, for treatment.

1.6.4. .Croup (acute laryngotracheobronchitis)

An inflammation of the upper and lower respiratory tracts, with obstruction most pronounced in the subglottic area characterized by brassy cough, hoarseness of voice and inspiratory stridor and respiratory distress, caused by viruses, measles, diphtheria and other bacteria.

Croup typically occurs in children between 6 months and 7 years

Diagnosis:

- Croup must be distinguished from epiglottitis (see YTG 13.4.7).

☞ Pharynx can be visualised, but should not be manipulated or examined by tongue depressor or any other instrument

Mild croup)

Hoarseness, harsh barking cough but no stridor when calm.

Management

- Advise mother to give home care) and watch for danger signs.
- Steam inhalation (hot bath) sometimes gives relief.
- Antibiotic therapy should NOT be given.

Note: Stridor in a child with measles (even if mild) requires hospital admission.

Severe croup)

Severe (bacterial) croup is suggested by copious purulent sputum, high fever, and drooling, severe airway obstruction.

Diagnosis:
Child is toxic and exhausted with severe cough and stridor

Management
☞ Pharynx may only be *visually* inspected but NOT manipulated since it may initiate a fatal airway obstruction.

Non Drug treatment
- Maintain adequate hydration (children are frequently unable to drink).
- Consider endotracheal intubation or tracheostomy if signs of obstruction develop and if adequate nursing facilities are available.

☞ **Refer to hospital** and ensure close supervision.

Drug Treatment:

Chloramphenicol 25 mg/kg i.m or IV every 6 hours, in view of the possibility of resistant H. Influenza.
•**Dexamethasone** 0.3 mg/kg i.m single dose and repeat once after 2 hours.

1.6.5 Diphtheria

Acute contagious disease caused by Corynebacterium diphteriae and presented by fever, malaise, nausea and pharyngitis.

NB *Diphteria is preventable by vaccination*. All children of 4 months of age Should be immunized

Diagnosis:

☞ Characteristically greyish adherent fibrinous pseudo membranes, usually on the tonsillar area.

Management

- be very careful when examining the throat as it is very easy to cause complete obstruction.
- Tracheostomy may be required if airway obstruction occurs.
- **Refer to hospital**.

Drug treatment:

- **Benzylpenicillin** 50,000 IU/kg i.m or IV every 6 hours for 7 days.
- **Diphtheria antitoxin** 40,000 IU i.m or IV, after sensitivity test.

1.6.6 Inhaled foreign body

May cause stridor o sudden onset and usually persistent cough.

Management

INFANT < 1 year should be held in upside down position while recuer delivers up to four slaps on the back. Support the infant by placing one hand behind the neck and the other behind the back

ODER CHILDREN: Give up to five upward abdominal thrusts in the midline just above the navel. Perform with clasped fists while the child is standing, lying

` 1.6.7 Pneumonia

Pneumonia is an acute bacterial infection of the lungs. It can occur along with other illnesses such as measles, asthma, and flu.

Pneumonia can occur very rapidly in children and may be life threatening if severe and resulting in hypoxemia.

Symptoms/signs

Children:

All children should be assessed using the **Integrated Management of Childhood Illness Guidelines.**

Cough or difficulty breathing PLUS one of the danger signs indicates a severe pneumonia or very severe disease and urgent action must be taken.

Look for the danger signs:

- Child is unable to drink or breast feed
- Child vomits everything
- Convulsions
- Child is lethargic or unconscious
- Chest in drawing
- Stridor

A diagnosis of "severe pneumonia or very severe disease" means urgent referral must be organised – (see guideline page 2) a child with cough or difficulty breathing PLUS fast breathing must be diagnosed with pneumonia and treated with antibiotics. (See guideline page 2 for management.) Probably easier to delete all this and just insert guideline (just the flowchart) / my abbreviated protocol of same

Fast/shallow breathing in children is defined as:

Age of child	Respiration rate
2 months – 12 months	50 breaths per minute or more
12 months – 5 years	40 breaths per minute or more

Under 2 months is 60 / minute

Adults:

Fever – may be preceded by sudden chills

Cough - Can be productive (yellowish/green or rusty) or non-productive. If cough persistent for 3 weeks or more refer for investigations for TB

Chest pain

Breathlessness

Use of accessory muscles for respiration and flaring of the nasal margins

Cyanosis - If the person cannot get enough air, the nails and lips may turn blue and neck veins may swell.

Fast pulse rate

Signs of consolidation (lobar or patchy) or effusion in the chest

Consider admission if the patient is obviously unwell or in severe pain. Admission and monitoring is mandatory if:

- Severe respiratory distress
- Fast/shallow breathing
- Severely cyanosed
- Pulse > 125/min
- Hypotensive (systolic<90mmHg)
- Temperature > 40 C or < 35 C
- Altered mental state

Non-drug treatment

Nurse in a comfortable position

Control fever and pain

Drink plenty of water

Drug treatment

If tuberculosis is unlikely and the patient's condition does not warrant admission (see notes above), treat the infection with:

IMCI

Co-trimoxazole (trimethoprim / sulfamethoxazole), oral, with food

CHILD 6 weeks to 5 months:

¼ adult tablet (20 mg trim. +100 mg sulpha.) Or

1 paediatric tablet (20 mg trim. +100 mg sulpha.) Or

½ teaspoon syrup = 2.5 ml (20 mg trim. +100 mg sulpha.)

CHILD 5 months to 5 years:

½ adult tablet (40 mg trim. +200 mg sulpha.) Or

2 paediatric tablets (40 mg trim. +200 mg sulpha.) Or

1 teaspoon syrup = 5 ml (40 mg trim. +200 mg sulpha.)

CHILD 5 to 12 years:

1 adult tablet (80 mg trim. +400 mg sulpha.)

ADULT: 2 adult tablets (160 mg trim. +800 mg sulpha.)

Duration: every 12 hours for 5-10 days

Serious pneumonia is commonly pneumococcal

Admit or refer urgently for admission to hospital and give:

Benzylpenicillin, injection, intravenous or intramuscular

ADULT: 1.2 g (= 2 million units) every 6 hours for 7 days

Birth to 12 years of age: give 30mg/kg/dose every 6 hours **EXCEPT**

Neonates: week 1 of life: give every 12 hours

Week 2-4 of life: give every 6-8 hours

Double doses (60mg/kg/dose) in severe infections

For IN HOSPITAL management of severe pneumonia

a) Benzyl penicillin would be first line for kids > 1 year. If very sick would use pen / gent or chloramphenicol if very sick

b) for kids under 1 year probably ampicillin better (also covers Haemophilus) +/- Gentamicin if very sick

c) for neonates use Benzylpenicillin / ampicillin and Gentamicin

If not improved within 48 hours review diagnosis (consider tuberculosis – would only really consider TB if chronic cough – i.e. more than a month).

Note: Intramuscular administration of Benzylpenicillin can be painful, however, give IM where IV administration cannot be commenced.

If Staphylococcal infection likely (associated skin lesions, pleural effusion / empyaema, cysts / bulla on CXR) then replace penicillin with or add:

Cloxacillin, intravenous

ADULT: 1g every 6 hours for up to 14 days

Birth to 12 years of age: 25-50mg/kg/dose every 6 hours **EXCEPT**

Neonates: week 1 of life give every 12 hours

Week 2-4 of life give every 8 hours

Give IV for at least 7 days then consider changing to oral route.

If suspect Klebsiella, or other Gram-negative organisms give:

Gentamicin, intravenous or intramuscular

ADULT: 4mg/kg once a day (give over 30 minutes)

(.CHILD UP TO 2 WEEKS: 3mg/kg body weight

PLUS

Chloramphenicol, intravenous

ADULTS: 50Mg/Kg body weight daily in 4 divided doses

CHILD 50 - 100Mg/kg/dose daily in divided doses for 10-14 days. Double dose in severe infection i.e. 25mg/kg/dose

INFANTS (2 weeks – 1 year: 25mg/Kg Daily in divided doses>

Based on culture and sensitivity. **If no response, suspect lung abscess, Empyaema/plural effusion. Refer to specialist for further investigation and management**.

If Lung abscess suspected

Hospital acquired infection)

Pneumonia presenting 7 days or more after admission

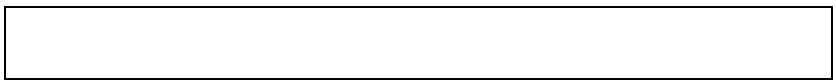
Benzylpenicillin, intravenous

1.2 g (= 2 million units) every 6 hours for 7 to 10 days

PLUS

Gentamicin, intravenous or intramuscular 4mg/kg once a day (over 30 minutes) for 7 to 10 days

(2 mg/kg every 24 hours in the elderly and if there is renal impairment)



Or based on culture and sensitivity

Key points

- . Severe pneumonia in children may cause hypoxia and / or respiratory fatigue / failure. Children with cough and fast / difficult breathing, cyanosis or any of the general danger signs should be referred to hospital – see IMCI.
- Pneumonia is a serious condition in any patient, therefore start antibiotic therapy before laboratory culture and sensitivity information is available.

1.7 Tuberculosis

Tuberculosis (TB) is a disease caused by *Mycobacterium tuberculosis*.

Pulmonary TB (TB of the lungs) is the most common form of the disease that is infectious and occurs in 80% of cases. It is the only form of TB that may be infectious. TB of the lungs may be spread when the patient coughs.

Extra-pulmonary TB affects parts of the body other than the lungs. These can be:

- Spine (bone)
- Skin and lymph nodes
- Brain and meninges
- Disseminated throughout the body (Miliary tuberculosis)

TB can be cured!

All children should have the BCG vaccination for protection at birth.

Symptoms/Signs

Adults usually present with:

- Cough that lasts for more than 3 weeks
- Chest pain, shortness of breath
- Loss of appetite, loss of weight
- May cough up small amounts or a lot of bright red blood
- Mild fever, general feeling of illness
- Evening or night sweating

Always suspect tuberculosis in a case of a productive cough of at least 3 weeks duration that is not resolving despite antibiotic treatment.

Children often present with symptoms that are mild but include:

A temperature that is slightly elevated but persistent (lasting 2 to 3 weeks)

- Fatigue
- Irritability
- Malaise
- Late symptoms usually include chest pain and cough

Chronic illness or malnutrition increases the chance of infection. Suspect tuberculosis in any child with severe malnutrition who is showing poor response to dietary treatment.

It is important to confirm whether or not a patient has TB before treatment is started. **Patients with suspected TB must be referred to a health facility where the diagnosis can be confirmed.**

Examining the sputum coughed up from the lungs can make confirmation. Three specimens must be collected:

- ♦ As soon as the patient is suspected of having TB at the first interview.
- ♦ The following morning, early, before the second interview.
- ♦ During the second interview another specimen is collected.

Any patient who has TB micro organisms visible on microscopic examination of the sputum must be diagnosed with TB and classed as a case. This person is recorded as a smear positive case.

Some cases may be treated for TB but may be smear negative.

Drug treatment

Treatment always includes 2 phases – intensive phase lasting at least of 2 months, and continuation phase lasting up to 6 months. The treatment involves taking a combination of drugs at the same time.

1. Newly diagnosed smear positive cases, all smear negative cases and extra-pulmonary cases

Intensive phase (at least 2 months) – Rifampicin, Isoniazid, Pyrazinamide, Ethambutol)

Continuation phase (6 months) – Isoniazid, Ethambutol

The following is a table showing dose of each TB drug for body weight of patient:

Bodyweight (kg)	Daily dose for the initial intensive phase (2 months minimum)	Daily dose for the continuation phase of 6 months

	Isoniazid + Rifampicin combination tablets	Pyrazinamide 500mg tablet	Ethambutol 400mg tablet	Ethambutol 400mg + Isoniazid 150mg combination tablets
< 33kg	2 (100mg+150mg combination tablets)	1.5	2	1.5
33 – 50kg	3 (100mg+150mg combination tablets)	2	2	2
> 50kg	2 (150mg+300mg combination tablets)	3	3	2

Note: Check carefully the strengths of the **combination tablets** before prescribing and dispensing these.

2. Re-treatment for previously treated patients

Patients who have previously been treated for TB (for at least one month) and who are smear positive must under certain circumstances be given the retreatment regimen. These patients are:

Relapses – patients who have been declared cured previously but are now smear positive again.

Failures – patients who have been smear positive but remain or become smear positive after five months of the above treatment.

Return after default – patients who have stopped their treatment (dropped out) having had at least one month of treatment and stopped for 2 months. If still smear positive then they should start the re-treatment regimen. If smear negative then they continue the original treatment (described above).

Chronic cases – patients who have successfully completed the first treatment regimen but who remai
smear positive.

	Daily dose for the initial intensive phase (3 months)				Daily dose for the continuation phase of 5 months (Take 3 times a week)			
	Isoniazid + Rifampicin combination tablets	**Pyrazinamide 500mg**	**Ethambutol 400mg**	**Streptomycin 1g njection (Given for 2 months only)**	**Isoniazid + Rifampicin combination tablets**	**Isoniazid 100mg (Must be given as well as the combination tablet)**	**Pyrazinamide 500mg**	**Ethambutol 400mg**
	2 (100mg+150mg tablets)	2	2	500mg	2 (100mg+150mg tablets)	1	2	2
	3 (100mg+150mg tablets)	3	2	750mg	3 (100mg+150mg tablets)	1	3	2
	2 (150mg+300mg tablets)	4	3	1g (750mg for person older than 50 years)	4 (100mg+150mg tablets)	1	4	3

Streptomycin is not used in pregnant women but can be used when breastfeeding.

3. Treatment for children

Bodyweight (kg)	**Daily dose for the initial intensive phase (2 months)**		**Daily dose for the continuation phase of 4 months (Take 3 times a week)**
	Isoniazid + Rifampicin combination tablets	**Pyrazinamide 500mg tablet**	**Isoniazid + Rifampicin combination tablets**
< 5kg	½ (100mg+150mg tablets)	¼	½ (100mg+150mg tablets)
5-10kg	½ (100mg+150mg tablets)	1/3	½ (100mg+150mg tablets)
10-20kg	1 (100mg+150mg tablets)	¾	1 (100mg+150mg tablets)
20-30kg	2 (100mg+150mg tablets)	1 ¼	2 (100mg+150mg tablets)

Ethambutol is not used in children because of the difficulty in assessing for the development of optic neuritis.

Adverse drug reactions

TB drugs can have major side effects including:

Exfoliative dermatitis – blistering or peeling of the skin

General reactions – Rifampicin, Pyrazinamide and/or Streptomycin can cause shock, purpura (haemorrhage into the skin) and fever.

Impairment of vision – Ethambutol can cause this. If so, stop and patient should refered for visual examination.

Hepatitis – patient develops jaundice. Isoniazid, Rifampicin and Pyrazinamide may cause this.

Dizziness – caused by vestibular damage due to Streptomycin. Check dose.

If these occur then treatment should be stopped. (If necessary evaluate liver function.) Reintroduce one drug at a time and build up gradually.

Start with Isoniazid 25mg – the least likely to cause a reaction. When the required dose has been achieved without any reaction, another drug should be introduced in a similar manner – slowly increasing the dose daily. e.g.

Day 1 Isoniazid 25mg

Day 2 Isoniazid 50mg

Day 3 Isoniazid 100mg

Day 4 Isoniazid 200mg

Day 5 Isoniazid 300mg

Day 6 Isoniazid 300mg + Streptomycin 125mg

Day 7 Isoniazid 300mg + Streptomycin 250mg etc

Key points

- The management of the National Tuberculosis Programme is outlined in the manual produced by the Health Care department, CARITAS. Refer to this manual for more information.
- TB can be cured but relies on patients taking medicine regularly for up to 8 months. Therefore patients and their families and friends must be carefully counselled about the treatment and outcome to ensure compliance.

CHAPTER 2 BLOOD DISORDERS

2.1 Anaemia

Anaemia is defined as abnormally low concentration of haemoglobin (a part of the blood). Haemoglobin carries iron (and oxygen!) in the blood.

If haemoglobin levels are measured then patients are said to be anaemic when (are these the WHO definitions):

Males – levels lower than 12 - 13 g/dl

Females – levels lower than 11 – 12g/dl

Children 6 to14 years– levels lower than 11 – 12g/dl

Children 6 months to 6 years – levels lower than 12 –g/dl

Anaemia does occur when blood is lost or destroyed faster than the body can produce it e.g. blood loss from large wounds, bleeding ulcers, dysentery, malaria, poor diet, menstrual periods, pregnancy, and worm infestation.

Symptoms/signs

The patient may complain of becoming tired easily, dizziness, and shortness of breath when exercising or palpitations.

The patient may have:

- Pale or transparent skin
- Pale insides of eyelids
- White fingernails
- Pale gums and tongue
- Weakness and fatigue
- The spleen may be palpable.
- Signs of high output cardiac failure if anaemia is severe or of acute onset – tachycardia, flow murmur, bounding pulses, tachypnoea and hepatomegaly

This is really not very relevant.

Thorough examination is required to attempt to identify the underlying cause of the anaemia.

2.1.1 Iron deficiency anaemia

Iron deficiency is the most common cause of anaemia and occurs most commonly in young children and women of childbearing age. In pregnancy and immediately after delivery deficiency in folic acid and/or combined with iron deficiencies is common.

2.1.2 Megaloblastic / macrocytic anaemia

This is anaemia with large red blood cells and is commonly due to deficiency of Vitamin B12 and/or folic acid. Vitamin B12) Deficiency is very rare in childhood.

Non-drug treatment

Advise on an iron rich diet e.g. meat fish and chicken are high in iron. Liver is especially high. Dark green leafy vegetables, beans, peas and lentils. Eating raw, thoroughly washed vegetables and fruit helps the body to absorb more iron.

Drug treatment

It is very important to treat the underlying cause of anaemia appropriately first i.e. malaria etc

Malaria – see Chapter 16 – this and the following are all drug treatments – perhaps the heading is wrong

Worms – see chapter 11

Dysentery – see chapter 11

Iron deficiency anaemia

Restore the iron levels by giving:

Syrup on EML is 25mg elemental iron/ml

Ferrous sulphate (Iron)
ADULT: 200 mg (= 60 mg iron) three times a day
Ferrous sulphate, syrup, 60 mg/5ml
Birth to 12 years old
60mg/Divide into 3 doses
CHILD up to 1 year: 5 ml (125mg!) three times a day
CHILD 1-5 years120mg three times a day
CHILD 6-12 years: 300mg twice daily
(This should be taken well diluted with water)
The treatment should be taken for 3 months after the haemoglobin levels have normalised in order to replenish iron stores.

Caution – iron is extremely toxic in overdose, particularly in children.

Special investigations are required to confirm the diagnosis.

If Vitamin B12 deficiency then gives:

Hydroxocobalamin, intramuscular
1 mg 3 times a week for 2 weeks,

Then 1 mg every 3 months

If folic acid deficiency gives:

Folic acid, oral 5mg once a day as required (review periodically). Folic acid, oral Initially, 5 mg daily for 4 months; maintenance, 5 mg every 1-7 days, depending on underlying disease. CHILD up to 1 year: 500 micrograms/kg daily; CHILD over 1 year: adult doses. – Or 1mg daily

Note: folic acid should never be given alone for pernicious anaemia and other vitamin B12-deficiency states (may precipitate sub acute combined degeneration of the spinal cord).

Key points

Refer patients with:

- **Undiagnosed cause and type of anaemia**
- **Symptoms of anaemia – fainting, palpitations, shortness of breath**
- **Evidence of cardiac failure – see above**
- **Signs of chronic disease e.g. TB**
- **Symptoms or signs of acute blood loss**
- **Blood in stool**
- **Pregnant women over 34 weeks of gestation**
- **Children with HB<8g/dl**
- **Adults with HB<7g/dl**
- **No improvement after treatment with iron**

Indication for blood transfusion in the treatment of anaemia: normally refer anaemic children for blood transfusion if a) Hb < 4g/dl or b) Hb < 6g/dl and has symptoms. Currently blood for transfusion is available only in Dili.

In every patient with anaemia it is important to screen for parasites / worms in stools or provide empirical treatment. It is also important to screen and / or treat for malaria.

2.1.3. Bleeding disorders

Diseases characterised by excessive bleeding. May be present from birth or acquired later in life. Causes may include liver disease, Vitamin K deficiency especially in newborns, drug induced (non-steroidal anti-inflammatory, prednisone), leukaemia, haemophilia, severe septicaemia, dengue fever amongst others! Is there a better way of saying this / grouping these conditions? They seem much unrelated – makes it difficult to understand. Perhaps say the common causes in children include: Vitamin K deficiency in the newborn period and dengue haemorrhagic fever. Rarer causes include leukaemia, congenital disorders of clotting etc … or something like this

Symptoms/signs

Bleeding may be spontaneous or after trauma/surgery.

It may occur into the skin, gastrointestinal tract, brain, joints and muscles, urine, from gums and nose.

In newborns with Vitamin K deficiency spontaneous bleeding may occur from various sites – umbilical cord, gastrointestinal tract, scalp, brain. There is usually a history of failure to administer Vitamin K injection at birth.

With a large bleed patients may be severely anaemic and in haemorrhagic shock.

Non-drug treatment

Apply pressure bandage to minimise bleeding where possible

Identify underlying cause and treat e.g. Dengue fever –

Stop any drugs thought to be responsible for bleeding or which may aggravate bleeding. E.g. aspirin

Drug treatment

It is very important to treat the underlying cause of bleeding appropriately first i.e. dengue etc repetition?

Prevention of haemorrhagic disease of the newborn:

Phytomenadione (Vitamin K), intramuscular 1mg as a single dose (if under 1.5kg, use 0.5mg)

OR

ORAL (using the injection): 2mg at birth, 2mg at 3-5 days of age and in the 4th week of life.

3rd dose must NOT be given later than 4 weeks after birth

In adults and older children the following measures will help to arrest bleeding depending on cause:

Transfusion of fresh frozen plasma (at this time this is unavailable in ET) or, if not available, fresh whole blood. Relatives can be asked to donate blood.

In cases of liver disease and abnormal prothrombin time give

Vitamin K, intramuscular

ADULT: 5-10mg/day for 2-3 days

Children:

Key points

- Refer all patients for further evaluation in hospital
- Prevent trauma in haemophiliacs –
- Avoid intramuscular injections and unnecessary surgical procedures
- Prophylactic administration of Vitamin K (dosage as above) to all newborns at birth.

CHAPTER.3. CARDIOVASCULR CONDITION

3.1 Hypertension

A person's blood pressure is persistently higher than normal for the person's age. There is increased risk of early death from stroke, heart attack, heart failure and kidney failure. Often people will not notice that their blood pressure is high but it is important to treat this to avoid the long-term damage to organs in the body.

Symptoms/signs

Persistent high blood pressure of more than 140/90 mmHg on at least 3 different occasions (or days) taken after the patient has rested for at least thirty minutes.

Pregnant women BP > 120/85 mmHg

Often there are no symptoms; hypertension may be discovered by chance during a medical examination

Patients may complain of headache, palpitation, dizziness, and becoming tired easily.

Some drugs may cause an increase in blood pressure e.g. sodium-retaining drugs: mineral corticoids or glucocorticoids, non-steroidal anti-inflammatory drugs, sympathomimetics, amphetamines, monoamine-oxidase inhibitors, aminophylline, cold cures, oral contraceptives.

Hypertension should **not** be treated until the blood pressure has been confirmed with three consecutive a reading (on three different occasions) after the patient has rested for at least thirty minutes.

Treatment

Treatment aims to reduce the risk of cardiovascular or renal complications by maintaining blood pressure at 140/90 or less but with a minimum of adverse effects.

Non-drug treatment involving lifestyle changes must always be considered first as these will contribute significantly to reduction in raised blood pressure.

Non drug treatment – lifestyle modification

All patients with hypertension must modify their lifestyle with the aim of reducing their blood pressure and preventing deterioration in the cardiovascular and renal systems.

Some patients will only need to change their lifestyle in order to reduce their blood pressure particularly those with mild hypertension.

Patients should be educated in:

- Reducing weight if above ideal weight
- Regular physical exercise
- Stopping smoking

- Moderate or no alcohol intake
- Restricting salt intake
- Restricting cholesterol intake

Drug treatment

Where there is no reduction in blood pressure due to alteration in lifestyle then drug therapy can be considered.

Some patients previously diagnosed and treated for hypertension may be on drug regimens slightly different to those described below. If the patient is well controlled, tolerates the side effects and there is no real need for change then the drugs can be continued.

Guidelines for treatment of hypertension:

- Start with first line drug
- Start with the lowest recommended dose
- If the drug is not effective or is not well tolerated then change the drug or add a new drug from another class.

First line agents

Thiazide

Hydrochlorothiazide oral
12.5 – 50mg once a day - long term

A starting dose sufficient to produce the necessary reduction in blood pressure is likely to be between 12.5mg and 50mg daily. Therafter the dose should be reduced to a maintenance level which may be as low as 12.5mg daily.

Give as a single morning dose.

Contraindicated in patients with gout

Beta-blockers

Atenolol, oral
25mg once a day - long term

Contraindicated in patients with heart failure, asthma and chronic obstructive airways disease, peripheral vascular disease, pulse rate less than 50/minute.

Second line agents

ACE inhibitors:

Captopril, oral

initially 12.5 mg twice daily; in elderly, initially 6,25 mg twice daily (first dose at bedtime); usual maintenance dose 25 mg twice daily; maximum 50 mg twice daily (rarely 3 times daily in severe hypertension.

Caution: *concomitant potassium supplements or potassium retaining drugs should be avoided, or used only with careful monitoring of serum potassium. Contraindicated in pregnancy. Cough can be side effect.*

Calcium channel blockers:

Nifedipine, sustained release 20mg

20mg once a day, up to a maximum of 120mg daily.

Centrally acting:

Methyldopa, oral

Initially 250 mg 2-3 times daily, increased gradually at intervals of 2 or more days, maximum 3 g daily.

ELDERLY: initially 125 mg twice daily increased gradually, maximum 2 g daily.

Special cases of hypertension

Hypertension in diabetics

Thiazide diuretics can impair glucose tolerance and in diabetics can exacerbate hyperglycaemia and hyperlipidaemia. However, these effects appear unlikely with the low doses now given to reduce blood pressure.

Beta-blockers can interfere with awareness of, and recovery from, hypoglycaemia in insulin dependent diabetics. However, this is less likely with the more selective $beta_1$ blockers (e.g. Atenolol).

If this fails or if unwanted effects occur, an ACE inhibitor, calcium channel blocker or alpha-blocker can be tried.

In hypertensive patients with diabetic nephropathy ACE inhibitors (Captopril) have been found to be more effective in slowing the decline in renal function and are the agent of first choice.

Pregnancy induced hypertension

See chapter 2 Reproductive health

Resistant hypertension

Poor compliance should always be considered in all treatment-resistant patients

Drug interactions should be considered (such as concurrent use of non-steroidal anti-inflammatory, aminophylline, cold cures etc)

If control remains poor, refer to a specialist.

Accelerated or very severe hypertension

Accelerated (or malignant) hypertension or very severe hypertension (e.g. blood pressure >140 mmHg) requires urgent treatment in hospital, but is not an indication for parenteral antihypertensive therapy. Normally treatment should be by mouth with a beta-locker (Atenolol) or a long-acting calcium-channel blocker (Nifedipine, slow-release). Within the first 24 hours the diastolic blood pressure should be reduced to 100-110 mmHg. Over the next 2 or 3 days blood pressure should be normalised by using beta-blockers, calcium-channel blockers, diuretics or ACE-inhibitors. Very rapid reduction in blood pressure can reduce organ perfusion leading to cerebral infarction and blindness, deterioration in renal function, and myocardial ischemia. Parenteral antihypertensive drugs are rarely necessary.

Key points

- Refer urgently – hypertensive emergencies diastolic > 120 mmHg, cases of severe hypertension > 170/100 mmHg,
- Refer within the next week – children or young adults with high blood pressure, cases that cannot be controlled, diabetics with hypertension, when there are sign of end organ damage e.g. if the patient has oedema, proteinuria etc.
- Hypertension is not a disease but an important risk factor for cardiovascular and cerebrovascular disease
- Correct measurement of blood pressure is vital to ensure that only the true hypertensive receives treatment
- Patients should be counselled that treatment and lifestyle changes are for life
- There is no ideal antihypertensive drug that reduces blood pressure at a reasonable cost without causing side effects
- It is important to match the antihypertensive medication to the patients other co-existing disease states to gain the most benefit
- Initial follow-up should be every 2 to 4 weeks until blood pressure is satisfactory, then follow-up can be every 3 months.

3.2 Cardiac failure

This is a condition in which the heart is not able to maintain adequate cardiac output. Left ventricular (left side) failure will cause pulmonary congestion (of the lungs); right ventricular (right side) failure will cause peripheral and hepatic congestion (of the rest of the body). Both of these can occur together.

Symptoms/signs

Heart failure is mainly a disease of the elderly. It is a result of damage to the heart due to some other underlying disease.

Usually presents with shortness of breath on exertion or at rest, swelling of ankles, ascites (accumulation of fluid in the abdomen) and easy fatigability.

More specifically:

Left heart failure – shortness of breath after exercise, discomfort when breathing (relieved if person sits or stands up), shortness of breath at night causing the patient to wake up, wheezing, cough with bloody sputum, tiredness, increased respiration rate, heart murmur, gallop rhythm, crackles may be heard in the lungs.

Right heart failure – abdominal discomfort and fluid build up in the abdomen, peripheral oedema (fluid build up) often seen around the ankles, increased heart rate, gallop rhythm, enlargement of the liver.

Non-drug treatment

Restrict salt in diet. Advise patients not to add salt to their diet.

Avoid alcohol,

Weight reduction.

Encourage bed rest but patients should be encouraged to be active when symptoms are mild or absent.

Drug treatment

Patients presenting at a primary health facility should be referred to a doctor for further management. Initial therapy for all grades of heart failure is:

Captopril (oral) 6.25mg twice a day initially, increasing slowly to 25mg three times a day Maintenance dose

Captopril (cardiac failure, adjunct) Initially 6.25-12.5 mg under close medical supervision; usual maintenance dose 25 mg 2-3 times daily; usual maximum dose 150 mg daily.

There is a risk of first-dose hypotension but this can be minimised by starting with very low doses of Captopril. If response to Captopril is inadequate then add:

Frusemide), oral 20-40 mg daily (in the morning) to a maximum of 240mg daily OR Hydrochlorothiazide, oral

25-50 mg daily in mild heart failure.

Patients receiving Captopril and frusemide or hydrochlorothiazide should have electrolytes and renal function monitored.

Patients receiving frusemide or hydrochlorothiazide may experience hypokalaemia (low blood potassium levels) therefore these patients must be encouraged to eat potassium rich foods such as fruit (bananas).

Note: Patients with renal impairment who are on Captopril AND frusemide or hydrochlorothiazide do not usually need potassium supplements as these could cause life-threatening hyperkalaemia (high blood potassium levels*).*

To control rapid ventricular rate (in atrial fibrillation or with sinus rhythm then add in:

Digoxin, oral

To obtain a rapid effect in acute situations – ADULT: 250mcg to 500mcg every 4-6 hours, to a maximum of 1mg

In less urgent cases – 250-500 micrograms daily (higher dose may be divided)

Maintenance: 62.5mcg to 500 micrograms daily – adjust according to age, plasma creatinine and plasma digoxin level. (Usual range is 125-250 micrograms/day.

OR

Digoxin, intravenous

Loading dose in acute situations – ADULT:

250-500 micrograms over 10-20 minutes, repeated at intervals of 4-8 hours according to response to total loading dose of 0.5-1 mg.

Continue with oral maintenance dose.

Acute pulmonary oedema

Sit up in bed. Give Oxygen by mask

Give: **Initially slow intravenous injection of 40 m**g, if no satisfactory response within one hour, the dose may be increased to 80 mg given slowly intravenously.

If patient is in pain or apprehensive give

Morphine, intravenous

5-10mg slowly

If there is fast atrial fibrillation gives

Digoxin, oral

250 micrograms twice a day for 24-48 hours

Monitor urine output

Look for and treat underlying causes e.g. hypertension, myocardial infarction

If patient is confined to bed add:

Heparin, subcutaneous
5000 units every 12 hours

Resistant cardiac failure

Increase dose of frusemide up to 240mg daily (in divided doses). Addition of another diuretic e.g. hydrochlorothiazide may be advantageous. Spironolactone 25mg once a day can also be tube given, but .If still unsatisfactory consider **referral** for further management under specialist care.

Key points

- Patients presenting to a primary health care facility should be referred to a hospital immediately.
- Precipitating factors should be sought and treated e.g.: hypertension, myocardial infarction, infections e.g. sub-acute bacterial endocarditis, chest infection, arrhythmias, hypocalcaemia, anaemia, drugs, e.g. digoxin overdose, NSAIDs, beta-blockers, pulmonary embolism, thyrotoxicosis.
- Daily weights and fluid balance should be recorded as a simple measure of response to treatment. Weight loss should not exceed 1kg/day.
- Monitor carefully potassium levels (stop supplements) when Captopril is started.
- Digoxin toxicity may be problem especially in the elderly and in patients with low blood potassium and blood magnesium levels.

3.3 Ischemic heart disease

Pain occurs because there is a blockage or partial blockage in the blood vessels feeding the heart muscle. When emotional stress or exercise creates a demand for more blood flow to the heart muscle, this cannot be achieved because of an obstruction in the blood vessel.

3.3.1 Angina

This is a recurrent central chest pain often induced by exertion. It is the result of a partial obstruction of a coronary artery and the principal factors associated with this are smoking, hypertension, diabetes and high blood cholesterol levels.

Symptoms/signs

Central chest pain often radiates to the left arm, neck or jaw.

Pain is relieved by rest.

Angina is often worse on effort, cold weather or after meals.

Non-drug treatment

Reassurances that the condition is not rapidly fatal,

Stop smoking

Reduce weight

Regular gentle exercise

Minimise stressful life style.

Control of hypertension, and diabetes and reduction in blood cholesterol levels.

Drug treatment

3.3.2 Stable angina/ infrequent attacks:

Aspirin, oral

75-150mg once a day – long-term

PLUS

Glyceryl trinitrate, sublingual

Sit down. Use

500 micrograms (1 tablet) when necessary for an attack. Dose might be repeated twice at 5 minutes interval. If no relief after 3 tablets refer to hospital immediately

Frequent attacks of angina:

Aspirin, oral 75-150mg once a day – long-term

PLUS

Isosorbide dinitrate, sustained release 20-40mg every 12 hours

.Atenolol, oral

ADULT: 50 mg once daily, increased if necessary to 50 mg twice daily or 100 mg once daily.

If still not stable: Add:

Nifedipine, sustained release

20mg once a day. Maximum 80mg a day.

(Max 90mg for IHD, and 120mg for HT)

If pain continues despite the above treatment, then refer for further assessment and management.

General notes

- Patients should be educated on the importance of making lifestyle changes.
- Chest pain can indicate a number of other conditions and investigations should be undertaken to eliminate these other causes.
- Refer patients when the chest pain is of uncertain cause, or if the symptoms are not relieved by treatment or appear to become worse.

3.3.3 Myocardial Infarction

Coronary blood flow is abruptly stopped and damage to the heart muscle occurs. Risk factors are smoking, diabetes, hypertension, being overweight, high cholesterol levels.

Symptoms/signs

Chest pain very severe or mild may radiate to left arm, neck and jaw. Persists for 30 minutes or more and is not relieved by rest or glyceryl trinitrate.

Patient is restless, apprehensive and in severe pain

Nausea, vomiting, shortness of breath, collapse

Peripheral or central cyanosis

Pulse thready, fast and possibly irregular

Low blood pressure and Raised jugular venous pressure

Bilateral crackles in chest

Presence of third or fourth heart sound

Non-drug treatment

Bed rest and reassurance

Monitor pulse rate, blood pressure and respiratory rate.

Prevention through reduction in risk factors e.g. good control of hypertension, diabetes, regular exercise, weight reduction, avoid smoking.

Drug treatment

Oxygen administration

Set up an intravenous line (**dextrose 5%**or **sodium chloride 0.9%**)

Avoid intramuscular injections where possible as this interferes with the measurement of cardiac enzymes and results in haematomas with thrombolytic agents.

Give: Aspirin, oral

75-100mg once a day for long term treatment. As a single dose,

PLUS

Morphine, intravenous

10 mg, followed by a further 5-10 mg if necessary; elderly or frail patients, reduce dose by half

PLUS

Glyceryl trinitrate, sublingual

500 micrograms – may be repeated after 5 minutes if necessary.

PLUS

Atenolol, oral

25 -50 once a day

Key points

- Refer urgently after initial management above.
- Do **not** give Adrenaline, as it may be counterproductive and cause as extension of the infarction.

3.4 Arrhythmia

Symptoms/signs

Palpitations

Dizziness

Syncopal attacks (sudden attacks)

Chest discomfort, dyspnoea (shortness of breath) and headache

Pulse irregularly irregular

Missed beats may occur either at regular or random intervals

In paroxysmal supraventricular tachycardia the pulse rate is usually regular between 140-220 beats a minute

In complete heart block the pulse is slow (30-40 beats per minute) and regular

Non-drug treatment

Reassure the patient

Avoid excessive intake of alcohol or caffeine

Massage the carotid sinus on one side for a few seconds – may stop an attack of paroxysmal supraventricular tachycardia.

Drug treatment

Patients presenting at a primary healthcare facility should be referred immediately to a facility with a doctor.

Key points

- It is dangerous to use an antiarrhythmic drug without doing an ECG. Refer symptomatic patients to hospital immediately. Choice of drug depends on the type of arrhythmia and severity of symptoms.

3.5 Rheumatic fever

This illness is a complication of a streptococcal infection of the throat. Fever plus inflammation mainly the joints and heart. It is a major cause of permanent damage to the heart.

Symptoms/signs

The onset of symptoms occurs 1-3 weeks after the throat infection.

Persistent fever

Joint pain that moves from one joint to another (migratory arthritis)

Child looks unwell (see above)

Tenderness with or without swelling on any of the joints mentioned above

Carditis – rapid heart rate and / or palpitations, murmur, heart failure, pericardial rub breathlessness and chest pain.

Less commonly – skin rash, subcutaneous nodules.

Non-drug treatment

Bed rest until rheumatic activity subsides

Drug treatment

To treat the infections give:

Benzathine penicillin, intramuscular WHO
As a single dose
ADULT and CHILD >30 kg: 900 mg = 1.2 million units
CHILD <30 kg: 450 to 675 mg = 0.6 to 0.9 million units
Or
Procaine penicillin for 10 days
OR

BNF (280) Erythromycin (oral) for 10 days: if patient allergic to penicillin

ADULT and CHILD (10mg/kg/dose) over 8 years:

250-500 mg every 6 hours

Up to 4 g daily in severe infections;

CHILD up to 2 years: 125 mg every 6 hours,

CHILD 2-8 years: 250 mg every 6 hours,

Doses doubled for severe infections

To suppress rheumatic activity give:

Aspirin, oral, with food

1.2g (4 tablets) every 4 hours, , Doses of 5.4 g daily in divided doses may be sufficient in chronic conditions.

Paediatric doses: 80-100mg/kg/d, usually given for at least 6 weeks

Aspirin should be continued until fever, all signs of joint inflammation and the ESR have returned to normal, and then tapered gradually over 2 weeks. If symptoms recur, full doses should be restarted.

In severe Carditis with increasing heart failure or failure of response to aspirin add:

Prednisolone, oral

1-2mg/kg once a day for 3 to 4 weeks then gradually reduce when there has been substantial reduction in clinical disease.

Continual antibiotic prophylaxis against streptococci infection is recommended for patients with history of rheumatic fever. Give:

Benzathine penicillin, intramuscular

As a single dose

ADULT and CHILD over 30 kg (20mg/kg up to):

900 mg = 1.2 million IU once every 3-4 weeks.

CHILD under 30 kg: 450 mg = 0.6 million IU once every 3-4 weeks.
Then, Oral Penicillin –V or

Erythromycin, oral

250mg twice a day until person is 21 years of age

(If there is inflamed heart (Carditis), use until person is 35 years of age)

Key points

- Prophylaxis should be given to all patients with a history of rheumatic fever and to those with heart valve lesions thought to be of rheumatic origin. Continue until age 21 years or indefinitely if valvular damage is present.

CHAPTER 4 EAR NOSE & THROAT NCONDITIONS.

4.1 Sore throat (Pharyngitis and Tonsillitis)

Infection of the throat and tonsils mostly is caused by a virus, which cannot be treated by antibiotics and will resolve in 3 to 5 days. But, it can also be caused by streptococcal bacterial infection, which must be treated with antibiotics to avoid more serious complications involving the heart and kidneys.

Symptoms/signs

Signs/symptoms of a viral infection:

Fever, difficulty in swallowing, sore throat, running nose or cough. The throat looks red, tonsils may be enlarged and reddened and the tonsillar lymph glands are palpable.

Signs of a bacterial (streptococcal) infection include:

Painful enlarged tonsillar lymph glands, whitish exudates at the back of the throat and whitish exudates on the tonsils (white patches), sustained high fever; occasionally there is a rash or scarlet fever.

When the infection is bacterial there will be an absence of the signs suggesting a viral infection e.g. running nose, cough and red eyes.

Non drug treatment

For sore throats without signs of streptococcal infection

DO NOT GIVE ANTIBIOTICS!

For all sore throats a homemade salt mouthwash may help: ½ teaspoon of salt in a glass of slightly warm water; gargle for 1 minute twice a day.

Drink plenty of water.

Drug treatment

For all sore throats give pain relief. Rheumatic fever can be a complication of streptococcal throat infection in children. Therefore give patients (especially children) with signs of bacterial (streptococcal) infection: See above

Benzylpenicillin, intramuscular, slow intravenous injection or infusion ADULT: 600mg-1.2g = 1-2 million units every 6 hours for 10 days

Birth to 12 years of age: 30mg/kg/dose every 6 hours **EXCEPT**

Neonates: week 1 of life: give every 12 hours

Week 2-4 of life: give every 6-8 hours

Double doses (60mg/kg/dose) in severe infections

OR

Benzathine penicillin, intramuscular

ADULT and CHILD over 30kg: 900 mg = 1.2 million units as single dose

CHILD under 30 kg: 450 mg = 0.6 million units as single dose

In patients allergic to penicillin give:

Erythromycin (oral)

ADULT and CHILD (10mg/kg/dose) over 8 years:

250-500 mg every 6 hours

Up to 4 g daily in severe infections;

CHILD up to 2 years: 125 mg every 6 hours,

CHILD 2-8 years: 250 mg every 6 hours,

Duration: every 6 hours for 5 days.

Key points

- Most sore throats are viral infections that cannot be treated with antibiotics.
- If a bacterial infection is suspected then it is important to treat with antibiotics to avoid the complications of rheumatic heart disease, acute glomerulonephritis and throat (tonsillar) abscesses. See above section
- Refer all patients with retropharyngeal or peritonsillar abscess, recurrent tonsillitis or tonsillitis accompanied be severe swallowing problems, , suspected acute rheumatic fever, history of previous rheumatic fever or rheumatic heart disease, heart murmurs not previously diagnosed., or suspected acute glomerulonephritis,

4 2 Hay fever (Allergic rhinitis)

Inflammation of the nasal mucosa due to hypersensitivity to allergens e.g. pollen, house dust, grasses, animal proteins and foodstuffs.

Symptoms/Signs

Blocked stuffy nose, watery nasal discharge, frequent sneezing often with nasal itching and irritation, itchy/watery eyes.

The discharge from eyes and nose is watery/clear.

Non-drug treatment

Try to avoid the allergens and irritants

Drug treatment

Give antihistamines to relieve the symptoms temporarily:

Promethazine, oral (
ADULT: 25 mg at night, increased to 25 mg twice daily if necessary
CHILD under 2 years: not recommended
(Child over 2 years: 0.125mg/kg/dose every 8 hours or 0.5mg.kg at night)
CHILD 2-5 years: 5mg once to twice a day,
CHILD 5-10 years: 10mg once to twice a day...

Key points:

- The main treatment is to find out what the patient is allergic to and to avoid this in the future. In practise this is very difficult to do.
- Use of antihistamines provides some temporary relief of the symptoms of hay fever.

4.3 Ear problems

Important to find and treat problems with the ear especially in children as chronic and untreated infection may result in deafness, mastoiditis and, more rarely complications such as meningitis and brain abscess.

Symptoms/signs

Children under 5 years of age should be assessed using the Integrated Management of Childhood Illnesses guidelines. See Chapter 1 – Paediatrics.

Children:

In children check for ear pain and ear discharge. Ask how long the ear has been discharging. Look for pus draining from the ear, and feel for tender swelling behind the ear.

If there is:	Then diagnose:
Tender swelling behind the ear	Mastoiditis
Pus is seen draining from the ear and discharge is reported for 14 days or less and/or . Ear pain, particulatly when the external ear is pulled for ward.	Acute ear infection (Acute Otitis media)
Pus is seen draining from the ear and discharge is reported for 14 days or more	Chronic ear infection (Chronic Otitis media)
No ear pain and no pus seen draining from the ear	No ear infection

Examination of the ear with an otoscope, where available and where the operator has been trained in its use, will help confirm or refute the diagnoses.

Adults:

Impaired hearing, sudden and persistent earache, fever, pus discharging from the ear for less than 2 weeks (acute ear infection) or longer (chronic ear infection).

Treatment

CHILDREN:

If diagnosis:	Then treat with:
Mastoiditis	Give first dose of amoxicillin as 1st choice Co-trimoxazole (see below for dose) Give Paracetamol for pain (see Chapter 3 – pain management for dose). **Refer urgently!**

Acute ear infection	Give amoxicillin as 1st choice or Co-trimoxazole (see below for dose) Give Paracetamol for pain (see Chapter 3 – Pain management for dose) Dry ear by wicking Follow-up in 5 days
Chronic ear infection	Dry ear by wicking Follow-up in 5 days

ADULTS:

Acute ear infection - treat with antibiotics and wicking

Chronic ear infection - treat with wicking only.

Non-drug treatment

Drink lots of fluid and continue eating normally.

Wicking - a discharging ear can only heal if it is dry. Drying the ear is time-consuming but is the effective treatment for Otitis media. Demonstrate to the mother if a patient is a child.

- ⇒ Roll a piece of clean absorbent gauze/cloth or soft strong tissue paper into a wick and insert carefully into ear. Leave for one minute then remove and replace with a clean wick.
- ⇒ Repeat the process with a new wick each time until the wick is dry when removed.
- ⇒ Dry the ear at least 3 times a day
- ⇒ Nothing should be left in the ear between wicking.
- ⇒ If bleeding occurs then drying (wicking) the ear should be stopped temporarily.
- ⇒ Avoid swimming or otherwise getting the inside of the ear wet.
- ⇒ Reassess after 5 days to ensure the patient (or mother) is drying the ear correctly and check for tender swelling behind the ear (mastoiditis). If this occurs then refer immediately.

Drug treatment

For acute ear infections (and where mastoiditis is diagnosed): - I think mastoiditis treatment should be listed separately as this is, as you know, parenteral treatment

2 months to 4 months – 62.5mg three times a day for 10 days

IMCI – suggest insert IMCI table

Co-trimoxazole (= sulfamethoxazole + trimethoprim), oral

CHILD 6 weeks to 5 months:

¼ adult tablet (20 mg trim. +100 mg sulpha.) Or

1 paediatric tablet (20 mg trim. +100 mg sulpha.) Or

½ teaspoon syrup = 2.5 ml (20 mg trim. +100 mg sulpha.)

CHILD 5 months to 5 years:

½ adult tablet (40 mg trim. +200 mg sulpha.) Or

2 paediatric tablets (40 mg trim. +200 mg sulpha.) Or

1 teaspoon syrup = 5 ml (40 mg trim. +200 mg sulpha.)

CHILD 5 to 12 years:

1 adult tablet (80 mg trim. +400 mg sulpha.)

ADULT: 2 adult tablets (160 mg trim. +800 mg sulpha.)

Duration: every 12 hours for 5-10 days

OR

Amoxicillin, oral (Mart.150) – IMCI table for kids under 5

ADULT: 250-500mg every 8 hours for 5 to 7 days

Birth to 12 years of age: 7.5mg to 25mg/kg/dose every 8 hours

Key points

- **Refer urgently to hospital** children with suspected mastoiditis. Give a dose of Paracetamol for pain and give and chloramphenicol injection .the or Co-trimoxazole if referral is delayed give a second dose of antibiotic and Paracetamol).
- Refer if after some weeks of wicking the discharge continues
- Refer of there is no response after 10 days of treatment for acute Otitis media.
- Local treatment using ear drops is not effective and should be avoided.

I would suggest specify treatment to the diagnosis:

4.4 Sinusitis

Inflammation of the air spaces in the bones of the head, which are connected to the nose. Inflammation can be caused by infections in the nose which can spread to these spaces e.g. colds or allergic rhinitis.

Symptoms/signs

Bacterial sinusitis is characterised by:

- Thick mucus or pus in the nose, perhaps with a bad smell. The nose is often stuffy. It may be from one nostril only.
- Pain and tenderness over one or more of the sinuses. Hurts when you tap over the bones or when the person bends over.
- Fever (occasionally)
- Certain teeth may hurt.

Non-drug treatment

Drink a lot of water

Breathe hot water vapours – Sit on a chair with a bucket of very hot water at your feet. Place a sheet over your head and cover the bucket to catch the vapours as they rise. Breathe the vapours deeply for 15 minutes. Repeat several times a day.

Put hot compresses on the face.

Tell patient to wipe runny or stuffy nose but try not to blow it. Blowing the nose may lead to earache and make the sinus congestion worse.

Make a solution of salt and water, and use as nose drops.

Drug treatment

To relieve the pain give as directed in Chapter 3 – Pain management

If bacterial infection is suspected then give:

Amoxicillin, oral ADULT: 250-500mg every 8 hours for 5 to 7 days Birth to 12 years of age: 7.5mg to 25mg/kg/dose every 8 hours OR IMCI

Co-trimoxazole (= sulphamethoxazol + trimethoprim), oral

CHILD 6 weeks to 5 months:

¼ adult tablet (20 mg trim. +100 mg sulpha.) Or

1 paediatric tablet (20 mg trim. +100 mg sulpha.) Or

½ teaspoon syrup = 2.5 ml (20 mg trim. +100 mg sulpha.)

CHILD 5 months to 5 years:

½ adult tablet (40 mg trim. +200 mg sulpha.) Or

2 paediatric tablets (40 mg trim. +200 mg sulpha.) Or

1 teaspoon syrup = 5 ml (40 mg trim. +200 mg sulpha.)

CHILD 5 to 12 years:

1 adult tablet (80 mg trim. +400 mg sulpha.)

ADULT: 2 adult tablets (160 mg trim. +800 mg sulpha.)

Duration: every 12 hours for 5-10 days

Sinusitis is not an IMCI diagnosis – nor is it a common paediatric condition at all – I would be tempted to leave it off for kids here. In particular kids under about 5 or 6 don't even have sinuses – not formed yet – if I remember correctly the frontal sinuses don't even form until about 10 yrs. I would just omit kids from this one.

? Trial of nasal decongestant (xylometazoline) for up to 5 days only (to avoid rebound congestion) may be useful.

Key points

- Sinusitis does not cause cheek swelling, if this occurs think of dental causes
- Spontaneous resolution of acute sinusitis occurs in up to 80% of patients after 2 weeks whether antibiotics are given or not.
- Chronic sinusitis is more likely to be associated with structural abnormalities, including nasal polyps.
- Untreated chronic sinusitis may cause chronic inflammation of the bronchi and recurrent chest infections due to mucus passing into the lungs.
- Refer patients with recurrent chest infection due to purulent post nasal drip and chronic sinusitis that does not respond to medical treatment.

4.5 Nose bleeds (Epitasis)

Bleeding from the nose is commonly caused by picking of the nose; however, it can also occur as a result of trauma, hypertension and bleeding disorders such as dengue fever. In children nose bleeds may be spontaneous.

If the nosebleed is due to nose-picking or nasal infection then further investigation is not necessary.

Non-drug treatment – first aid

Ask the patient to sit quietly. Sit the patient up and flex head to prevent blood running down throat.

Wipe the nose gently to remove mucous and blood

Continuously Pinch the nose for 10 minutes (patient must breathe through mouth) or until bleeding has stopped. Apply ice pack to nose.

Key points

- Refer patients who have nosebleeds not due to nose-picking or nasal infection this could be dengue fever or hypertension and these need urgent medical attention. See chapter 11 – Infectious Diseases or Chapter 6 – Cardiovascular Conditions.
- Refer patients whose nosebleed cannot be stopped or when nosebleed occur frequently and may require a transfusion.

CHAPTER 5 ENDOCRINAL DISORDERS

5.1 Diabetes

Diabetes is a chronic disease where a person has abnormally high levels of glucose (sugar) in the blood. Without correction the person can develop some very serious complications.

There are three types of diabetes are encountered in practice:

Diabetes type 1 – is where a person cannot produce enough of the hormone insulin. Insulin is required by the body in order to use the glucose obtained in the food people eat. When there is not enough insulin then glucose cannot be used and the blood levels increase. Usually occurs in young people (<30years).

Diabetes Type 2 – blood glucose levels rise because the systems within the body that regulate the use of glucose fail. Usually occurs in older people (>30years), often in obese or overweight people.

Gestational diabetes – diabetes developing during pregnancy in previously non-diabetic patient. See Chapter 2 – Reproductive health.

If diabetes is not diagnosed and treated, the patient is at risk of serious illness and even death from coronary heart disease, stroke, renal and eye problems etc.

Symptoms/signs

Often the disease may be diagnosed by accident or when the serious long-term complications start to develop.

Early signs of diabetes are:

- Always thirsty
- Urinates often and a lot
- Always tired
- Always hungry
- Weight loss

Later, more serious signs are*:*

- Itchy skin
- Periods of blurred vision
- Some loss of feeling in hands or feet
- Frequent vaginal infections
- Sores on feet or legs that do not heal
- Loss of consciousness – in extreme cases

* Note: It is important to distinguish diabetes type 1 from diabetes type 2 and so all suspected patients should be referred to a health facility where further investigation can occur.

The diagnosis can be suspected by finding sugar in the urine however it must be confirmed by blood testing and preferably a glucose tolerance test.

Non-drug treatment

Both type 1 and type 2 diabetics must be encouraged to adhere to a balanced diet to control the blood glucose.

Diabetes type 2 can often be controlled by very good diet and exercise alone – without drug therapy.

- Encourage patients to eat small regular meals of starchy foods e.g. bread, rice, pasta.
- Reduce fried and fatty food,
- Eat high fibre food
- East at least 5 portions of fruit, vegetables or pulses per day.
- Avoid sugar-containing foods.
- Exercise at least 20 minutes walking – 4 or more days a week.

To prevent infection and injury to the skin, clean teeth after eating, keep the skin clean and always wear shoes to prevent foot injuries.

For poor circulation in the feet rest often with the feet up.

Have regular checks on your eyes

Drug treatment

5.1.1 Diabetes type 1

This type of diabetes requires changes to diet and exercise and treatment with insulin.

Types of insulin:

Type of insulin	Duration of action	Onset of action (hours)	Peak activity (hours)	Duration (hours)	Concentration
Soluble	Short acting	0.5 to 1	2 - 5	6 - 8	100 units/ml
Isophane	Intermediate	Within 2 hours	4 – 12	Up to 24	100 units/ml

Insulin dosages (as a guide)

Type 1 diabètes

Insulin, subcutaneously
Total daily dose of insulin is 0.6 units/kg/day. Give as a combination of short acting (1/3 of the total daily requirement) and intermediate acting (2/3 of the total daily requirement) insulin. Give 2/3 of the total dose in the morning and 1/3 in the evening. Doses should be given about 45 minutes before the morning and evening meals.

Diabetes type 2

Try 3 months with dietary and exercise changes only. If after this there is still poor blood glucose control then start drug therapy.

If the patient is of normal weight then give:

Glibenclamide
Start with 2.5mg twice a day with meals (elderly patients 2.5mg once a day). Adjust dose according to response (maximum 10mg twice a day). Take the daily dose at breakfast time.

Note: Elderly or debilitated patients may respond to half the usual doses.

With the highest doses it may be necessary to divide the dose over the day to maintain optimal control.

If poorly controlled with strict adherence to diet then give

Glibenclamide
2.5mg-15mg daily with breakfast

If remains poorly controlled despite diet then change to insulin.

The long-acting Glibenclamide is associated with a greater risk of hypoglycaemia and should therefore be avoided in the elderly.

In obese patients, use metformin 500mg, once to three times a day, with meals. Maximum 1g three times a day.

Gliclazide is a shorter-acting alternative for the elderly and for patients with decreased renal function. In this case substitute Glibenclamide with:

Gliclazide80 mg

Initially, 40mg 1-2 times a day, with meals-, adjusted according to response, maximum dose - 160mg twice a day

Type 2 diabetes with failed drug therapy, insulin therapy should be initiated

Insulin, subcutaneously Total daily dose is 0.3units/kg/day. Give as a combination of short acting (1/3 of the total daily requirement) and intermediate acting (2/3 of the total daily requirement) insulin. Give 2/3 of the total dose in the morning and 1/3 in the evening. Doses should be given about 45 minutes before the morning and evening meals.

In the elderly this is usually given as a once daily dose of intermediate acting insulin.

Key points

- Suspect type 2 diabetes in all middle age or elderly people with obesity, hypertension, ischemic heart disease, peripheral vascular disease or cerebrovascular disease.
- Blood glucose should be maintained in the range 3.5-10mmol/litre
- Where blood glucose measurements are not available, urinary sugar levels give a guide to overall control
- Stable patients should be reviewed at least every 3 months
- Refer urgently patients who may be developing hyperglycaemia or any complications of diabetes e.g. blindness, gangrene of the feet, myocardial infarction etc
- Refer patients who are not responding to oral drug therapy for commencement of insulin therapy.

5.2 Thyroid conditions

The thyroid is a gland on the throat that produces hormones for regulating the body's metabolism. Abnormalities in the thyroid can therefore cause changes in many systems of the body including the skin, nervous system, muscles, and the gastrointestinal and cardiovascular systems.

A reduction in production of thyroid hormones results in hypothyroidism, while excess results in thyrotoxicosis or hyperthyroidism.

5.2.1 Goitre

A goitre is a swelling if the neck due to enlargement of the thyroid gland. Goitres that occur in patients in certain localities may suggest lack of iodine in the diet. Research in East Timor suggests that Iodine deficiency remains a serious problem.

Goitre can be caused by:

Hypothyroidism

Hyperthyroidism or thyrotoxicosis

Thyroid neoplasm (Tumour)

Simple non-toxic goitre (endemic goitre)

Symptoms/signs

A swelling in the neck – if very large can cause obstructive symptoms with problems in breathing and swallowing

Hoarseness of voice

Symptoms of hypothyroidism (see over)

Symptoms of hyperthyroidism (see over)

Irregular thyroid swelling/diffuse or generalised thyroid swelling

Slow pulse (<60 per minute) – associated hypothyroidism is likely look for other signs

Fast pulse (> 90 per minute) – associated thyrotoxicosis is likely, look for other signs.

Special investigations are required to determine the type of abnormal thyroid function.

Treatment

Refer patients to specialist for further investigation.

5.2.2 Hypothyroidism

There is a reduction in thyroid hormone production. This affects intellectual development and growth in infants and young children. In adults it may be the cause of heart disease and reversible dementia.

It can be caused by iodine deficiency, antibody-related thyroid destruction or may be congenital.

Symptoms/signs

Cold intolerance

Constipation

Heavy menstrual periods

Lethargy

Weight gain

Hoarse voice

Neonates - persistent neonatal jaundice, excessive sleep, floppiness and feeding problems. Children who are born with congenital hypothyroidism and are untreated may develop Cretinism (mental sub-normality, short stature, large tongue, dry skin, sparse hair, protruding abdomen, umbilical hernia)

Adults – slow pulse (usually < 60 per minute), dry coarse skin, puffy face, pallor, deep hoarse voice, slow relaxing deep tendon flexures, dementia

Refer for thyroid function tests. Not available in ET

Treatment

Treatment of hypothyroidism

Levothyroxine (thyroxine), oral

ADULT: initially, 50-100 micrograms (50 micrograms for those over 50 years) daily, preferably before breakfast, adjusted in steps of 50 micrograms every 3-4 weeks until normal metabolism maintained (usually 100-200 micrograms daily); where there is cardiac disease, initially 25 micrograms daily or 50 micrograms on alternate days, adjusted in steps of 25 micrograms every 4 weeks.

CHILD under 4 weeks of life: 8-15 mcg/kg/day

Over 4 weeks: 3-5mcg/kg/day

Key points

- Typical adult replacement dose of Thyroxine is 2 micrograms/kg/day
- Start Thyroxine at 25 micrograms/day in the elderly or those with heart disease
- Close monitoring of clinical response and thyroid function tests is essential practical difficulties here
- IODINE supplemented salt or iodine tablets – esp. pregnant women needs a mention!!! I.e. PREVENTION of iodine deficiency
- 5.2.3Hyperthyroidism

Excess thyroid hormone. The patient is in a high metabolic state. If left untreated significant weight loss and cardiac complications including heart failure may occur.

It is caused by Grave's disease or toxic nodular goitre.

Symptoms/signs

Weight loss despite increased appetite

Excessive sweating

Heat intolerance

Tremors

Nervousness and irritability

Menstrual irregularity

Staring or protruding eyes

Moist palms

Rapid pulse rate that may be irregular

Heart failure

Smooth and diffuse goitre (if Grave's disease)

Irregular goitre in toxic multi-nodular goitre

Refer for further investigation

Treatment

Early patient referral is important. The thyroid hormone levels may be reduced by anti-thyroid drugs, radio-iodine therapy or partial thyroidectomy.

Many of the symptoms can be reduced by:

Propranolol, oral (EML tabs = 40mg)

20-40 mg 3-4 times daily

This may be started before referral but is contraindicated in asthmatics.

For severe thyrotoxicosis due to hormone over-production give:

Propylthiouracil, oral

ADULT: 300-600 mg daily in 2 or 3 divided doses until patient becomes euthyroid; dose may then be gradually reduced to a maintenance dose of 50-100 mg daily.

Patient advice: Warn patient to tell doctor immediately if sore throat, mouth ulcers, bruising, fever, malaise, or non-specific illness occurs.

CHAPTER 6 CONDITIONS OF THE EYE.

6.1 Conjunctivitis

This broadly describes inflammatory conditions that affect the conjunctiva (the thin layer that covers the white of the eye). Infection or allergy or foreign bodies may cause the inflammation.

Symptoms/signs

Redness of one or both eyes.

Common types of conjunctivitis are:

Allergic conjunctivitis – Usually the eyes (both) are very itchy and there can be watery (clear) discharge. Allergic conjunctivitis can recur often depending on the season, the pollens, grasses or animals that are around.

Bacterial conjunctivitis – Usually starts with one eye and can then spread to the other. Characterised by a thick discharge of pus, the lids often stick together after sleeping.

Viral conjunctivitis – One or both eyes can be affected, there may be a watery discharge, and no itching.

Trachoma – this is a chronic eye problem. Inflammation of the conjunctiva occurs initially and eye may be red and watery. After some months lumps called follicles appear inside the upper eyelids. When the follicles begin to disappear (after some years) the scarring causes the eyelashes to pull down into the eye scratching the eye and causing blindness.

Conjunctivitis in the newborn (Ophthalmia neonatorum– occurs in the first few days/weeks of life of the newborn and is an infection that the baby picked up from the mother during delivery. See above – refer page…

Non-drug treatment

Make up a fresh solution of salt in water (1/2 teaspoon salt in a glass of freshly boiled and cooled water) and use to bathe eyes and eye area to get rid of discharge.

Advise on the need for personal hygiene and especially for bacterial conjunctivitis and trachoma the need to avoid spreading the infection from one eye to another and to other people. Wash hands after touching, do not share towels etc.

Drug treatment

Allergic conjunctivitis – For severe cases give:

Promethazine, oral (

ADULT: 25 mg at night, increased to 25 mg twice daily if necessary

CHILD under 2 years: not recommended

(Child over 2 years: 0.125mg/kg/dose every 8 hours or 0.5mg.kg at night)

CHILD 2-5 years: 5mg once to twice a day,

CHILD 5-10 years: 10mg once to twice a day...

.

Bacterial conjunctivitis and Trachoma – These are infections that can be treated with antibiotic eye ointments. Give

Tetracycline eye ointment 1%

Bacterial conjunctivitis

Apply to the eyes 3 or 4 times a day for at least 2 days after the infection has disappeared.

Trachoma:

Apply every 8 hours; continue for 2-3 weeks.

Thereafter: 2 times daily during 5 consecutive days every month for 6 months.

If there is no response to treatment then refer.

Trachoma– if eyelashes are interned then REFER immediately.

Viral conjunctivitis – No drug treatment as this will resolve itself, but if there is doubt about the diagnosis then treat with Tetracycline eye ointment as above.

Conjunctivitis in the newborn (Ophthalmia neonatorum) – as a preventative, treat all newborn babies with:

Tetracycline eye ointment 1%

One single application to both eyes within 24 hours of delivery.

To treat an infection (gonorrhoeal ophthalmia, chlamydial ophthalmia) in the newborn refer for:

Ceftriaxone, intramuscular or intravenously

50 mg/kg to a maximum dose of 125 mg once a day for 7 days (100 mg/kg can also be used)

OR

Benzylpenicillin, intramuscular or intravenously

15mg/kg/dose every 12 hours during 1st week of life, and 7.5mg/kg/dose every 6 hours thereafter for 7 days

PLUS,

Erythromycin, oral

10mg/kg/dose every 6 hours for 14 days

i.e. 2 drugs must be used. One injection plus erythromycin

Frequently irrigating the eye with saline prevents secretions from adhering.

Key points

- Most conjunctivitis is very contagious therefore advise the patient (and the mother) about personal hygiene – washing hands, not sharing towels and pillows etc.

6.2 Xerophthalmia

This is a condition common in children and is associated with inadequate intake of foods that contain Vitamin A. If it is not recognised and treated early then it can cause blindness in the child.

Symptoms/signs

- At first the child may have "night blindness". The child cannot see as well in the dark as other people can
- "Dry eye" occurs; the white of the eyes loses it shine and begins to wrinkle.
- Patches of little grey bubbles (spots) may appear on the surface of the sclera = Bigot's spots.
- As the disease gets worse the cornea (the clear layer that covers the iris and the pupil) becomes dry and dull and may develop little pits. Then the cornea may quickly grow soft, bulge or even burst. Usually

Xerophthalmia often begins or gets worse when a child is sick with another illness like diarrhoea, measles or TB or malnutrition.

Prevention and treatment

Xerophthalmia can be easily prevented by eating foods that have Vitamin A. Foods such as dark green leafy vegetables, yellow or orange fruits and vegetables e.g. papaya (paw paw), mango, squash, pumpkin and carrots. Whole milk, eggs and liver are also rich in Vitamin A.

AGE ⇒	< 6 months	6 – 12 months	>12 months
1st Day	50,000 IU	100,000 IU	200,000 IU
2nd Day	50,000 IU	100,000 IU	200,000 IU
2 – 4 weeks later	50,000 IU	100,000 IU	200,000 IU
Repeat single prophylactic doses in 4 – 6 months intervals.			

The integrated management of childhood illness ensures that the Vitamin A status of every child presenting at a clinic in East Timor children will be checked. Vitamin A supplements are given as a routine:

> Dose Vitamin A (retinol) capsule, with foodCHILD 6-12 months:
>
> 100,000 units = 2 capsules of 50.000 units
>
> CHILD 1-5 years:
>
> 200,000 units = 1 capsule of 200.000 units
>
> Duration: 1 every 6 months

If Xerophthalmia is diagnosed, or the patient has measles or is malnourished then give:**Vitamin A (retinol**) capsule (50.000 and 200.000 units)

> INFANT less than 6 months: 50.000 units on diagnosis, repeated the next day and then after 2 weeks, T 6-12 months: 100.000 units on diagnosis, repeated the next day and then after 2 weeks
>
> CHILD over 1 year and ADULT (except women of child-bearing age): 200.000 units on diagnosis, repeated the next day and then after 2 weeks
>
> ADULT (women of child-bearing age), severe signs of xerophthalmia: as for other adults;
>
> Less severe cases, e.g. night blindness: 5.000-10.000 units daily for at least 4 weeks or up to 25.000 units weekly

Warning: Too much Vitamin A is poisonous. Do not give more than the amounts advised here.

Key points

- Refer to a specialist if the condition is severe with a pitted or bulging cornea.

If any corneal ulceration need to

a) refer to hospital

b) give Vitamin A immediately

c) Cover the eye and take care in handling as may rupture (the surface of the eye is abnormally soft)

6.3 Stye in the eye.

Symptoms / signs

This is a red lump on the eyelid, usually near its edge.

Usually painful and irritating.

Non-drug treatment

Make up a fresh solution of salt in water (1/2 teaspoon salt in a glass of freshly boiled water); while the solution is warm apply a compress to the eye.

Drug treatment

A sty will usually resolve itself in a few days. However, or with tetracycline eye ointment 1% applied 3 times daily to prevent more sties from occurring use:

To prevent recurrence, refer to eye specialist. It may need surgical intervention.

6.4 Eye injury:

Injuries to the eye must be considered dangerous for they may cause blindness.6.4.1 Penetrating injury

Put on an eye shield; DO NOT press on the eye. Refer urgently.

Give:

Tetanus toxoid 0.5 ml
As a single dose (adult)
PLUS
Paracetamol, oral
500-1000 mg 4 times a day
PLUS
Amoxicillin, oral
500 mg three times a day for 5 days

Foreign bodies

Try to remove the foreign body by flooding with water or using a soft cloth or orange stick tipped with cotton wool. If successful then treat with:

Tetracycline eye ointment 1%
Apply under an eye pad for 24 hours then 3 times a day for 7 days.

If not successful or if the eye does not clear up after 24 hours then refer.

Abrasions

Apply an eye pad with:

Tetracycline eye ointment 1%
Apply under an eye pad for 24 hours then 3 times a day for 7 days.

Review after 24 hours and refer if the eye is worse or not improving.

6.5 Chemical burns

This is a medical emergency!! Irrigate the eye and surrounding areas thoroughly using tap water and a 10ml syringe (without the needle) for 30 minutes. Then apply:

Tetracycline eye ointment 1%
Apply under an eye pad for 24 hours then 3 times a day for 7 days.

Review after 24 hours; if the cornea appears opaque or ulcerated then refer immediately. If cornea is not involved and appears to be improving after 24 hours then continue with the Tetracycline eye ointment.

6.6 Iritis / Uvitis

Inflammation of the iris (the coloured part in the centre of the eye – covered by the cornea).

Usually occurs in one eye only, pain may occur suddenly or gradually. Vision is usually blurred.

This is an emergency; refer the patient immediately to hospital.

Antibiotics will not help.

6.7 Glaucoma

A disease of the eye resulting from changes in the pressure inside the eye. It is a common cause of blindness and to avoid this it is important to recognise glaucoma and refer for treatment quickly.

Symptoms/signs

There are two types of glaucoma – acute and chronic

Acute glaucoma can start suddenly with headache or severe pain in the eye. Eye becomes red and the vision blurred. There may be vomiting. It may affect one eye and not the other.

Chronic glaucoma – Changes occur more slowly, there may be no pain. Vision is lost slowly, starting from the side.

Drug treatment

Patients must have the eye pressure tested therefore all suspected cases should be **referred to an eye specialist**.

CHAPTER 7 GASTROINTESTINAL CONDITIONS.

7.1 Oral conditions

7.1.1 Oral thrush (Candidiasis)

A fungal infection of the buccal mucosa caused by *Candida albicans*. It commonly affects the very young, the very old or those whose immunity is impaired and occurs more frequently in HIV/AIDS patients, the malnourished, diabetics, patients on long-term antibiotics and steroids.

Symptoms/signs

White patches on the tongue, cheeks or roof of the mouth

Difficulties in feeding / eating, breastfed babies may refuse to suck

Burning sensation in the mouth

Drug treatment

ADULT or CHILD:

> Nystatin, oral suspension 100,000units/ml
>
> 1 ml 4 times a day after each feed (babies) for 7 days.
>
> Make sure that it is spread around the mouth.

OR ADULT:

> Nystatin 100,000unit lozenges
>
> Suck one lozenge 4 times a day for 7 days.

Gentian violet paint can also be used in limited areas of the skin**.**

Key points

- Advise the patients and mothers of babies that the medicine is effective only while it is in the mouth. Once it is swallowed it will not be effective. Therefore mothers of babies should be shown how to wipe the medicine inside the mouth of the baby.
- Mothers of breastfeeding babies also need to treat their breasts with topical antifungal
- The treatment should be continued for at least 7 days
- Identify the underlying cause and refer if necessary.

7.1.1 Gingivitis and Stomatitis

Symptoms/signs

Sore mouth, bleeding gums after brushing, cracks at the corners of the mouth, poor appetite, nausea, and ulcers present**.**

Non-drug treatment

Encourage a well-balanced diet, sores at the corner of the mouth are often due to lack of vitamins and iron in the diet.

Encourage the patient to rinse mouth frequently with a saline mouthwash. This can be easily made at home using a pinch of salt (or ¼ teaspoon) in around 140ml water (roughly half a glass). Rinse every few hours and especially after meals.

Drug treatment

If the ulcers look infected give:

Amoxicillin, oral

(ADULT: 250-500mg every 8 hours for 5 to 7 days

Birth to 12 years of age: 7.5mg to 25mg/kg/dose every 8 hours

PLUS (for anaerobs)

Metronidazole, oral Tablets with food, syrup 30 minutes before food

ADULT: 250 mg every 8 hours for 3 days

CHILD:

Birth to 4 weeks of life: 7.5mg/kg/dose every 12 hours

4 weeks to 12 years of age: 7.5mg/kg/dose every 8 hours

Key points

Sore mouth can be due to a fungal infection therefore it is important to try and identify the cause of the soreness. Fungal infections will be made much worse if the above drug treatment is incorrectly given**.**

Much improvement can often be seen with the saline mouth washes alone and this should be strongly encouraged

.7.1.3 Dental abscess

A collection of pus around the affected tooth, which may spread into the surrounding tissue.

Symptoms/signs

Fever, feeling unwell, constant throbbing pain in the affected tooth, swelling of the gum around the tooth which may also cause the face to look swollen, pus may be seen discharging from the gum around the affected tooth.

Drug treatment

Relieve pain with: Paracetamol

See chapter –Mescelanious on Pain Management.

Treat the infection with

Amoxicillin) oral
ADULT: 250-500mg every 8 hours for 5 to 7 days
Birth to 12 years of age: 7.5mg to 25mg/kg/dose every 8 hours
PLUS (for anaerobic organisms)
Metronidazole, oral, tablets with food, syrup 30 minutes before food– as above
ADULT: 500mg every 8 hours, for 7 days
CHILD: treat for 7 days
Birth to 4 weeks of life: 7.5mg/kg/dose every 12 hours
4 weeks to 12 years of age: 7.5mg/kg/dose every 8 hours

Refer the patient to a dental surgeon as soon as possible.

7.2 Abdominal pain

Abdominal pain or dyspepsia is commonly caused by reflux oesophagi is, peptic ulceration or non-ulcer dyspepsia.

Symptoms

/Any abdominal pain or discomfort must be assessed for the following features**:**

- Duration
- Severity

- Location
- Type
- Accompanying clinical features e.g. nausea, vomiting, constipation, diarrhoea, tenderness, fever, tachycardia, distension
- Activity level of patients with severe pain e.g. restlessness or inability to lie still, ongoing heartburn or indigestion are difficult diagnostic problems because they are often non-specific

Obtain clear description of specific symptoms

Perform a thorough physical examination to see if referral is needed.

Non-drug treatment

Stop smoking, Limit alcohol intake, Eat small frequent meals, Stop Non-Steroidal Anti-Inflammatory Drugs, these are likely to be the cause e.g. ibuprofen or aspirin.

Drug treatment

Initiate drug therapy only after full assessment

Give: Aluminium hydroxide, tablets 500mg

1 or 2 to be chewed four times a day and at bedtime or as required

OR

Aluminium hydroxide suspension

10ml four times a day and at bedtime or as required

Can cause constipation

Patients with moderate symptoms.

If patients are experiencing symptoms on most days, give:

Cimitedine or Ranitidine, oral

150 mg twice daily or 300 mg at night (benign gastric and duodenal ulceration) for 4-8 weeks, up to 6 weeks in chronic episodic dyspepsia, and up to 8 weeks in NSAID-associated ulceration (in duodenal ulcer 300 mg can be given twice daily for 4 weeks to achieve a higher healing rate); maintenance, 150 mg at night.

Patients not responding should be referred for further investigation.

NOTE: Myocardial Infarction some times presents as epigastric pain

Key points;

- ☒ Ranitidine may mask the symptoms of gastriccancer; particular care is needed in those whose symptoms change and in those who are middle-aged or over.
- ☒ Refer urgently patients with symptoms haemorrhage or perforation, weight loss, anorexia or dysphagia, undiagnosed dyspepsia after the age of 45 years.
- ☒ R patients with past history of duodenal ulcer, recurrence of symptoms after 6 weeks on ranitidine or family history and/or patient fears of cancer.

7.3 Diarrhoea

Diarrhoea means an increased frequency of liquid or semi-liquid stools (> 3 in 24 hours). Diarrhoea can be caused by intestinal infections and infestations, a wide range of gastro-intestinal disorders, or can be a side effect of some drugs it could also be a manifestation of other disease, such as malaria, magnetron or respiratory tract infection...

The major concern with diarrhoea is the rapid loss of fluid and the risk of dehydration in the patient. Dehydration, particularly in young children, can be fatal and must be treated as quickly as possible.

Symptoms/signs of diarrhoea and dehydration

The Integrated Management of Childhood Illness guidelines (IMCI All children should be assessed using IMCI guidelines.

If the child has diarrhoea

Ask:

For how long?

Is there blood in the stool?

Look: for: danger signs

Is the child lethargic or unconscious?

Is the child restless and irritable?

Eyes sunken?

Able to drink or drinking poorly?

Drinking eagerly or thirsty?

Pinch the skin of the abdomen:

Does it go back very slowly (longer than 2 seconds) or slowly?

All children with diarrhoea must be treated for dehydration, the management of the child will depend on how dehydrated the child is. **See Chapter 1 -**) **guideline page 3 to assess the child and page 13 for management of dehydration.**

If there is blood in the stool dysentery is diagnosed and antibiotic therapy should be initiated as well as dehydration management.

Bloody diarrhoea is the only indication for antibiotics.

7.3.1 Diarrhoea in Adults and older children

Look for:

Presence of fever

Urine output plus the colour of the urine

Presence of vomiting

Duration of illness

Blood or mucus in the stool

Other signs of severe dehydration in adults and older children are absent radial pulse and low blood pressure.

Treatment of adults and older children

The aim of treatment is to prevent dehydration, replace lost fluid, maintain nutrition and maintain personal hygiene.

If there are any pathogens present then additionally there is an aim to eradicate these.

Acute diarrhoea – is usually self-limiting and is managed by fluid replacement. (If there is a blood in the stool or a pathogen is identified then drug therapy may be needed)

Chronic diarrhoea – lasts more than 2 weeks. It may be treatable or it may be a symptom of an underlying disease like bowel cancer or AIDS. Refer all cases of chronic diarrhoea for further investigation.

Non-drug treatment

Replace lost fluid. (Refer IMCI manual*)*

Patients should make up fresh mixture of

Oral rehydration solution (ORS) Mix sachet with 1 litre of clean water (boils and cools the water if the quality is uncertain).

OR Make Homemade Sugar and Salt Solution

Homemade sugar and salt solution 1/2 teaspoon of table salt 8 teaspoons of sugar

1 litre of boiled (this is no longer recommended by WHO as it is impractical and costly and causes time delay – they just recommend clean water – i.e. what the patient normally drinks) then cooled water

OR

WATER BASED FOOD SUCH AS THE WATER OF BOILED RICE.

Adults should aim to drink 200-400 ml of solution after every loose motion. Children should aim to drink 200 ml after each loose motion. Taking small sips but continuously may be easier than trying to drink the whole amount. Children may find it easier drinking off a spoon. Continue for as long as diarrhoea and signs of dehydration continue. Return of urine flow is a sign of recovery. When the patient is severely dehydrated (e.g. with cholera) then IV fluids may need to be administered:

Intravenous rehydration

Compound solution of sodium lactate, (Ringer-Lactate), intravenous infusion

ADULT: In severe dehydration the first litre may be infused in 15-20 minutes. Thereafter the drip rate should be progressively slowed down. Six or more litres may be required in the first 24 hours of which the first 3-4 litres will be a replacement fluid after which a maintenance regimen of approximately 3 litres/24 hours should be used.

OLDER CHILD: Severely dehydrated children may be rehydrated at a maximum rate of 30ml/kg bodyweight/hour for the first hour. Then reduce the rate over the next few hours to 75ml/kg/24 hours.

7.3.2 Diarrhoea in children

For every patient with diarrhoea:

1) Assess for symptoms and signs of dehydration.
2) Record the temperature and weight.
3) Examine the stool and ask about blood in stools.
4) Take a history and examine for other diseases.

The most important part of the management of diarrhoea is the prevention and treatment of dehydration.

Treatment Plan	Plan A	Plan B	Plan C
LOOK AT: General Condition	**Well, alert**	Restless Irritable	Less than normal movements Abnormally sleepy Very difficult to awaken
Eyes			Sunken
Thirst	**Drinks normally Not thirsty**	**Thirsty and Drinking Eagerly**	**Not able to breastfeed or drink**

			Vomits Everything
FEEL: **Fontanelle**			**Sunken**
Skin pinch	**Goes back immediately**	**Goes back slowly: <2 seconds**	**Goes back very slowly: >2 seconds**
DECIDE and CLASSIFY:	**The Child has** NO SIGNS of DEHYDRATION	**If the child has 2 or more signs from this column then child has** SOME DEHYDRATION	**If the child has 2 or more signs from this column then the child has** SEVERE DEHYDRATION
TREATMENT	**Plan A: More fluids at home**	**Plan B: ORS under supervision, if improves Plan A at home**	**Plan C: IV Fluids if possible, if not, NG, if not ORS - REFER**
OTHER TREATMENT	**Treat fever if present**	**Treat fever and Malaria if present**	**IM Quinine and Chloroquine**
FOLLOW UP	**Daily**	**In 3-4 hours, then reassess**	**REFER IMMEDIATELY**
REFER	**If develops signs in column C.**	**IF no response to ORS or develops signs in column C.**	**IMMEDIATE**

7.3.3 ASSESSMENT OF DEHYDRATION IN A CHILD WITH DIARRHOEA

TREATMENT OF DIARRHOEA WITH NO DEHYDRATION (Plan A)
Home treatment of diarrhoea focuses on teaching the mother to:

Give more fluids than usual: Use coconut water, rice water, and soups. If this is not possible give plain boiled water.

- -give as much fluid as the child will drink after every loose stool.
- up to

2 YEARS: 50-100ML AFTER EACH LOOSE STOOL
2 YEARS OR MORE: 100-200ML AFTER EACH LOOSE STOOL
-Breastfeed frequently and longer
-The more fluid the child drinks, the less the chance of becoming dehydrated.
-Continue to give these fluids until diarrhoea stops.
This is especially important if they have been on Treatment Plans B or C, or cannot return if diarrhoea gets worse.

ORS for home treatment of diarrhoea

Child under 2 years - a teaspoon full every 1-2 minutes.
Older child - frequent sips from a cup.
If the child vomits - wait 10 minutes and give ORS again slowly. (Vomiting in diarrhoea is often due to low potassium. Give initially ORS in small sips) Show the mother how to give ORS

Age	**Amount of ORS after each loose stool**	**Amount of ORS to take home**
Less than 24 months	50-100ml	500ml per day

2 to 10 years old	100-200ml	1000ml per day
Older than 10 years	As much as wanted	2000ml per day

Give mother enough packets of ORS to last 2 days.

If diarrhoea continues after all packets of ORS are used - give home fluid or water as described above.

Salt-sugar solution

Only use salt-sugar solution if no supplies of ORS are available.

Use

1) 1 litre size bottle (E.g. cooking oil or plastic juice bottle).

Dissolve into 1 litre of boiled water: 2 level tablespoons sugar.

1 levelled teaspoons salt.

2) Continue feeding and give plenty of food:

-Continue to breast-feed frequently.

-If under 6 months: If not breast-feeding then dilute the milk with equal amount of boiled water for 2 days.

-**If 6 months or older** or taking solid food: Encourage the child to eat.

-Offer food at least 6 times a day.

-Encourage extra feeding after diarrhoea finishes.

3) Returns to the clinic if:

The child is not better in 3 days.

The child develops any of the following
- Many watery stools.
- Eating or drinking poorly.
- Repeated vomiting.
- Marked thirst.
- Fever.
- Blood in the stool.

TREATMENT OF DIARRHOEA WITH SOME DEHYDRATION (Plan B)

This should be treated in Dispensary or Outpatients. Do not send the child home if they are unable to take fluids.

Age	Up to 4 months	4 months to 12 months	12 months to 2 years	2 years up to 5 years
Weight	<6kg	6 to <10kg	10 to <12kg	12-19kg

Amount of ORS to give during first 4 hours	200-400ml	400-700ml	700-900ml	900-1400ml

IF YOU CAN GIVE IV FLUIDS, see below.

If the child wants more than that shown, give to the child.

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-Child under 2 years - a teaspoon every 1-2 minutes.

-Older child - frequent sips from a cup.

-If the child wants more ORS, give more.

-Encourage the mother to continue breastfeeding.

-For infants less than 6 months who are not breast fed, also give 100-200ml water.

-Check from time to time to see if there are any problems.

-If the child vomits then wait 10 minutes, then continue ORS slowly - 1 teaspoon Every 2-3 minutes.

-If the child's eyelids become puffy then stop ORS

-Give plain water or breast milk until puffiness gone then continue ORS.

After 4 hours re-assess hydration:

NO dehydration : Use PLAN A.

SOME dehydration : Repeat PLAN B, offer food, milk, juice.

SEVERE dehydration : Use PLAN C.

Use NORMAL SALINE OR HARTMANS NOT GLUCOSE

TREATMENT OF DIARRHOEA WITH SEVERE DEHYDRATION (Plan C)

weight in kg	load of iv luids very fast in	then run the iv fluids at a rapid rate for 4 hours and re-assess		patient is drinking well run at the following rate
	mls	mls/hr	drops/min	mls/hr
3-5	100	60	15	20

6-9	150	100	25	30
10-14	250	150	40	50
15-19	350	250	60	60
20-29	500	400	100	80
30-39	750	800	200	100
40-59	1000	1000	250	100
60+	1000	1000	250	150

If the patient can drink:

Give ORS while drip is being set up.

Try to give ORS from start of treatment (see amounts next page).

Assessment of dehydration:

Re-assess every 1-2 hours during treatment.

Do a full dehydration assessment:

Infants: - after 6 hours treatment.

Adults: - after 3 hours treatment.

If still severe dehydration: Continue IV fluids at rapid rate.

And fully assess again after 3 hours.

If improving and only some or no dehydration:

Start plan B or A.

Continue IV fluids at maintenance rate until drinking well

and no longer vomiting.

If the patient's eyelids become puffy:

Change IV NORMAL SALINE to IV DEXTROSE/SALINE

and slow the infusion to maintenance rate.

IN SEVER DEHYDRATION

IF YOU CANNOT GIVE IV FLUIDS AND IV treatment IS available within 30 minutes

Start ORS solution if the patient can drink (see amounts next page).

`Show the mother how to give ORS during the trip.

ORS volume per hour for severe dehydration:

** Use the patient's age ONLY if you cannot weigh.						
**Age	Under 4 months	4-11 months	12-23 months	2-4 years	5-14 years	Over 14 yrs
Weight in kg	Under 5kg	5-7	8-10	11-15	16-29	30+
mls/hr	60-100	100-150	150-200	200-300	300-600	600-1000

IF YOU CANNOT GIVE IV FLUIDS, AND IV treatment IS NOT available within 30 minutes	
If you can pass a nasogastric tube	Start ORS by tube. Give 20ml/kg/hour for 6 hours,total of 120ml/kg
If you can pass a nasogastric tube	Start ORS by tube. Give 20ml/kg/hour for 6 hours,total of 120ml/kg (See table). Re-assess patient after 1-2 hours, If patient worse - refer for IV treatment. Do a full dehydration assessment after 6 hours, continue treatment with Plan A, B or C.
If the patient CAN drink	Start ORS by mouth. Give 20ml/kg/hour for 6 hours (See table). Re-assess patient after 1-2 hours, If patient worse - refer for IV treatment. Do a full dehydration assessment after 6 hours, continue treatment with Plan A B or C.
If the patient CANNOT drink	URGENTLY send the patient for IV or nasogastric treatment.

7.3.4 Treatment of causes

Acute diarrhoea: (Diarrhoea for less than 14 days)

The commonest causes of acute diarrhoea are infections of the gut.

In children any infection may cause diarrhoea. Is there Fever? Is there blood?

Fever	Blood	Common causes	Treatment
NO	NO	Toxins , E.coli,Viruses	Rehydration therapy only.
YES	NO	Salmonella, Viruses Malaria, Any infection in children	Fever over 38.5C:- ANTIMALARIALS Do not give antibiotics routinely. If very toxic:- Start CHLORAMPHENICOL Refer to hospital
YES	YES	Shigella, Salmonella Campylobacter	Fever over 38.5C:- ANTIMALARIALS If very bloody: Children <5 years give Cotrimoxazole ADULTS: Ciprofloxacin or Chloramphenicol If very sick - Refer to hospital
NO	YES	Worms Amoebae	ALBENDAZOLE. If no better:-METRONIDAZOLE

IS IT TYPHOID?

Signs and Symptoms: Prolonged fever (more than a week), mild diarrhoea, loss of appetite, abdominal swelling and tenderness and mental slowness.

REFER to HOSPITAL for EVALUATION.

Treatment for Typhoid Fever

Chloramphenicol 500mg four times a day for 14 days OR Ciprofloxacin 500mg twice a day 10 days OR ceftriaxoone 2gm IV daily for 5 days

Chronic Diarrhoea: (Diarrhoea for more than 14 days) Refer if:

Under 6 months old. And
Signs of Malnutrition.

Treatment:

Teach the mother home treatment of diarrhoea. (TREATMENT PLAN A).

Continue breast-feeding.

If not breast-fed, dilute milk with equal water.

Give 6 meals a day with added oil or coconut cream.

Chronic diarrhoea may be caused by Giardiasis.

If available, give METRONIDAZOLE three times a day (with food) for 5 days.

Review in 5 days:
If still diarrhoea - **Refer.**
If no diarrhoea - Continue breast-feeding.
Give an extra meal a day for 1 month.
After 1 week gradually re-start normal milk.
Treatment of symptoms**.**
If there is a severe colicky pain:-
Stop oral treatment and give IV fluids.
If the pain is very bad: - Refer to hospital.

NEVER give anti-emetics**.**

NEVER give anti-diarrhoeal drugs**.**

Some "anti-diarrhoeal" drugs can be dangerous and all can make the diarrhoea last longer. Vomiting is a way of getting rid of poisons and stopping vomiting can make the patient sicker.

2. Maintain nutrition

Adults and children should continue to eat. Food should be easy to eat and digest e.g. soup,

Continue to breastfeed

Offer more fluids than normal, Continue to eat

After diarrhoea finished need to have increased solids intake (until regained any lost weight)

Check if given / up to date with Vitamin A and measles immunisation – if not, ensure get either / both

3. Maintain **personal hygiene**

Educate the patient about the faecal-oral route of transmission of pathogens and the need to wash hands carefully after using the toilet and before preparing food.

7.3.5 Drug treatment for specific types of diarrhoea (pathogens)

Most diarrhoea will not benefit from treatment with antibiotics. Health workers should concentrate on encouraging adequate hydration and ensuring that a good standard of personal hygiene is maintained.

Try to get a stool culture and sample for routine examination if possible.

Where the diarrhoea has blood (dysentery) then antibiotic therapy can be given. Antibiotics are not recommended even for the majority of identified pathogens e.g. cholera, salmonella etc – recommend to use antibiotics is the exception i.e. Shigella

Gastro-enteritis) (Food poisoning/viral infection*)*

Antibiotics are not required.

Bacillary Dysentery (bloody diarrhoea*) Shigellosis*

Give

IMCI

Co-trimoxazole (sulfamethoxazole + trimethoprim), oral

CHILD 6 weeks to 5 months:

¼ adult tablet (20 mg trim. +100 mg sulpha.) Or

1 paediatric tablet (20 mg trim. +100 mg sulpha.) Or

½ teaspoon syrup = 2.5 ml (20 mg trim. +100 mg sulpha.)

CHILD 5 months to 5 years:

½ adult tablet (40 mg trim. +200 mg sulpha.) Or

2 paediatric tablets (40 mg trim. +200 mg sulpha.) Or

1 teaspoon syrup = 5 ml (40 mg trim. +200 mg sulpha.)

CHILD 5 to 12 years:

1 adult tablet (80 mg trim. +400 mg sulpha.)

ADULT: 2 adult tablets (160 mg trim. +800 mg sulpha.)

Duration: every 12 hours for 7 days.

OR

Nalidixic acid, 30 minutes before food

ADULT: 1 g every 6 hours for 5 days

Child over 3 months: 15 mg/kg every 6 hours for 5 days

CHILD 3 months to 12 years: 1/8 to 1/4 to 1/2 tablet (62.5 mg to 125 mg to 250 mg) (IMCI)

Diarrhoea with blood in young children may also be a sign of serious bowel obstruction). All young children with bloody diarrhoea should be assessed to exclude

7.3.5.1Cholera

Rice water diarrhoea with or without vomiting causing severe dehydration or death.

Patients can die in a few hours from the severe dehydration therefore rehydration is most important either orally in moderate cases or IV (Ringers lactate) in more severe cases.

Antibiotic therapy reduces the volume and duration of diarrhoea to cholera Give:

Note: Doxycycline should not be given to children below 8 years

Doxycycline, oral, with food

ADULT: 300mg as a single dose

CHILD >8 years: 100 mg as a single dose

OR

Co-trimoxazole (sulfamethoxazole + trimethoprim), oral with food

ADULT: 2 adult tablets (160 mg trim. +800 mg sulpha.)

CHILD 6 to 12 years:

1 adult tablet (80 mg trim. +400 mg sulpha.)

CHILD 6 months to 5 years:

½ adult tablet (40 mg trim. +200 mg sulpha.) Or

2 paediatric tablets (40 mg trim. +200 mg sulpha.) Or

1 teaspoon syrup = 5 ml (40 mg trim. +200 mg sulpha.)

CHILD 6 weeks to 6 months:

¼ adult tablet (20 mg trim. +100 mg sulpha.) Or

1 paediatric tablet (20 mg trim. +100 mg sulpha.) Or

½ teaspoon syrup = 2.5 ml (20 mg trim. +100 mg sulpha.)

Duration: every 12 hours for 7 days

7.3.5.2 Amoebic dysentery

Extra-intestinal amoebiasis (including liver abscess) and symptom less amoebic cyst passers:

Metronidazole, oral, tablets with food, syrup 30 minutes before food.

ADULT: 750mg every 8 hours for 5 to 10 days

CHILD: Birth at 12 years of age: 10mg/kg/dose every 8 hours for 10 days

PLUS Diloxanide with food

ADULT: 500mg every 8 hours for 10 days

CHILD over 25 kg: 20mg/kg daily in 3 divided doses for 10 days

7.3.5.3 Giardiasis

Metronidazole, oral, tablets with food, syrup 30 minutes before food

ADULT: 2 g daily for 3 days.

Child 1-12 years of age

30mg/kg/dose (maximum 2g) once a day for 3 days

7.3.5.4 Shigellosis

Causes abdominal pain and bloody diarrhoea. It is often associated with sudden fever and headache. If not relieved by rehydration, antibiotics are indicated.

Treatment:

Co-trimaxazole is the drug of choice, however, resistance often reported. For resistant cases, Ciprofloxacin or Nalidixic acid is effective.

DOSES; Cotrimoxazole: ADULTS: 960mg/12houly for 3 – 5 days

CILDREN 6 months - 5years 240mg /12hours for 3 days

!/2 the dose for younger infants.

Or Nalidixic acid: ADULTS 1G 6 hourly for 3 days.

CHILDREN: 15MG /Kg body weight 6 hourly for 3 days

Key points

- Treating or preventing dehydration is the main objective when managing diarrhoea.
- Drugs like kaolin, and neomycin do not treat diarrhoea and dehydration
- For dysentery/cholera etc investigate the source of contamination and inform environmental health authorities
- Diarrhoea lasting more than 2 weeks is termed persistent diarrhoea, may have many causes and may be associated with the development of malnutrition. Patients with persistent diarrhoea should be referred for further investigation.

7.4 Nausea and vomiting

Occasionally people have simple vomiting that is not serious and clears up without treatment. But vomiting can also be a sign of a more serious problem.

Vomiting often comes from a problem with the stomach e.g. an infection, poisoning, appendicitis or something blocking the gut.

Sickness with high fever may cause vomiting e.g. malaria, hepatitis, tonsillitis, earache, meningitis, urinary infection, and gall bladder pain or migraine infection.

Vomiting can also be associated with diarrhoea, drugs e.g. iron preparations and digoxin, the sequence of illness e.g. migraine, motion sickness and also alcohol abuse.

Therefore it is very important that patients are thoroughly examined and as much a possible the reason for the nausea and vomiting is discovered.

Any young children with bile stained (green) vomiting need urgent referral to hospital for assessment to exclude a bowel obstruction.

Treatment involves preventing dehydration, symptomatic relief and identifying cases that need referral for further investigation of more serious illness.

Non-drug treatment

1. Prevent dehydration and replace lost fluid.

Encourage patients to make up fresh mixture of

> Oral Rehydration Solution (ORS)
>
> Mix sachet with 1 litre of clean water (boils and cools the water if the quality is uncertain).

Make Homemade Sugar and Salt Solution

> Homemade Sugar and Salt Solution
>
> 1/2 teaspoon of table salt
>
> 8 teaspoons of sugar
>
> 1 litre of boiled then cooled water

Continue for as long as vomiting and signs of dehydration continue. Return of urine flow is a sign of recovery.

If the patient is unable to tolerate ORS (i.e. continued vomiting even when small amounts are given frequently) or has bile stained vomiting should be treated with intravenous fluids.

When the patient is severely dehydrated then IV fluids may need to be administered as follows:

> Sodium chloride 0.9%, intravenous infusion
>
> OR, Compound solution of sodium lactate, (Ringer-Lactate intravenous infusion
>
> ADULT: In severe dehydration the first litre may be infused in 15-20 minutes. Thereafter the drip rate should be progressively slowed down. Six or more litres may be required in the first 24 hours of which the first 3-4 litres will be a replacement fluid after which a maintenance regimen of approximately 3 litres/24 hours should be used.
>
> OLDER CHILD: Severely dehydrated children may be rehydrated at a maximum rate of 30ml/kg bodyweight/hour for the first hour. Then reduce the rate over the next few hours to 75ml/kg/24 hours.

Younger child: if patient may be dehydrated use rehydration principals as in IMCI diarrhoea / dehydration guidelines

2. Maintain nutrition – see above (may be difficult if vomiting is moderate – severe!)

Adults and children should continue to eat. Food should be easy to eat and digest e.g. soup,

Drug treatment

Symptoms of nausea and vomiting can be reduced through the use of the following ant emetics:

Promethazine, oral

ADULT: 25 mg at night, increased to 25 mg twice daily if necessary

CHILD under 2 years: not recommended

(Child over 2 years: 0.125mg/kg/dose every 8 hours or 0.5mg.kg at night)

CHILD 2-5 years: 5mg once to twice a day,

CHILD 5-10 years: 10mg once to twice a day...

.OR

Metoclopramide, oral

ADULT: 10 mg three times daily

Child 1-12 years: 0.15mg/kg/dose every 6-8 hours, max 0.5mg/kg/DAY

YOUNG ADULT (15-19 years, under 60 kg):

5 mg three times daily

Ant emetics are not recommended for use in children under 12 months of age – there is a high incidence of dystonic reactions to metoclopramide and promethazine may cause sedation (which may be dangerous in vomiting)

Key points

- Refer patients immediately when severely dehydrated or in shock, septicaemic, if digested or fresh whole blood is vomited, if there is constant abdominal pain and especially if the person cannot pass a stool.
- Refer infants who are projectile vomiting immediately; they may have pyloric stenosis
- Refer patients who have symptoms that are prolonged longer than 1 week.
- Keep patients hydrated

7.5 Helminthic infestation (Worms)

Infestation with worms is very common and usually is caused by poor hygiene or contact of bare skin with soil in which the worm or worm eggs live. Thus they are particularly common in young babies / children who often crawl around in or play in the soil.

There are many types of worms that live in people's intestines and cause diseases. Those that are larger are sometimes seen in the stools.

Common worm infestation includes:

HOOKWORM) (Ancylostoma) – causing anaemia

ROUNDWORM) (Ascaris) – causing nutritional deficiency and obstructive lesions

STRONGYLOIDES – causing weakness, nutritional deficiency

TAPE WORM (Hymenolepis, Taenia) – causing nutritional deficiency

The only common worms seen in the stools are roundworms, pinworms and tapeworms. Hookworms and whipworms may be present in the gut in large numbers without ever being seen in the stools.

Symptoms/signs

Itching – when larvae are in the bloodstream and also when eggs are just outside the anus (children may scratch especially at night),

Dry cough and wheeze – when the larvae pass through the lungs,

Abdominal discomfort and sometimes pain,

General weakness and getting tired easily,

Seeing a worm in the stool or coming through the nose or mouth.

Large swollen abdomen in children, (heavy loads of worms may even cause bowel obstruction in young children)

Anaemia, Wheezing, and Poor physical growth of children.

Non-drug treatment

Many worms are spread by the faecal oral route; therefore educate patients and all family members about the importance of:

- Washing hands with soap and water after going to the toilet and before working with food
- Keep fingernails short
- Wash fruit and vegetables well or cook well
- Keep toilets clean
- Teach children to use toilets and to wash hands
- Do not pollute the soil with sewerage/dispose of faeces properly

Also people should be encouraged to:

- Be careful that all meat is well cooked, especially pork. Make sure that no parts in the centre or roasted meat or cooked fish are still raw.

Drug treatment TREAT THE ENTIRE FAMILY at the same time

Caution: antihelminthic drugs including Albendazole and Mebendazole are not safe in pregnancy as they may cause congenital defects. Delay treatment until after delivery and treat the underlying anaemia if present**.**

FOR Children USE IMCI GUIDELINES

NOTE all children between 1 and 5 yrs should be regularly deworm at 6 monthly intervals

Treat with Albendazole (30 minutes before food)

Over 2 years (or over 10kg): 400mg as a single dose

6 months (and up to 10kg) - 2 years: 200mg as a single dose

Not for use in children under 6 months

Alternative is Mebendazole (with food)

Infants over 6 months and up to 10kg

Whipworm, hookworm and roundworm

50mg every 12 hours for 3 days

Threadworm

50mg as a single dose. Repeat in 2 weeks

Children over 10kg and adult

Whipworm, hookworm and roundworm

100mg every 12 hours for 3 days

Threadworm

100mg as a single dose. Repeat in 2 weeks

In pregnant women

Use Pyrantel (with food)

(1 year to) adults

Whipworm, hookworm and roundworm

20mg/kg (maximum 750mg) as a single dose. Repeat in 7 days

Threadworm

10mg/kg (maximum 750mg) as a single dose.

For threadworms (pinworms, Enterobius vermicularis):

<u>Mebendazole</u>

ADULT and CHILD over 2 years:

100 mg as single dose; if reinfection occurs second dose may be needed after 2-3 weeks.

CHILD under 2 years: not yet recommended

For whipworms (Trichuris trichiura)

Mebendazole

ADULT and CHILD over 2 years:

100 mg twice daily for 3 days

CHILD under 2 years: not yet recommended

For roundworms (Ascaris lumbricoides):

Mebendazole

ADULT and CHILD over 2 years:

100 mg twice daily for 3 days

CHILD under 2 years: not yet recommended

For tapeworm (Taenia, Hymenolepis):

Praziquantel, oral

Taenia): 20 mg/kg as a single dose

Hymenolepis nana: 25 mg/kg as a single dose

Take as single dose after a light breakfast.

For hookworms (Ancylostoma):

Mebendazole

ADULT and CHILD over 2 years:

100 mg twice daily for 3 days

CHILD under 2 years: not yet recommended

For strongyloides (Strongyloides stercoralis):

Albendazole (30 minutes before food))

400mg (child 10kg or less: 200mg) once a day for 3 days, repeated after 3 weeks if necessary

If the patient is anaemic then treat:

As directed in Chapter 7 Blood disorders

Key points

- Refer patients if they show signs of abdominal tenderness, pain and vomiting, abdominal masses, seizures, severe headaches, nausea, vomiting, changes in their vision. If tapeworm is suspected and the patient is pregnant – refer.
- Delay treatment of pregnant women until after delivery. Albendazole and Mebendazole can be used while the mother is breastfeeding.
- Advise patients and family members on food items that are a good source of iron and vitamins.

7.6 Constipation

Decreased frequency of bowel action.

Constipation can have many causes some of which are more serious than others e.g. incorrect diet, lack of exercise, pregnancy, old age, certain drugs, chronic use of laxatives and enemas, cancer of the bowel, disobeying the call to defecate (maybe due to immobility), anal fissure and other painful perianal lesions, obstructions etc

Symptoms/signs

There is a wide variation of what is normal between individuals, and therefore there must be careful assessment of each individual.

Bowel habits vary between individuals, therefore constipation can mean:

- Their stools are too hard
- They do not pass stools often enough
- Passing stools causes straining
- There is a sense that the evacuation is incomplete

Non-drug treatment

⇒ Encourage regular exercise

⇒ Encourage food rich in fibre e.g. fruit, vegetables, bran

⇒ Encourage adequate amounts of fluid – 4 – 6 250ml glasses of water (or fluid) per day

⇒ Encourage a regular time for bowel motion even if there is no urge

⇒ Discourage continuous use of laxatives

Drug treatment: To stimulate the bowel and increase intestinal motility**:**

Bisacodyl, oral 5mg-10mg at bedtime

If the constipation is resistant to the above treatment then re-evaluate the underlying cause. For further therapy use:

Magnesium sulphate, oral 1-2 teaspoonfuls in water once or twice daily (should cause a bowel evacuation within 2 to 4 hours)

Note: do not use magnesium salts in patients with impaired renal function.

For the treatment of hepatic encephalopathy only (specialist):

Lactulose solution (g/5 ml) 30-50 ml 3 times daily, subsequently adjusted to produce 2-3 soft stools daily

Key points

- Prolonged severe constipation may present with overflow diarrhoea
- Refer patients with recent unexplained change in bowel habits.
- Be suspicious of a sudden change in bowel habits as there is a possibility of cancer of the large bowel!
- Refer patients with faecal impaction
- Refer patients with poor response to non-drug treatment
- Refer where the cause of constipation is uncertain

7.7 Anal conditions

The two common conditions found in the anal area are anal fissures (cracks) and haemorrhoids (varicose veins of the anorectic area, Piles). Often they are found together.

Symptoms/signs

Painful small cracks just inside the anal margin often seen with piles (either internal or external). These may cause spasm of the anal sphincter.

Piles or haemorrhoids are varicose veins or the anus or rectum that feels like little limps or balls. They may be painful and frequently appear during pregnancy and may disappear afterwards.

Often these occur when a patient is constipated and is straining to pass a hard dry stool.

Haemorrhoids may bleed.

Non-drug treatment

Educate the patient on how to ensure soft easily passed stools are formed through eating a high fibre diet and drinking plenty of water. Counsel against chronic laxative use and against straining to pass a stool.

Careful anal hygiene and sitting in a bath of warm water or in a saline bath (salt and water) will aid healing (Measure roughly one handful of salt to 10 litres of water).

Press a clean cloth on haemorrhoids that begin to bleed.

Drug treatment]

To relieve the symptoms use:

Ant haemorrhoidal, ointment or suppository Apply / insert 2 to 4 times a day as required (usually after passing a stool and at bedtime).

Key points

- Refer if the haemorrhoids cannot be reduced or if the area is severely painful, if the episodes are recurrent.
- Refer if haemorrhoidal bleeding is severe and will not stop.
- Do not try to cut the haemorrhoid out.

CHAPTER 8. INFECTIOUS DISEASES.

8.1Yaws

Yaws is an infection with Treponema pertenue causing a contagious skin infection. Infection is spread by direct skin-to-skin contact. Skin lesions occur and can result in patients having chronic sores.

The infection can remain in the body for a long time without causing any visible problems.

Symptoms/signs

Commonly occurs in children younger than 15 years.

There are 4 stages:

Primary stage – lesion occurs at infection site on the skin. This will heal up by itself after 3-6 months.

Secondary stage – many skin lesions appear as the infection spreads. These lesions may last as long as 6 months.

During the primary and secondary stage the skin lesions are very contagious i.e. the infection is very easily spread to another person.

Latent stage – may be no symptoms but also some lesions can appear. This stage may last as long as 5 years.

Tertiary stage – deformities of the bone, joints and soft tissue can occur but usually 5-10 years after the first infection.

During the latent and tertiary stages the skin is not contagious.

Early yaws lesions are raised, have wavy borders and are creeping, sometimes scaly looking. There can be nodules and thickened skin on the palms of hands and soles of feet, lesions on bones and joints. Swollen lymph nodes can occur.

Late yaws lesions present as nodular scars, thickened skin; there may be nodules next to joints. Swellings each side of the nose may occur.

Make a diagnosis based on what the sores look like and the patient history. Laboratory confirmation of infection with yaws is difficult.

Non-drug treatment

Advise on the importance of good hygiene and the need to avoid sharing towels, clothing, bedclothes etc.

Keeps skin clean using soap and water?

Drug treatment

If treatment is initiated in the early stages a rapid improvement can be seen:

Benzathine penicillin, intramuscular
ADULT: 900 mg = 1.2 million units as a single dose by deep intramuscular injection
CHILD <45 kg: 450 mg = 0.6 million units as a single dose by deep intramuscular injection

Patients allergic to penicillin give:

Erythromycin, oral
ADULT: 500 mg four times a day for 15 days
CHILD10 -15 mg/kg four times a day for 15 days

Key points

- After a single dose of Benzathine penicillin early lesions become non-infectious after 24 hours and heal within 1-2 weeks.
- Tissue damage occurring during the late stages of yaws is irreversible.
- Very important to provide health education to patients and the community about the value of good hygiene and sanitation to stop yaws being transmitted.

8.2 Tetanus

Tetanus is a very dangerous infectious disease caused by *Clostridium tetani* a bacterium mainly living in the soil or faeces of animals. The bacterium produces a toxin that affects the muscles.

Infection occurs easily through cuts or breaks in the skin. Tetanus of the newborn (neonatal tetanus) occurs when the infection enters through the umbilical cord when it has not been kept clean or if non-sterile instruments or dressings have been used.

Symptoms/signs

IN INFANTS:

3 to 10 days after birth the child begins to cry continuously and is unable to suck

Umbilicus may look infected

Stiff body Irritability, Spasms, Constipation

Tongue and lips become blue (cyanosed) during spasms.

It is commonly fatal

IN ADULTS AND OLDER CHILDREN**:**

History of wound or trauma.

Headache and muscular stiffness in the jaw (lockjaw) followed by neck stiffness, difficulty swallowing, rigidity or abdominal muscles, spasms and sweating.

Painful convulsions of the jaw and finally of the whole body. Moving or touching the person may trigger sudden spasms like this.

Noise and bright lights will also trigger muscle spasms.

Patients often do not have any fever.

Non-drug treatment

Tetanus is a deadly disease and must be treated immediately.

Arrange for immediate transfer to a health facility where antitetanus immunoglobulin (human) can be administered.

Avoid noise, bright light and unnecessary touching of the body

Clean the infected umbilicus or wound with water and chlorhexidine solution:

Chlorhexidine 0.5% solution

Use to clean the wound at each dressing change

Dilute 10ml of Chlorhexidine 5% with 90ml of water to make 100ml of 0.5% solution

Remove any foreign bodies

Maintain a clear airway

Ensure adequate hydration and nutrition

Drug treatment

8.2.1 Neonatal tetanus

Give Antitetanus immunoglobulin, intramuscular

500 units once only as a single dose

PLUS Metronidazole, intravenous

Birth to adults: FIRST dose give 15mg/kg (up to 1g). Then 12 hours later, 7.5mg/kg/dose (up to 500mg) every 8 hours.

CHILD: 7.5 mg/kg every 8 hours, intravenous infusion over 20 minutes. What is the metronidazole for? I have always used penicillin

OR

Benzylpenicillin, intravenous

Birth to week 1 of life: 60mg/kg/dose every 12 hours for 7-10 days

Week 2 of life to 12 years: 60mg/kg/dose every 6 hours for 7 –10 days

Adults: 2.4g every 4 hours for 7-10 days

NEONATE: 50 mg/kg/day (= 83.333 units/kg/day) in 2 divided doses

INFANT 1-4 weeks: 75 mg/kg/day (= 125.000 units/kg/day) in 3 divided doses

To control muscle spasms:

Diazepam, intravenous

CHILD by intravenous injection:

0.1-0.3mg/kg/doserepeated every 15-30 minutes as required, by intravenous injection

Rectal: 0.3-0.5mg/kg/dose

OR By intravenous infusion (or by nasoduodenal tube): 3-10 mg/kg over 24 hours, adjusted according to response

REFER TO HOSPITAL

8.2.2 Tetanus in adults and children

Give:

Tetanus immunoglobulin, intravenous

ADULT: 8.000 units.

Start with 1 ml/minute for about 15 minutes. If there is no adverse reaction, the rate can be increased up to 3-4 ml/min.

CHILD up to 14/15 years: 4.000 units.

Start with 1 ml/minute. If there is no adverse reaction, the rate can be increased to 3-4 ml/minute.

PLUS

Metronidazole, intravenous[7]

Birth to adults: FIRST dose give 15mg/kg (up to 1g). Then 12 hours later, 7.5mg/kg/dose (up to 500mg) every 8 hours.

OR

Benzylpenicillin, intravenous

Birth to week 1 of life: 60mg/kg/dose every 12 hours for 7-10 days

Week 2 of life to 12 years: 60mg/kg/dose every 6 hours for 7 –10 days

.

Adults: 2.4g (4 million units) every 4 hours for 7-10 days

PLUS

Tetanus toxoid, intramuscular: 0.5ml once only (for active immunisation)

To control muscle spasms give:

Diazepam, intravenous ADULT & CHILD OVER 10kg body weight 0.2 –0.3mg /Kg or 1mg per year of age. Repeated if necessary every 30 – 60 m minutes to a maximum of 3mg/Kgm body weight over 24 hours

Rectal:

ADULT & CHILD over 10Kgm body weight 0.5mg/Kg body weight. ELDERLY 0.25 mg/Kg body weight.

.Key points

- Do not inject tetanus human immunoglobulin and tetanus toxoid using the same syringe or into the same site.
- Vaccination is the key to prevention – both children and adults should be vaccinated against tetanus and this should be repeated every 10 years.
- Women should be vaccinated every time they are pregnant to prevent neonatal tetanus. See EPI schedule
- Wounds should be carefully washed and kept clean. Patients should be encouraged to go to the health facility to have wounds cleaned and dressed and to have vaccination against tetanus.
- Sterilize instruments used to cut the umbilical cord, cut the cord short and keep the area clean and dry.
- Refer all children (and adults?) with tetanus to hospital - paediatrician

8.3 Rabies

Rabies is a virus that is carried by animals such as dogs, cats, bats etc. Saliva or central nervous tissue from the infected animal contains large numbers of the rabies virus and this is transferred to other animals or humans through a bite or wound to the skin.

Symptoms/signs

In the animals:

Acts strangely, sometimes sad, restless or irritable

Foaming at the mouth, cannot eat or drink

Sometimes the animal goes wild (mad) and may bite anyone or anything

The animal dies within 5 to 7 days

In people:

After a bite or infection with the virus it may take 20-90 days (or longer) before any symptoms start to appear.

Malaise, anorexia, headaches, fever, chills, sore throat, nausea, vomiting, anxiety, agitation, insomnia and depression

As the disease progresses the patient may become very agitated, restless, thrash about, bite, become confused and hallucinate. There may also be very quiet times.

Eventually the patient will go into a coma and will die.

Non-drug treatment

This is a life-threatening infection; patients must have treatment in order to survive.

To confirm the diagnosis - observe the animal carefully, tie or cage 1 week. If infected then it will die within 5 to 7 days. Clean the bite well with soap and water and with chlorhexidine solution

Chlorhexidine 0.5% solution

Dilute 10ml of Chlorhexidine 5% with 90ml of water to make 100ml of 0.5% solution

Leave the wound open.

Update tetanus immunisation – 0.5ml adsorbed tetanus vaccine (IM).

If rabies is suspected then refer the person immediately to a health facility able to administer passive and active immunisation. I.e. human rabies immunoglobulin (passive immunity) and rabies vaccine (active immunity).

Drug treatment

Before onset of symptoms occurs both passive and active immunisations are effective in preventing full-blown rabies.

Give:

Rabies immunoglobulin, human, intramuscular, infiltration

10 units/kg to be injected around the site of the wound

PLUS

Rabies immunoglobulin, human, intramuscular

10 units/kg injected into the gluteal muscle.

PLUS

Rabies human diploid cell vaccine[8], intramuscular or deep subcutaneous injection (IM in the upper arm deltoid muscle) 0.5ml in the deltoid region of each arm on day 0 THEN GIVE, 0.5ml in one arm on day 7 and day 21 after the bite.

If the patient has been previously vaccinated then a single booster dose of rabies vaccine is all that is required.

Key points

- It is important to observe the animal concerned in order to know if the person bitten is likely to be infected with rabies.
- If rabies in the animal is confirmed (i.e. the animal dies within 5 to 7 days) then continue and give full immunisation to patient.
- Stop the immunisations if the animal is confirmed as NOT having rabies i.e. the animal recovers.
- If rabies is suspected it is vital that full immunisation (both passive and active) is completed before symptoms of the infection occur in the patient.

8.4 Pertiussis (Whooping cough)

Whooping cough occurs when the bacteria *Bordetella pertiussis* gets into the respiratory tract and causes a bloody mucous to be formed. The patient coughs very hard and as he/she tries to take air into the lungs a whooping noise can be heard. It is a particularly serious infection in young, Unimmunised, infants and may be fatal.

Symptoms/signs

Initially there is a cough, fever, running nose.

Patient coughs many times without stopping (paroxysms of cough) to breathe eventually coughing up sticky / frothy mucous.

Patient then takes a deep breath, which may sound like a “whoop”.

During coughing the patients face, lips and fingers may turn blue (cyanosis).

Vomiting may occur after coughing.

Poor appetite and food refused.

Young infants may have apnoea after coughing spasms

Severe coughing may result in subconjunctival haemorrhages

The symptoms last for weeks and sometimes even months

Whooping cough may cause secondary complications such as:

- Protein-calorie malnutrition
- Secondary pneumonia
- Chronic dilation of the bronchi or bronchioles (small airways in the lungs) - bronchiectasis
- Convulsions and coma due to cerebral hypoxia (lack of oxygen in blood).
- Secondary infections such as Otitis media, pneumonia, activation of latent TB)
- Apnoea and hypoxia may result in death in young babies

Non-drug treatment

If patient is healthy: Feed frequently between coughing spasms even though the child may not want to eat

Give extra fluids

Drug treatment: If patient is weak, malnourished or a child under one year of age:

Admit to hospital

Treat the following conditions if they occur – dehydration, fever, pneumonia, malnutrition.

Key points

- Refer infants who have episodes of not breathing or turning blue.
- Antibiotics will not influence the course of the illness but help to prevent others from getting the disease
- All children should be immunised with DPT) (Diphtheria, Pertiussis, Tetanus)
- A child with pertiussis should continue with DPT immunisation to prevent diphtheria and tetanus.

8.5 Meningitis

This is a very severe infection of the coverings of the brain and is commonly caused by bacteria but can be caused by viral or fungal infection or be due to tuberculosis.

Symptoms/signs

Fever, severe headache, neck pains or stiff neck, abnormal conscious state and even coma, vomiting, convulsions, neurological abnormalities or strange movements?

All children should be assessed using the **Integrated Management of Childhood Illness** guidelines. For children less than 5 years the diagnosis of meningitis is encompassed under the top section of danger signs or the section relating to serious illness *(I can't remember if it says this or serious infection)*

The danger signs include:

- Child is unable to drink or breast feed
- Child vomits everything
- Convulsions
- Child is lethargic or unconscious
- Child has a stiff neck

Fever plus any one of the danger signs indicates a very severe febrile disease and urgent action must be taken.

A diagnosis of "very severe febrile disease") means the child may have meningitis and urgent referral must be organised – see guideline for management.

Children over 5 years more commonly have the same signs / symptoms as do adults with meningitis

Non-drug treatment

This is a life threatening condition therefore urgent referral must be arranged.

Take blood slide to check for malaria parasites. Keep the airway clear

Drug treatment

Treatment must be started at once:

Neonates (< 28days) should be treated with intravenous benzylpenicillin and Gentamicin. Neonates with confirmed meningitis require treatment for 3-4 weeks.

Older children should, in the unavailability of ceftriaxone, be treated with chloramphenicol. Treatment should continue for 7days

Alternatively for all types of bacterial meningitis:

Ceftriaxone, intravenous
ADULT: 2g every 12 hours for 7 days
Child 1 month – 12 years: 50mg/kg/dose every 12 hours for 7 days.

Chemoprophylaxis for close contacts (meningococcal meningitis) give:

Ciprofloxacin, oral, 30 minutes before food
500mg as a single dose
OR
Rifampicin, oral)), 30 minutes before food
ADULT: 600mg every 12 hours for 2 days

CHILD: (neonate <1 month: 5mg/kg; child: 10mg/kg **up to**) 600mg orally, every 12 hours for 2 days.

Note: Do not use Ciprofloxacin in children or pregnant women.

If the patient experiences convulsions give:

Diazepam, intravenous

ADULT: 10mg slowly over 3 minutes

CHILD: 0.1-0.3mg/kg/dose slowly over 3 minutes, repeated every 15-30 minutes if needed.
Rectal: 0.3-0.5mg/kg/dose

Key points

- All contacts of the patient should be advised to come to the clinic immediately at the first sign of fever, sore throat, rash or any symptoms of meningitis.

8.6 Measles

An acute infectious disease caused by a virus transmitted by droplets produced by sneezing and coughing. Usually occurs in children between 6 months and 3 years who have not been successfully immunised. Very infectious from 7 days before to 2 days after the rash appears.

Symptoms/signs

All children should be assessed using the

(Integrated Management of Childhood Illness guidelines.)

Look for the danger signs:

- Child is unable to drink or breast feed
- Child vomits everything
- Convulsions
- Child is lethargic or unconscious
- Clouding of the cornea
- Deep or extensive mouth ulcers

Fever plus any one of the danger signs indicates a severe complicated measles and urgent action must be taken.

A diagnosis of “severe complicated measles” (see guideline page 5) means urgent referral must be organised – see guideline for management.

General symptoms and signs of measles are:

Fever before the rash appears

Runny nose, Cough, Conjunctivitis, Sore mouth

Rash starting with head and neck moving down over the body

Diarrhoea. Child is generally miserable

This infection is particularly dangerous in children who have TB or who are malnourished. Complications can occur quickly. Look for:

Early complications	Late complications
Croup (cough with stridor) Bronchopneumonia Otitis media Diarrhoea	Vitamin A deficiency leading to xerophthalmia and blindness Malnutrition Deafness from Otitis media Activation of latent TB

Measles cannot be treated but the complications arising from measles must be treated.

Prevention

Measles is preventable by vaccination. See Chapter 1 – Integrated Management of Childhood Illness Guidelines and EPI guidelines. Educate parents about immunisation and ensuring their child eats the correct food to remain healthy. Encourage breast-feeding and good weaning foods.

Immunise children at 9 months of age or at any clinic visit after this age.

If a measles case is suspected, notify the Department of Health and consider mass immunisation. Measles is a notifiable disease.

Treatment

Wash eyes with clean water. Treat sores in and around mouth with gentian Violet paint and encourage oral hygiene

Tepid sponge. Or Paracetamol For the fever give:

Paracetamol, oral, rectal
10-15 mg/kg every 4 hours (not more than 4 doses in 24 hours)

Always calculate the dose of Paracetamol according the weight of the child.

To assist with calculating the correct dose the following chart can be used as a guide

Age or weight	Paracetamol) tablets 500mg	Paracetamol Syrup 120mg/5ml	Paracetamol) suppository 100mg
2 months up to 6 months (4-<7kg)	1/8 = 62.5 mg	2.5ml (1/2 teaspoon) = 60 mg	½ = 50 mg
6 months up to 3 years (7 - < 14kg)	¼ = 125 mg	5.0ml (1 teaspoon) = 120 mg	1 = 100 mg
3 years up to 5 years (14 - <19kg)	½ = 250 mg	10ml (2 teaspoon) = 240 mg	2 = 200 mg
5 – 8 years (19 - < 21kg)	½ = 250 mg	-	2 = 200 mg
8 – 11 years (21 - < 30kg)	¾ = 375 mg	-	-
11 – 15 years (30 - < 40kg)	1 = 500 mg	-	-
15 + years (40+kg)	2 = 1000 mg	-	-

These doses may be repeated every 4 – 6 hours if necessary, maximum 4 doses in 24 hours. Continue feeding

Vitamin A supplements are given as a routine:

AGE ⇒	< 6 months	6 – 12 months	>12 months
1st Day	50,000 IU	100,000 IU	200,000 IU
2nd Day	50,000 IU	100,000 IU	200,000 IU
2 – 4 weeks later	50,000 IU	100,000 IU	200,000 IU
Repeat single prophylactic doses in 4 – 6 months intervals.			

Vitamin A (retinol), capsule with food

CHILD: 6-12 months: 100,000 units = 2 capsules of 50.000 units

1-5 years: 200,000 units = 1 capsule of 200.000 units

Duration: 1 dose every 6 months

Warning: Too much Vitamin A is poisonous. Do not give more than the amounts advised here.

If pus is draining from the eye(s) then:

Tetracycline eye ointment 1%

Apply to the eye(s) three times a day until redness is gone (and for 2 or 3 days afterwards)

Children with complications

Pneumonia - See chapter 4 Respiratory conditions

Otitis media - See Chapter 9 Ear, Nose and Throat

Xerophthalmia - See Chapter 14 Eye conditions

Diarrhoea - See chapter 11 Gastrointestinal

Key points

- Refer immediately children with severe complicated measles. These are children with fever plus any one general danger sign (not able to drink or breastfeed, vomiting everything, convulsions, lethargy or unconsciousness), or if there is clouding of the cornea or deep extensive mouth ulcers.
- Measles can be prevented by vaccination therefore take every opportunity to vaccinate children.

9.7 Dengue Fever, Dengue Haemorrhagic Fever, Shock Syndrome[9]

This is an illness caused by a virus that is spread by mosquitoes. It is difficult to tell the difference between malaria and dengue fever during the early stages of the disease.

Symptoms/signs

Children

All children should be assessed using the **Integrated Management of Childhood Illness** guidelines.

Look for the danger signs:

- Signs of shock
- Blood or “coffee ground” vomitus
- Tarry black stools
- Severe bleeding from nose or gums

- Positive tourniquet test or skin petechiae
- Frequent vomiting and no diarrhoea

Fever plus any one of the danger signs indicates Dengue Haemorrhagic Fever and urgent action must be taken.

A diagnosis of "Dengue Haemorrhagic Fever" means urgent referral must be organised – see IMCI guideline page 5 for management.

Adults

Fever lasting 2-7 days then a phase with no fever of about 2-3 days.

In early stages headache, aching muscles and joints, rash, small haemorrhagic spots on the skin may (or may not) also be present.

Following fever patient may **or** may not develop Dengue Haemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS).

Check for Dengue haemorrhagic fever performs a Tourniquet test as follows:

Tourniquet test Inflate a blood pressure cuff to a point midway between systolic and diastolic pressures for 5 minutes. Test is positive if 10 or more haemorrhagic spots per

square inch (2.5 cm^2) are seen.

Dengue Haemorrhagic fever (DHF) – patients may bleed from the nose and gums, have black tarry stools (indicating internal bleeding), vomit blood.

Dengue Shock Syndrome (DSS) - Patients with a history indicating dengue fever and presenting with rapid and weak pulse, narrow pulse pressure, hypotension, cold and clammy skin and restlessness.

Dengue Haemorrhagic Fever and Dengue Shock Syndrome are life-threatening conditions and urgent referral must be arranged!

Treatment

Febrile/afebrile phase – patient has fever (or previously had fever) but no other signs of serious illness

During early febrile phase it is not possible to distinguish DF from DHF. There is risk of developing DHF or DSS. Fever may last from 2 to 7 days followed by a period of no fever for 2-3 days.

Advise rest, and to help with the fever give:

Paracetamol, oral, rectal: 10-15 mg/kg every 4 hours (not more than 4 doses in 24 hours)

Do **not** give aspirin

Ensure the patient keeps well hydrated by drinking oral rehydration solution

Tell the patient to eat normally

Observe carefully for the following 2 - 3 days after recovery from fever.

Tell patients and household members to watch for severe abdominal pain, black stools, bleeding gums, nose or bleeding into the skin, sweating and cold skin.

REFER PATIENT TO HOSPITAL URGENTLY IF ANY OF THESE OCCUR**!**

Dengue Haemorrhagic Fever – patient must be admitted to hospital

Immediately check haematocrit and platelet count to assess patients' condition.

If haematocrit rises >20% then:

Initiate IV therapy –

Dextrose 5% in normal saline

6 ml/kg/hr for 3 hours.

Check haematocrit, vital signs and urine output after three hours

Reduce IV therapy to 3 ml/kg/hr for 3 hours

If patient is improving then continue IV therapy at 3 ml/kg for 6 to 12 hours and then stop IV therapy. If there is no improvement, increase IV therapy to 10 ml/kg/hr for one hour.

Dengue Shock Syndrome – patient must be admitted to hospital

Immediately check haematocrit and platelet count and vital signs to assess patients' condition.

Initiate IV therapy –**Dextrose 5% in normal saline 10 ml/kg/hour**.

Check haematocrit, vital signs and urine output every hour.

Do blood grouping and matching as a precaution.

Give oxygen

If patient improves, reduce IV fluid every hour from 10ml/kg to 6ml/kg and from 6ml/kg to 3ml/kg, which can then be maintained for 24 for 48 hours.

If haematocrit increases**, change to Polygeline 3.5% or plasma At 10 ml/kg every hour.**

If haematocrit decreases give fresh whole blood 10ml/kg/hour and continue fluid therapy at 10ml/kg/hour. Reduce the volume stepwise to 3ml/kg/hour and maintain for 24 to 48 hours.

If patient is in profound shock with undetectable pulse and blood pressure

Initiate IV therapy **– Dextrose 5% in normal saline) 20 ml/kg as a bolus and repeat once if necessary**.

Give oxygen

Do blood grouping and matching as a precaution.

Monitor pulse, blood pressure and temperature every 15 to 30 minutes.

If shock continues give **Polygeline) 3.5% or Plasma** At 10 – 20 ml/kg/hour.

If shock continues and haematocrit continues to decline give fresh whole blood 10mg/kg as a bolus.

In the case of severe bleeding give fresh whole blood 20ml/kg as a bolus

If platelet counts are below 5000 – 10000/mm^3 then give platelet rich plasma transfusion.

After blood transfusion continue fluid therapy at 10ml/kg/hour and reduce it stepwise to bring it down to 3ml/kg/hour for 24 to 48 hours.

Signs of recovery

Stable pulse, blood pressure and breathing rate, normal temperature, no evidence of external or internal bleeding, return of appetite, no vomiting, good urinary output, stable haematocrit, and convalescent confluent patchier rash.

Key points

- Hyperosmolar or Ringers lactate solution should not be used in cases of acidosis.
- Avoid fluid overload, adjust rate of infusion after monitoring the haematocrit and vital signs. Volume of fluid replacement should be just sufficient to maintain effective circulation during period of plasma leakage. Excessive fluid will cause pleural effusion, ascites and pulmonary congestion/oedema.
- Do not give aspirin or ibuprofen for the treatment of fever
- Avoid giving intravenous therapy before there is evidence of haemorrhage and bleeding
- Avoid giving blood transfusion unless indicated i.e. reduction in haematocrit or severe bleeding.
- Avoid giving steroids. They do not show any benefit
- Do not use antibiotics
- Do not change the speed of fluid rapidly i.e. avoid rapidly increasing or rapidly slowing the speed of fluid
- Do not insert a nasogastric tube to determine concealed bleeding or to stop bleeding (by cold lavage) this is hazardous

9.8 Lymphatic filiariasis:

It is caused by Wusherreria bancrofti... The manifestation varies according to the strain of the parasite and the mosquito vector that transmit it.(Upper or Lower biting habit*)*

Clinical features*:*

Three types*:*

a. Asymptomatic: Usually in endemic areas were population had acquired some immunity.

b. Acute: presented with fever, last 3 – 7 days then may recurr.with headache, malaise and delirium.

c. Chronic: Progressive and accumulative, requires long exposure period (10 – 15 years). Present as hydrocele, lymphoededma and elephantiasis.

Management: Diethyl Carbimazole 2mg/Kgm body weight in 3 divided doses for/24hrs

For 6 – 12 days. Raising the limb on laying and compressing dressing helps to reduce oedema. Radical surgery can be an ultimate resort.

8.9 Japanese encephalitis (JE)

Japanese encephalitis (JE) is caused by a mosquito-borne flavivirus.

Clinical features

The disease is typically an acute neurological syndrome the virus goes to the brain causing the neck to arch back word... It is characterised by headache, fever, convulsions, focal neurological signs, depressed level of consciousness and coma. It has a high case-fatality rate and there is a high prevalence of neurological sequel (up to 50%) in those who survive the acute illness. is left with mental retardation and paralysis.

Epidemiology

JE is a significant public health problem in many parts of Asia including the Indian Subcontinent, Southeast Asia and China.1

Management:

There are many clinical conditions resemble encephalitis. One can judge by the epidemic state of the area. Malaria, TB, other encephalitis. Still the management will be the same, i.e. nursing care of the unconscious patient. REFERAL TO HOSPITALS

Vaccination: Available vaccine that is now included in the EPI in the endemic area. Two doses of 1.0ml administered 7 days a part gives 91% protection against the disease. I 0ml of the vaccine (formalin inactivated)

Dosage and administration. The JE vaccine is administered by the SC route. The volume injected is 0.5 mls in 1 to 3 year old children and 1.0 mls for all those, including adults, over 3 years of age.

CHAPTER 9. MALNUTRITION. (MN)

9.1 Definition: Malnutions means children who have grown or who are growing poorly.

9.2 Classification of Malnutions is:

a. **Sever malnution**: **H**eight **F**or **W**eight (**HFW**) = < 70 – 80%
b. **Moderate malnution**: WFH = 70 -80%

NB: WFH is easy parameter to follow the growth of the child and to compare his nutrional status with normal children.

But one has to be careful, if the child was born under weight or he has other disease unrelated to nutrition such as heart disease.

9.3 Causes of Malnution:

A. Inadequate food intake:

1. **Inappropriate and insufficient** breast feeding or is not take the Proper weaning food.

2. Lack of food: This happens in case of starvation or poverty or simply lack of health education

B. Disease as a cause of malnutrition: Chronic infection is a common cause of MN.

Chronic diarrhoea which result in malabsorption, TB, Chronic malaria, worm infestation

1. It is important to identify the cause of MN, because the approach of treatment is different.
2. If the disease is the caus, treat the disease as well as the MN
3. If poor feedin is the cause, the the focus is on health education and food sublement

All cases of sever malnutrition should be referred to hospital

1. Confirm diagnosis of moderate MN (
2. History and examination to try and determine the cause of the MN
3. Refer to hospital or CHC with beds (i.e. inpatient facility) if the child is presenting to the clinic with a condition that requires hospitalisation in itself – e.g. any danger sign and / or severe disease e.g. severe pneumonia or severe dehydration.
4. Offer hospitalization to all other children with moderate MN. If the child is not particularly unwell and family prefers for the child not to be hospitalized and they are able to attend the clinic regularly for follow-up then the child can be managed as an outpatient from the CHC / HP. *If so, he / she should be managed according to the following protocol.*

9.4 Complications of Malnutrition: Diarrhoea: Result in dehydration, malabsorption and further malnutrition.

Poorly manumitted children can develop Hypothermia and hypoglycaemia.

Long standing MN results in micronutrients deficiencies, (Iron, Zinc, & vitamins)

Electrolytes imbalance (Potassium and Magnesium)

ALL THESE ARE LIFE THREATENING COMPLICATIONS

9.5 OUTPATIENT MANAGEMENT – FROM THE HEALTH POST

1. Standard Medical check 2. Medication a. standard antibiotics, vitamins, deworming and iron
b .specific treatment according to any accompanying illness that is detected. Review of Immunisations – immunise to schedule. Nutrition advice
3. Nutrition supplementation 4. Growth monitoring

1. Medication – for doses see below

Antibiotic:

- If there is a focus of infection it should be treated accordingly. In accordance with IMCI the first and second line oral antibiotics for children under 5 years are Cotrimoxazole and Amoxicillin respectively; their doses are listed below.

Vitamin A:

- If the child has not received dose of Vitamin A in last 6 months then give age appropriate dose

Antihelminthic

- **If child has not had antihelminthic within the last 6 months then give age appropriate dose.**
- Children > 1 year should routinely receive Albendazole every 6months
- If a child has worms and is < 1 year then they should be treated initially with Pyrantel as Albendazole is not recommended for children under 1 year. If worms persist consult with a doctor.

Folic Acid / Ferrous Sulphate:

- Once a week for at least a month

2. Immunisation:

At presentation check immunization status

- If incomplete administer outstanding vaccines. **MEASLES IS AN ABSOLUTE PRIORITY.**
- If vaccinations complete praise mother and mark when next vaccine due.

3. Nutrition Advice (Health Education)

- Give nutrition advice according to MAC (counsel the mother) – standard nutrition advice.
- Give extra / specific recommendations for feeding for children with malnutrition in
-
-

4. Food Supplements

- It is not practical to provide milk on an outpatient basis. However for children with malnutrition it is beneficial to provide a regular supplementary food ration. This may be provided in the form of *DELVITA* (a high calorie packed mixture made from soya bean which can be added to Sosoro) *or* by adding locally available foods (i.e. MUNG BEANS, MILK powder and SUGAR) to Sosoro.

Mothers will need to be taught how to make either or both of these alternatives. *Recipes are included in the inpatient manual appendices.*

6. Growth monitoring (weight follow-up)

- See again 2 weeks after initial consult and then at monthly intervals.
- Follow weight (gain) on KMS.
- **If child does not gain weight within a month or if child's weight drops further then he / she should be referred to hospital**

TREATMENT – for CHILDREN with MALNUTRITION and DANGER SIGNS – WHO NEED IMMEDIATE REFERRAL to HOSPITAL

Danger Sign	Additional signs	Referral Treatment
Unable to drink or breastfeed	May have dehydration	Check for dehydration. If have dehydration treat according to protocol. Trial of feed via nasogastric tube. If vomiting continues then intravenous fluids and dextrose is needed (NS 20ml + D5 80ml, per 100ml) at 4ml/kg/hr.
Vomiting everything	May have dehydration	Same as for unable to drink or breastfeed
Reduced Level of Consciousness - severe lethargy - drowsiness - unconscious	May be due to cerebral infection, shock, hypoglycaemia, hypothermia or hypoxia so may have signs of any of these. Treatment needs to cover all of these possibilities	Look for signs of shock – *if present treat as below* Check temperature – if hypothermia treat as above Give:- Chloramphenicol intramuscularly *(see dose chart)* Give:- Quinine intramuscularly *(see dose chart)* Give: - a feed or glucose (if reduced level of consciousness DO NOT FEED ORALLY) – *see hypoglycaemia.*
Convulsions	May have reduced level of consciousness	Give oxygen if available. Give Diazepam 0.5mg/kg per rectal to stop convulsion. If convulsion does not stop, call doctor.
Hypothermia (Axillary Temp.< 35^{o}C)	Child may also be drowsy and hypoglycaemic	Warm - take off wet clothes - cover with warm wraps (include head) *or* use "skin-to-skin" contact with mother - keep away from draught Feed – *see hypoglycaemia* Give: - Ampicillin and Gentamicin, or Chloramphenicol intramuscularly *(see dose chart)*
Cold hands and feet and fast pulse I.e. **SHOCK**	May have reduced level of consciousness or irritability.	Give oxygen if available. Intravenous fluid bolus 15ml/kg over 1 hour. - RL 50ml + 50ml 5% glucose, per 100ml

		or - NS 50ml + 50ml 5% glucose, per 100ml. Monitor pulse and respirations closely. If improving, repeat after 1 hour. If deteriorating, stop IV fluid and radio to doctor if possible. Transfer to hospital URGENTLY. Give: - Ampicillin and Gentamicin, or Chloramphenicol intramuscularly.
Severe Pallor	Tachypnoea (fast breathing)	None – if associated fast breathing and if oxygen available then give oxygen (2L by nasal prongs or 4L by mask)
Severe dehydration Markedly reduced tissue turgor with lethargy / abnormal conscious state or sunken eyes or not able to drink / drinking poorly		*If associated with signs of shock treat as per shock*. *If no shock…* Resomal** 5ml/kg every 30 minutes for 2 hours; Then 5-10ml/kg hourly for next 4-10 hours. If vomiting or not drinking use NGT. If vomiting continues use intravenous fluids – Treatment Plan C IMCI.
Corneal ulceration	Opacification of the cornea; other eye signs	Vitamin A Tetracycline or chloramphenicol eye drops. Cover the eyes. HANDLE the EYES GENTLY

Hypoglycaemia (definition = BSL < 3.5mmol but if no glucose meter available, possible clinical signs of hypoglycaemia include: seizures, reduced level of consciousness or irritability, sweating
And tremulousness; if child has signs of possible hypoglycaemia the child should be treated empirically for hypoglycaemia).

** If available use Resomal** instead or Oralyte for rehydration of children with malnutrition. If not Resomal available use Oralyte.If Resomal is not available start treatment with Oralyte. Resomal contains less sodium than Oralyte and is safer for use in children with malnutrition.

DOSES of MEDICATIONS used in the TREATMENT of MODERATE MALNUTRITION

COTRIMOXAZOLE

Age or Weight	Cotrimoxazole (Trimethoprim + sulphamethoxazole) **Give 2 times daily for 5 days**		
	Adult Tablet 80mgTrim / 400mg sulpha	Paediatric Tablet 20mgTrim / 100mg Sulpha	Syrup 40mg Trim / 200mg Sulpha
2 mo-4mo (4kg-<6kg)	¼	1	2.5ml
4 mo-12mo (6kg-<9kg)	½	2	5ml
1yr-3yrs (10kg-14kg)	1	3	7.5ml
4 yrs – 6 yrs (15kg-19kg)	1	4	10ml
7yrs–10 yrs (20kg–29 kg)	2	-	15ml

AMOXICILLIN – give three times daily for 5days

Age or Weight	Tablet 250mg	Syrup 125mg/ml
2mo-4mo; (4-<6kg)	¼	2.5mg
4 mo-12mo; (6-<10kg)	1/2	5ml
12mo-5yr; (10-<19kg)	1	10ml

VITAMIN A

AGE	200 000 IU Capsule	100 000IU Capsule
< 6 months	-	½ capsule
6 months – 12 months	½ Capsule	1 Capsule
12 months – 5 years	1 Capsule	2 Capsules

ANTIHELMINTHICS

Age	**Pyrantel** (50mg/ml suspension)	**Albendazole (400** mg tablet)
6 months – 1 year	125mg (2 ½ ml)	-
1 - 2 years		
2 -5 years	-	1

FOLIC ACID / FERROUS SULFATE

Weight	**Iron / Folate Tablet** **Ferrous Sulphate 200mg + 400mcg Folate** (contains 60mg elemental iron)
< 10 kg	½ tablet / week
> 10 kg	1 tablet / week
> 20 kg	1 ½ -2 tablets / week

CHAPTER10 .MUSCOLOSKELETAL CONDITIONS.

10.1 Back pain

Back pain and lower back pain is a common presenting complaint especially among the elderly. It may be a mild, transient symptom or a chronic and disabling complaint.

There are many causes of low back pain therefore it is important to take a good clinical history and physical examination.

Some of the causes of back pain are:

- Chronic upper back pain with cough and weight loss may be TB of the lungs
- Mid back pain in a child may be TB of the spine especially if the backbone has a hump or a lump
- Low back pain that is worse the day after lifting or straining may be a sprain or muscle strain.
- Severe low back pain that first comes when lifting or twisting may be a slipped disc especially if one leg or foot becomes painful or numb and weak. This can result from a pinched nerve.
- Standing or sitting wrongly with the shoulder drooped is a common cause of backache
- In older people chronic back pain is often arthritis
- Pain in the upper right back may be from a gallbladder problem
- Acute or chronic pain in the lower back may be due to a urinary tract infection or urinary problem
- Low backache is normal for some women during menstrual periods or pregnancy
- Very low back pain sometimes comes from problems in the uterus, ovaries or rectum.

Most low back pain is related to a sprain or strain or to chronic osteoarthritis. However it is important to eliminate all other possible causes before making this diagnosis.

Non-drug treatment

Bed rest initially may provide some comfort but beyond 24-48 hours should be avoided as it increases the risk of chronic back pain.

Massage and heat may help muscular spasm

Advise the patient on how to sit, stand, lie and lift to avoid further injury.

Light exercise to increase muscle strength and flexibility, and to reduce spasm should be started.

Drug treatment

To relieve the pain see chapter 3 Pain management, section on mild pain management

OR give:

Ibuprofen, oral, with food 400mg to 800mg (1-2 tablets) every 6-8 hours. Maximum 2.4g (6 tablets) a day.

Key points

- Back pain can have many different causes therefore careful history taking and examination is vital.
- When initiating drug treatment it is better to take the medicines regularly for a few days rather than on an as required basis.
- Anti-inflammatory like ibuprofen can cause gastro-intestinal side effects therefore these should be taken with food.

10.2 Arthritis

10.2.1 Rheumatoid arthritis

Chronic inflammation of the joints

Symptoms/signs

This can present as:

- Pain, stiffness, swelling in small joints of hands and wrist for several weeks.
- Morning stiffness, weight loss, lethargy, depression
- Symptoms can fluctuate
- Limitation of movement
- Destruction of the joint often occurs
- The patient may be anaemic, have rheumatoid nodules, muscle wasting and dry eyes
- If you want to include children in this bit you need to a) not just say small joints of hands etc – in kids it varies in pattern and may in fact present with only 1 or 2 big joints being involved. Also might present with growth failure and also systemic symptoms like fever, rash, malaise etc

Non-drug treatment

Rest – if the arthritis causes some fever then it helps to take naps during the day. If possible avoid heavy exercise that can aggravate the painful joints.

Place cloths soaked in hot water on the painful joints

Do simple exercise to help maintain or increase the range of motion in the painful joints.

Drug treatment

To reduce the pain and swelling (in adults):

Aspirin, oral

ADULT: 1 g every 4 hours after food; maximum in acute conditions 8 g daily;

CHILD, juvenile arthritis: up to 80 mg/kg daily in 5 – 6 divided doses after food, increased in acute exacerbations to 130 mg/kg.

Precaution in use in children under 16 years of age

25mg/kg/dose (max 2g) 6h for 3d then 15-20mg/kg/dose 6h

OR

Infants and Children over 6 months: 10mg/kg/dose 3-4 times a day, with food.

Ibuprofen, oral

ADULT:

400mg to 800mg (1-2 tablets) every 6-8 hours. Maximum 2.4g (6 tablets) a day.

Ibuprofen, juvenile rheumatoid arthritis

Infants and Children over 6 months: 10mg/kg/dose 3-4 times a day, with food

Key points

- Anti-inflammatory like ibuprofen can cause gastro-intestinal side effects therefore these should be taken with food.
- Refer all suspected cases to specialist physicians. Children with suspected JCA should be seen by a paediatrician (as there may be other serious manifestations – affecting other organs and also management can be difficult.
- May occur at any age, some types of juvenile arthritis can occur at 2-4 years of age and in young adults. Refer these cases

- Painful joints in young people and children can also be a sign of other serious illness e.g. rheumatic fever or tuberculosis

10.2.2 Septic arthritis

A condition involving infection of one or more of the large joints. The infection can be caused by a variety of organisms.

Symptoms/signs

Pain, swinging fever

Restriction of movement of affected limb/s

Sudden onset with the large joints usually affected

The affected joint is hot, tender and swollen

Non-drug treatment

Rest the affected joint

Try splinting during the acute phase

Drug treatment

To reduce the pain and swelling (in adults):

Aspirin, oral

ADULT: 0.3 – 1 g every 4 hours after food; maximum in acute conditions 8 g daily.

OR: Ibuprofen, oral

400mg to 800mg (1-2 tablets) every 6-8 hours. Maximum 2.4g (6 tablets) a day. Infants and Children over 6 months: 5-10mg/kg/dose 3-4 times a day, with food

Key points

- Anti-inflammatory like ibuprofen can cause gastro-intestinal side effects therefore these should be taken with food.
- The infection can be caused by a number of organisms therefore it is important that if septic arthritis is suspected the patient is referred to hospital so the organism can be identified (usually by joint aspiration) and the appropriate antibiotic selected.

In the absence of microbiology in children the antibiotic of choice would be Cloxacilline or chloramphenicol

10.2.3 Osteoarthritis

Degenerative joint disease, which affects weight-bearing joints e.g. hips, knees but can also affect joints in hands.

Symptoms/signs

Morning stiffness that improves with exercise

Pain when exercise is started

A reduction in the movement of the joint

Non-drug treatment

Encourage weight reduction if the patient is overweight. This will reduce the load on the joint

Encourage light exercise to retain movement

Weight supports e.g. crutches, walking sticks, may be needed

Drug treatment: To reduce the pain (in adults):

Aspirin, oral

ADULT: 0.3 – 1 g every 4 hours after food; max. In acute conditions 8 g daily.

OR

Ibuprofen, oral, with food400mg to 800mg (1-2 tablets) every 6-8 hours. Maximum 2.4g (6 tablets) a day...

Key points

- Anti-inflammatory like ibuprofen) can cause gastro-intestinal side effects therefore these should be taken with food.
- Long-term management of severe cases need referral to orthopaedic surgical specialists

10.3 Gout

10.3.1Gout - acute

A condition where uric acid crystals deposit in the joints and other tissues.

Symptoms/signs

This can present as:

- One joint becoming very hot, extremely painful and red
- Uric acid deposits in and around the joints and cartilages of the extremities
- Occasional deformity due to uric acid deposits
- Renal disease – poor kidney function
- Uric acid kidney stones
- Blood levels of uric acid being increased (above 0.5mmol/L)

Dehydration, fasting, binge eating or drinking alcohol can cause an acute episode of gout.

Non-drug treatment

Patient should have bed rest and drink lots of water.

Do **NOT** drink **alcohol** and do **NOT** take **aspirin** (acetyl salicylic acid) to reduce the pain.

Drug treatment

Allopurinol should not be used during an acute attack of gout.

To treat an acute attack:

Note BNF: ibuprofen is unsuitable for conditions where inflammation is predominant such as in acute gout. Suggest using higher end of doses e.g. 800mg TDS

Ibuprofen, oral, with food 800 mg immediately then 200-400 mg every 6 to 8 hours (maximum dose 2400 mg per day) for 2 to 3 days. If needed continue with 200-400mg every 8 hours until pain has subsided.

If the patient is already being treated for heart failure or is on anti-coagulants e.g. warfarin) then treat an acute attack of gout with:

Colchicine 1mg (= 2 tablets) immediately, followed by 500 micrograms (= 1 tablet) every 2-3 hours until relief of pain is obtained or vomiting or

diarrhoea occurs, or until a total dose of 6 mg has been reached; the course should not be repeated within 3 days

10.3.2 Chronic gout

Chronic gout involves:

- Many acute attacks – more than 4 per year
- Bony destruction
- To phi – uric acid deposits in and around joints and cartilages of extremities
- Kidney stones
- Poor renal function
- Serum uric acid over 0.5mmol/L

Non-drug treatment

Check to see if a thiazide diuretic e.g. hydrochlorothiazide, is being taken by the patient and consider an alternative

Encourage controlled weight loss

Advise patient to avoid alcohol, aspirin, and some foods e.g. red meat

Drug treatment

Initiate treatment with allopurinol at least 3 weeks after an acute attack:

Allopurinol

Initially 100 mg daily, preferably after food, then adjusted according to plasma or urinary uric acid concentration; usual maintenance dose in mild conditions 100-200 mg daily, in moderately severe conditions 300-600 mg daily, in severe conditions 700-900 mg daily; doses over 300 mg daily given in divided doses.

The period of introduction of allopurinol should be covered by use of Colchicine or ibuprofen until normal serum uric acid levels have been achieved;

Colchicine

500 micrograms (=1 tablet) 2-3 times daily

OR

Ibuprofen

200 mg three times a day for 7 days

Key points

- Always consider the possibility of septic arthritis
- Allopurinol should not be given during or within 3 weeks of an acute attack.
- In the elderly, or patients on diuretics or with impaired renal function, allopurinol should be started at 100mg daily and cautiously increased if necessary.
- Colchicine is effective and specific for acute attacks of gout but is not easy to use because of the development of vomiting and diarrhoea.

CHAPTER 11. CENTRAL NERVOUS SYSTEM CONDITION

11.1 Headache

Headache is a very common symptom. It can have very serious underlying causes however; in most cases the cause is not serious.

Causes of headaches;

Tension headaches –said to be due to stress or anxiety, which causes tension in the frontal or occipital muscle. Occasionally due to visual defects. Common in young to middle-aged women. Often gets worse as the day progresses and may progress to chronic daily headache.

Chronic daily headache – Headache occurs on more days than not for a period of 3 months or more. Main cause is long-term use of analgesics and is sometimes termed "analgesic rebound headache" or "medication misuse headache"

Infections – usually of gradual onset with fever and general debility. Malaria, Dengue and other infections cause moderate, generalized, pulsating constant headache. Meningitis causes a headache that radiates down the neck. Patient is usually acutely ill, febrile and may be confused. Patient may have a stiff neck and fail to raise straight leg. (See chapter 16 – Infectious diseases)

Sinusitis – pain and tenderness around the sinuses (see chapter 9 – Ear, Nose and Throat)

Migraine – Often there is a family history. Is a frontal and unilateral headache that may be associated with vomiting, photophobia and visual changes? There may be trigger factors e.g. foods, stress, missed meals, premenstrual etc. Often there is an aura stage where the patient may experience visual disturbances before the onset of the headache.

Cluster headaches – unilateral pain occurring from 30minutes to 3 hours duration. Often occurs at night with 1-8 attacks per day for several weeks or months (usually with running nose, and eyes). More common in males.

Drugs – Many drugs will cause headaches e.g. vasodilators like the nitrates. Oral contraceptives are a well-known cause of migrainous headaches.

Temporal arteritis – this is a vascular disorder which typically produces severe throbbing pain over the temporal area, marked tenderness over the affected arteries and ischemic pain in the jaws. Vision can be significantly impaired and treatment needs to be undertaken as an emergency to prevent permanent blindness. The condition is characterised by a marked rise in ESR.

Subarachnoid haemorrhage – Sudden onset of severe occipital headache often associated with collapse, brief unconsciousness and confusion, stiff neck and elevated blood pressure. CT scan or lumbar puncture confirms diagnosis.

Brain Tumour) **–** The headache is usually occipital worsening in the morning and associated with vomiting. Slowly progressive weakness on one side, convulsions, visual changes, impaired speech, vomiting and mental changes may be associated with headache.

Hypertension) **–** throbbing, there is a history of cardiovascular or renal disease. BP is elevated on examination and there may be retinal changes.

Chronic subdural haematoma – This usually follows a head injury, which is sometimes trivial and occurs particularly in the elderly. The clue to the diagnosis is the fluctuating symptoms and signs, which usually increase in severity over the course of weeks.

Toxic fumes – may occur with mechanics, factory workers etc or in rooms where there are gas or coal fires and little ventilation. It is therefore important to take a thorough history and examination of the patient.

Action:

Measure pulse, temperature and blood pressure

Check for neck stiffness and positive Kernig's sign (ability to raise straightened leg)

Check for tenderness of the sinuses and temporal arteries

Perform a complete neurological examination

Ask:

Is the headache of sudden onset and very acute – the first or worst headache (thunderclap headache)?	Subarachnoid haemorrhage Meningitis
Is the headache recurrent (associated with vomiting and visual phenomena)?	Migraine Cluster headache
Is the headache daily and progressive over some time?	
Worse on rising and may improve during the day (may be worse on coughing)?	Brain tumour Chronic subdural haematoma Hypertension
Constant or worse in the afternoon or evening?	Tension headache Sinuses/dental Cervical spondylosis Viral or other infection Temporal arteritis Drugs Toxic fumes

NOTE: Headache is rare in children therefore look for the underlying cause.

Non-drug treatment

Try to avoid unnecessary stress, modify lifestyle, relaxation techniques

Migraine – avoid factors that trigger migraine, rest in darkened room during an attack.

Drug treatment

For pain (but avoid prolonged frequent use):

See Chapter 3 – Pain management.

11.2. Migraine

To treat an acute attack:

See chapter 3 – Pain management Aspirin 600mg-900mg every 4 to 6 hours with food. Do not give to children under 16 years of age PLUS to stop vomiting Metoclopramide (oral) ADULT: single dose of 10-20 mg at first sign of attack preferably 10-15 minutes before ant migraine drug; ADOLESCENT): single dose of 5-10 mg (5 mg if body weight less than 60 kg) OR Promethazine, oral 25mg, give intramuscularly if patient is vomiting already

If these measures have failed to relieve a previous attack the use:

-Ergotamine 1 mg + caffeine 100 mg (oral) 1-2 tablets at onset and repeat in 30-60 minutes if needed; maximum dose 6 tablets in 24 hours; above not to be repeated until 4 days has passed; maximum dose 10 tablets in one week.

NOTE: Treatment should not be repeated at intervals of less than 4 days.

To avoid habituation the frequency of administration of ergotamine should be limited to no more than twice a month. It should never be prescribed prophylactic ally but in the management of cluster headache a low dose is occasionally given for 1 – 2 weeks.

Rebound headache may occur after ergotamine

Prophylaxis for migraine

If a patient experiences more than 2 acute attacks of migraine per month then regular prophylactic medication is necessary.

Use:

Aspirin, oral

150mg once a day continuous

If this is ineffective then use:

Atenolol, oral 25 - 50mg daily

-Amitriptyline, oral

12.5 mg at night increased to a maintenance dose of 50-75 mg at night. The need for continuous prophylaxis should be reviewed at intervals of about 6 months.

Cluster headache

Can be relieved with:

OxygenBy inhalation, for 10 minutes

Temporal arteritis)

If this is diagnosed then treatment must be initiated immediately to avoid blindness. Give:

Prednisolone, oral

60mg daily reducing rapidly to 20-30mg daily when the ESR falls, usually within 3 months. Further gradual reduction should be titrated against symptoms and the ESR.

Key points

- Most headaches are tension headaches and will be relieved with analgesics and changes to lifestyle.
- Always look for a possible underlying cause of headache.
- Refer patients immediately if subarachnoid haemorrhage, meningitis, malaria or intracranial lesion e.g. tumour, abscess, haematoma, is suspected.
- Refer temporal arteritis but don't delay treatment
- Refer severe hypertension (See Chapter 6 – Cardiovascular conditions Refer any headache not responding to treatment
- Refer elderly patients with dementia and a history of head injury.
- Headache is rare in children – refer for paediatrician assessment any child with recurrent or severe headache

11.3 Seizures (convulsions)

These are sudden unintentional (involuntary) movements of the whole or part of the body; the event is of cerebral origin. If generalised (involving the whole body) the Patient may lose consciousness, may bite their tongue, become incontinent and may unintentionally injure themselves. After a convulsion a patient may sleep for some time.

Common causes of seizures:

Fevers – especially in children.

Infections – e.g. cerebral malaria, meningitis, encephalitis, TB, HIV, abscesses in the brain

Metabolic causes – hypoglycaemia, hypocalcaemia, hypernatraemia, Hyperosmolar diabetic state

Epilepsy – spontaneous recurrent seizures

Eclampsia – See Chapter 2 – Reproductive health

Hypertensive encephalopathy –

Tumour or cysts in the brain –

Head injury or, in children, non-accidental injury –

Drugs and toxins – alcohol, antidepressants, metronidazole, drug and alcohol withdrawal.

Vascular causes – malformations, bleeds etc

This section looks at seizures in general and how to manage patients. Management of specific types of convulsions will be addressed under the specific sections and chapters.

Non-drug treatment

Put the patient in the coma position in a safe place and on the floor. Turn the patient on the side with that leg bent and other leg straight

Bend head back to keep airway open

Remove any secretions or vomitus from mouth or nose with a finger / wipe. Do not insert any sharp objects (e.g. spoon) into the mouth

Drug treatment

If the patient is still convulsing after a minute or two give:

Diazepam, intravenous

ADULT: 10-20 mg, slowly (0.5 ml over 30 seconds), repeated if necessary after 30-60 minutes. May be followed by intravenous infusion up to maximum 3mg/kg over 24 hours.

CHILD: 0.1-0.4 mg/kg or 1 mg per year of age, slowly. If give intravenously give in 0.1mg/kg aliquots.

If not possible intravenously then remove the needle and give same dose into the rectum. To give rectally insert nasogastric tube of 2 cm into the rectum – a syringe is attached to the NGT and the drug is syringed into the rectum

If a child has a fever with the fit also give Paracetamol to lower the fever.

Key points

- It is important to find the cause of the convulsion and treat.

In IMCI any child under 5 with a convulsion is referred to hospital

Probably all children with their first fit should be seen by a doctor. All children under 5 (first / otherwise) with any fit should be referred.

11.4 Epilepsy

Epilepsy is a disorder of the central nervous system that is characterised by spontaneous recurrent seizures.

The seizures can be classified as follows:

Generalised seizures – grand mal (tonic clonic) seizures, petit mal (absence) seizures.

Partial or focal seizures – temporal lobe seizures, Jacksonian (motor) seizures**,**

Status epilepticus – 2 or more generalised seizures without regaining consciousness, or continuous partial seizures. Continuous epileptic activity that does not resolve spontaneously or with routine anticonvulsant measures

Signs & Symptoms

Generalised seizures typically have sudden onset with abrupt loss of consciousness.

Involuntary movements of the limbs, urinary incontinence, biting of the tongue.

Afterwards the patient is often confused, sleepy and complains of headache.

Partial seizures do not involve loss of consciousness but present as recurrent twitching or abnormal sensations in one body part. Complex partial seizures include confusion, aimless movements and memory loss for the event afterwards.

A single seizure is NOT epilepsy. Do not start anticonvulsant treatment without an eyewitness description of a seizure.

Non-drug treatment as above

If a patient is seen convulsing ensure that the patient does not harm himself and that the airway is clear.

Clothing should be loosened.

After convulsions cease, turn the patient into semi-prone position, ensure that the airway is clear.

If available give Oxygen at high concentration to offset cerebral hypoxia.

Drug treatment

Drug treatment should be considered after two seizures and the type of drug depends on the type of seizure.

- Drug dosage is individualized at the lowest level capable of preventing convulsions
- Begin with a single drug at the lower dose
- If seizures are not controlled, increase dose to upper limit of dose or until side effects appear
- If seizures still poorly controlled then change to different drug by gradually introducing new agent while gradually reducing dose of initial drug at the same time. This may take 3-4 weeks.
- Try 3 single drugs before resorting to drug combinations (which help in only a minority of cases).
- Treatment can be stopped only after 3 years free of seizures and full discussion with patient. The drug is usually reduced slowly over 2-4 weeks or longer.
- Pregnant women with epilepsy need specialist referral as many of the drugs can be harmful to the baby

If two or more typical generalised seizures in the past 12 months in a patient over 2 year PLUS normal physical examination then start:

Try Phenytoin first, then sodium valproate second and then phenobarbitone last.

Phenytoin

Loading dose in emergency (all ages): 15mg/kg IV (give in saline 50mL over 1 hour). Then 24 hours later give according to age

Age:

Premature neonate: IV or oral, 4mg/kg once day

1 month-12 years: IV or oral, 5-8mg/kg once a day

Adults: IV or oral, 5mg/kg once a day

Phenobarbitone

Neonates: Birth to 4 weeks

Seizures: 20mg/kg (max 1g) STAT (single dose) IV or IM. *Then 24 hours later*

IV/IM or oral 3-5mg/kg once at night for 2 weeks then review

Infants and children (1 month – 12 years)

Seizures: 20-30mg/kg (max 1g) STAT (single dose) IV or IM. *Then 24 hours later*

IV/IM or oral 3-5mg/kg once at night for 2 weeks then review

> Phenobarbital, oral
>
> ADULT: 60-90mg once at night for 2 weeks then review
>
> CHILD >5 years: 3mg/kg/day once at night for 2 weeks then review.
>
> CHILD <5 years: up to 4.5 mg/kg/day
>
> I have always used / been taught / cross checked just 5mg/kg irrespective of age of kid

Phenobarbital needs to be introduced gradually to avoid sedative side effects. If side effects are experienced then reduce dose by 30mg and review after 4 weeks.

If seizures persist despite good compliance then:

> Phenobarbital, oral
>
> ADULT: 150mg once at night for 4 weeks then review.
>
> CHILD: 3-5mg/kg at night for 4 weeks then review

If still having seizures then add Phenytoin and slowly withdraw Phenobarbital

> ADULT: initially 3-4 mg/kg daily or 150-300 mg daily (as a single dose or in 2 divided doses) increased gradually as necessary (with plasma-Phenytoin concentration monitoring); usual dose 200-500 mg daily (exceptionally, higher doses may be used);
>
> CHILD: initially 5 mg/kg daily in 2 divided doses, usual dose range 4-8 mg/kg daily (maximum 300 mg).
>
> 4mg/kg/dose 6h if 3wk-12 months; 8h if 1-2 yr, 8-12h if 3-12yr. 2mg/kg/dose 6-12h >12yr. At the same time reduce Phenobarbital by 30mg each week.

If seizures persist then add Carbamazepine and slowly withdraw Phenytoin:

> Carbamazepine, oral
>
> ADULT: initially, 100-200 mg 1-2 times daily, increased slowly to usual dose of 0.8-1.2 g daily in divided doses; in some cases 1.6-2 g may be needed;
>
> ELDERLY: reduce initial dose;

CHILD up to 1 year: 100-200 mg daily in divided doses

CHILD 1-5 years: 200-400 mg daily in divided doses

CHILD 5-10 years: 400-600 mg daily in divided doses

CHILD 10-15 years: 0.6-1g daily in divided doses

2mg/kg/dose 8h increase over 2 wks to 5-10mg/kg/dose 8h. If start it too early get rash and dizziness

At the same time reduce phenytoin by 50mg each week

If still not controlled then refer to specialist. In kids I would recommend.

Sodium valproate is effective in controlling tonic-clonic seizures, particularly in primary generalised epilepsy. It is a drug of choice in primary generalised epilepsy, generalised absences and myoclonic seizures, and may be tried in atypical absence, atonic and tonic seizures.

Sodium valproate, oral

ADULT: initially, 200mg every 12 hours, preferably after food, increasing by 200 mg/day at 3-day intervals to a maximum of 2.5 g daily in divided doses, usual maintenance 1-2 g daily (20-30mg/kg daily);

1 month – 12 years: 5mg/kg/dose every 12 hours, increasing weekly to 20-30mg/kg every 12 hours

CHILD up to 20 kg: initially 20 mg/kg daily in divided doses, may be increased provided plasma concentrations monitored (above 40 mg/kg daily also monitor clinical chemistry and haematological parameters); - not a reality in ET. Valproate levels are not useful

CHILD over 20 kg: initially 400 mg daily in divided doses increased until control (usually in range of 20-30 mg/kg daily); maximum 35 mg/kg daily.

Kids: 5mg/kg/dose 8-12h can increase if required to 20mg/kg/dose 8-12h

Key points

- Treatment should be initiated after 2 or more seizures observed by an eyewitness
- Combination drug therapy is not helpful in most cases. If control not achieved with one drug then change to another single drug
- When changing from one drug to another, gradually reduce the dose of the first drug while at the same time increasing the dose of the new drug.

- Refer patients with neonatal convulsions, absence seizures and progressive neurological deficit.
- All children with seizures should be seen by a doctor before commencing regular anticonvulsant treatment

  a) Unassimilated with any neurological deficit and from which the child recovers fully.

  b) Febrile seizures commonly run in families

  c) Having a history of febrile seizures does not mean that every seizure the child has is a febrile seizure – every time a child has a seizure they should be examined for other causes – especially malaria and meningitis

  d) Children grow out of febrile seizures, though they may have more than one, even in the same illness

  e) Febrile seizures do not cause epilepsy or brain damage

  f) Febrile seizures are a symptom of an infection somewhere – in assessing / treating a child with a febrile seizure it is not enough to make that diagnosis – the source of the fever must be determined. I some cases this will mean performing a lumbar puncture to exclude meningitis– refer to doctor. Treatment as above for any seizure

11.5 Anxiety neurosis

Consider this diagnosis when patients present with multiple or poorly specified complaints.

- If possible, consult a psychiatric specialist.
- Avoid the use of medications, if possible.
- Minor tranquilizers **for a limited period of time** can provide temporary relief, but long-term improvement can only be expected from counselling or behavioural therapy.

Treatment

.Counselling or behaviour therapy

.Adults

- **Diazepam** 2 mg orally every 8 hours for 10 days.
  Consider the risks of dependence

! Note.

Routine prescription of tranquilizers is not advised.

11, 6 Toxic psychosis (acute confessional syndrome or delirium)

This is an acute reversible mental disorder characterised by confusion and some impairment of consciousness, generally associated with emotional liability, hallucination or illusion, and inappropriate impulses, irrational or violent behaviour,

☞ It is caused by systemic infections (malaria, pneumonia, UTI, etc). Metabolic disturbances (hypoglycaemia, anaemia, liver failure) Hypoxia and head injury.

General Management

☞ Identify and treat the underlying cause!
☞ Reduce stress and prevent accidents.
☞ To control excitement,
☞

Drug Treatment

•

Haloperidol Adults: 3-9 mg daily in 2-3 divided doses
Note: max 70 mg in healthy cases.
Elderly patients: 1.5-6 mg daily in 2-3 divided doses.
Children: 50 microgram/kg/day in divided doses every 6 hours,
or,
•

11.7 Depressive psychosis

General Management

☞ Warn the patient that at least 10 days of treatment may pass before any improvement is experienced, and dose should not be increased before the end of this period.
☞ Preferably refer the patient to a psychiatrist

If there is marked irritability/anxiety:

Drug treatment Adults,

Amitriptyline 75 mg per day orally in 3 divided doses, preferably 25mg in the morning and 50 mg in the evening. Increased to 150 mg per day, if require d

11.8 Schizophrenia or mania

Schizophrenia is defined as a common and serious mental disorder characterized by loss of contact with reality, hallucination, delusion, abnormal thinking, flattened effect, diminished motivation and disturbed work and social functioning.

Must be treated in specialized hospital departments.

Initial help :

Chlorpromazine Adults, 100 mg orally every 8 hours as required,
or 50-100 mg i.m every 6 hours as required.Elderly patients: half doses

CHAPTER 12 RENAL CONDITIONS.

12.1 Urinary tract infections (UTI)

This refers to any bacterial infection of the urinary tract and usually presents as infection of the bladder (cystitis). Acute pyelonephritis is an acute kidney infection; chronic pyelonephritis usually presents as chronic renal failure.

UTIs are common in women due to the shortness of the urethra. UTIs in men can be associated with renal calculi (stones), prostatic hypertrophy or urethral stricture.

UTI is children may be associated with vesico-ureteric reflux or other urinary tract abnormality.

Symptoms/signs

Frequent painful urination

Occasionally haematuria (Blood in urine)

Loin pain/tenderness

Fever

Lower back pain

In children there may be resurgence of urinary incontinence, irritability, feeding problems, diarrhoea and failure to thrive

Note: dysuria in men can indicate a sexually transmitted infection.

Acute pyelonephritis is diagnosed when a UTI is accompanied by nausea, vomiting, fever, rigors and loin pain. Dysuria may be absent.

Non-drug treatment

Advise patient to drink plenty of water –

Avoid acidic fruit juices, coffee and tea. A teaspoonful of sodium bicarbonate (baking soda) in a glass of warm water may help to make the urine for alkali and ease the dysuria

Always pass urine after intercourse

Double voiding – try to pass urine again after 5 minutes

Good personal hygiene is important – always wipe away from urethra and wash the perianal area with mild soap and water after defecation. Dry with soft towel.

Drug treatment

In mild/moderate cases treat with first line therapy:

Amoxicillin, oral

Uncomplicated, non pregnant women: 250-500mg three times a day for 7 days (3 days may be adequate) OR

3 g repeated after 10-12 hours, for uncomplicated acute urinary-tract infection and fully sensitive bacteria.

CHILD:

Cotrimoxazole, oral – see IMCI doses

Note: All cases of pyelonephritis and men with UTIs, and pregnant women require treatment for 14 days.

Second line therapy:

Refer acutely ill patients for intravenous therapy. In acutely ill patients give intravenous antibiotics until the patient is apyrexial then change to oral therapy:

Ampicillin), intravenous

500mg every 6 hours

OR

Gentamicin, intravenous or intramuscular

4 mg/kg once a day

Young infants or children may be quite unwell with a UTI. Young infants UTI may be associated with septicaemia +/- pyelonephritis. All young infants with UTI, under 3 months, should be treated with parenteral antibiotics (IM / IV) – ampicillin and Gentamicin.

Attention also needs to be paid to hydration – they may require intravenous or nasogastric hydration if intake is poor.

Key points

- If the patient still has symptoms after 3 days then refer for further investigation
- Check Gentamicin levels where possible – this is not practical or feasible – needs to be relevant to context - and avoid use in renal failure.
- Refer all children and men with UTI.
- Refer patients with recurrent UTI and patients with persistent haematuria (blood in the urine).
- Refer pregnant women with acute pyelonephritis
- UTIs in women are more common when first becoming sexually active, in pregnancy and after the menopause

12.2 Glomerulonephritis (Glomerular lesions)

Inflammation of the glomeruli due to deposits of immune complexes. Usually due to bacterial infection.

Common causes include streptococcal infections, hepatitis, dengue, malaria, systemic lupus erythematosus, systemic vasculitis, etc... In children GN is most commonly related to a recent streptococcal infection.

Symptoms/signs

Oliguria (urine volumes < 400ml/day)

Hypertension

Haematuria (dark or “coca-cola” urine)

Acute heart failure

Coma

Common signs in children are: History of preceding infection (e.g. sore throat or skin infection), generalized oedema most marked around the eyes, breathlessness (due to fluid retention), anorexia, fever, seizures (due to the hypertension), urinary abnormalities like Oliguria, haematuria

Treatment

Patients presenting to a Primary Health Care facility should be referred immediately.

12.3 Nephrotic syndrome

This is defined by severe proteinuria in excess of 3.3-3.5 g daily accompanied by hypoalbuminaemia, oedema, and hyperlipidaemia and hypercoagulation state. Can be caused by infections (viral, bacterial and parasitic), primary glomerular disease, some systemic diseases (diabetes) or be caused by drugs (Captopril, lithium). In children it is most commonly idiopathic.

Symptoms/signs

Oedema – generalised or local

Pleural effusions

Proteinuria (>3gm/day) – makes frothy urine

May be complicated by infection

Non-drug treatment

Adequate protein diet – 0.8g/kg of high-class protein per day

No added salt diet

Weigh patient at each review

Drug treatment

PATIENTS PRESENTING TO A PRIMARY HEALTH CARE FACILITY SHOULD BE REFERRED IMMEDIATELY.

11.9 Ureteric colic

Agonizing pain, starting from loin and radiating to groin and inner part of thigh.
May cause vomiting, an intravenous urography (IVU) is often indicated.

Treatment:
Adults (symptomatic treatment):
Ibuprofen 400 mg deep I'm
Fluid intake of 3-4 litres/day after the crisis.

CHAPTER.13. SEXUALLY TRANSMITTED DISEASES(STDs)

13.1 Syphilis

Syphilis is a sexually transmitted disease caused by *Treponema pallidum*, which causes a sore where the organism enters the body. This sore heals without treatment. However, the bacteria spread all through the body and cause serious sub acute and chronic disease of many organs.

Previous infection with the similar yaws bacterium gives some immunity against syphilis.

Symptoms/Signs

Primary syphilis

Causes a chancre and enlarged lymph glands and usually presents with:

- Chancre, the lesion at the site of infection, first a painless lump develops, it soon ulcerates in the centre and clear fluid oozes from it. It usually heals after 2-6 weeks, even without treatment. It may look different if secondary bacterial infection occurs.
- A female patient may not know she has a chancre if it occurs in the vagina or on the cervix.
- The nearby lymph glands are usually hard but not tender.

Secondary syphilis

Usually comes about 6 weeks after the primary sore heals, but it can be earlier and much later. There may be any or all of these common lesions:

- A skin rash with bilateral (on both sides) round, red, non-itchy flat patches 5-10 mm in diameter.
- A skin rash with bilateral red, non-itchy lumps, which may become scaly or turn into pustules.
- A skin rash called condylomata in warm moist areas such as the perineum, vulva, scrotum, inner thighs, under breasts, etc. The above lumps here get bigger and the surface skin comes off to produce large painless raised moist grey areas. However, secondary infection may occur and change the appearance.
- Mucous patches are painless, shallow grey ulcers with a narrow red margin (or edge). They occur on the lips or mouth, vulva, vagina, scrotum and penis.
- Painless enlargement of all lymph nodes of the body.
- General symptoms and signs of infection, e.g. malaise, fever, loss of appetite, loss of weight.

Tertiary syphilis

Occurs many years later, in one out of every two or three cases. “Gumma” causing mostly non-inflamed ulcers on the skin as well as disease of the heart or disease of the brain can occur.

Congenital syphilis

A child may be infected through the placenta, if his mother has syphilis. The child may be born dead or develop any of the signs of secondary or tertiary syphilis.

Common signs of congenital syphilis include

- low birth weight
- jaundice
- rash (especially blistering and especially on hands / feet) but may vary
- hepatomegaly
- pneumonia / sepsis syndrome
- abnormalities of the blood count (Hb, WCC and platelets)
- long bone abnormalities and pain in the limbs
- albuminuria
- neurological abnormalities including meningitis
- rhinitis / snuffles
- rashes around the anus and the mouth

Non-drug treatment

Advise on the importance of good hygiene and the need to avoid sharing towels, clothing, bedclothes etc.

Keeps skin clean using soap and water?

Drug treatment

Before giving treatment ask the patient about previous or present symptoms of gonorrhoea. If the patient has symptoms of gonorrhoea do tests and give treatment for gonorrhoea as well as for syphilis (which will not cure gonorrhoea).

Early syphilis

Recommended treatment regimens:

Benzathine benzylpenicillin, intramuscular
1.8 g = 2.4 million units intramuscularly in a single session, usually

given as 2 injections at separate sites

OR

Procaine benzylpenicillin, intramuscular

1.2 g = 1.2 million units intramuscularly daily for 10 days

OR

for non-pregnant penicillin-allergic patients

Doxycycline, oral, with food

100 mg twice daily for 15 days

OR

for pregnant women allergic to penicillin

Erythromycin, oral

500 mg 4 times daily for 15 days

Late syphilis

Recommended treatment regimens

Benzathine benzylpenicillin, intramuscular

1.8 g = 2.4 million units intramuscularly once weekly for 3 consecutive weeks

OR

Procaine benzylpenicillin, intramuscular

1.2 g = 1.2 million units daily for 20 days

OR

for non-pregnant penicillin-allergic patients

Doxycycline), oral, with food

100 mg twice daily for 30 days

OR

for pregnant penicillin-allergic patients

Erythromycin, oral

500 mg 4 times daily for 30 days

For patients with **neurosyphilis**:

Benzylpenicillin, intravenous

1.2 g to 2.4 g = 2 to 4 million units every 4 hours for 14 days

OR

for non-pregnant penicillin-allergic patients

Doxycycline, oral, with food

200 mg twice daily for 30 days

Plus prednisolone 20mg for 3 doses, 12 hours apart to reduce likelihood of Jarisch-Herxheimer reaction)

Congenital syphilis

Recommended treatment regimens for early congenital syphilis in (up to 2 years of age) and infants having abnormal cerebrospinal fluid:

Benzylpenicillin, intravenous

50 mg = 50.000 units/ kg every 12 hours during first 7 days of life and every 8 hours thereafter for a total of 10 days

OR if no evidence of neurosyphilis (this requires a lumbar puncture to exclude)

Procaine benzylpenicillin, intramuscular

50 mg = 50.000 units/kg once a day for 10 days

Congenital syphilis of 2 or more year's duration:

Benzylpenicillin, intravenous

50 mg = 50.000 units/kg every 4-6 hours for 10-14 days

OR

for penicillin-allergic patients after first month of life

Erythromycin, oral

7.5-12.5 mg/kg/dose every 6 hours for 30 days

Congenital syphilis is prevented by appropriate treatment of the mother before / during pregnancy

Key points

- Any ulcer of the genitalia is treated as syphilis no matter what is looks like.
- Any wet skin lesions in groin, perineum, axilla, etc. must be suspected of being syphilis.

- Treatment for syphilis needs only a low concentration of the antibiotic but for a long time.
- Treatment for gonorrhoea needs a high concentration of the antibiotic but for only a short time.
- Treat also for Chancriod
- It is essential to detect and adequately treat infants / newborns with congenital syphilis as untreated congenital syphilis may result in either death or permanent neurological disability and other serious effects (e.g. bony and ocular abnormalities)

-

13.2 Gonorrhoea & Gonococci infection

Gonorrhoea is a sexually transmitted disease caused by *Neisseria gonorrhoea* (Gonococcus*)*. It occurs predominantly as urethritis in men and cervicitis in women and also as pharyngitis, proctitis or conjunctivitis. It can spread within the genital organs causing more severe infections of them and through the blood to other parts of the body, causing serious disease there or septicaemia.

The original host is an infected person. Some infected people have symptoms and signs; but some men and many women are carriers with no symptoms.

Infection does not give any immunity.

Symptoms/Signs in the male

Symptoms and signs usually develop within a week; but they can take longer or never develop. They usually present with:

- urethral discharge which is usually white or yellow (pus) and often a large amount,
- Dysuria and urinary frequency.
- The symptoms slowly improve over weeks or months, although a little white discharge may continue to be present each morning. But the infection does not go.

Complications include

- Abscess around urethra,
- inflammation of the epididymis and testis,
- sterility due to blocked epididymis and vas deferens,
- severe conjunctivitis and Iritis (spread by fingers from the genitalia),
- bacteraemia with pustule skin rash,

- acute infective arthritis,
- Septicaemia.

These complications usually occur soon after infection. Sterility will occur later. Urethral stricture (i.e. narrowing of the urethra due to scarring where there was previous infection around the urethra) causing difficulty in passing urine and distended bladder occurs after many years.

Symptoms/Signs in the female

Symptoms and signs usually develop within a week: but they can take longer or never develop and usually present with:

- dysuria and urinary frequency,
- Vaginal discharge, which is often mistaken for a urinary tract infection.

Complications include

- acute salpingitis,
- pelvic peritonitis,
- pelvic abscess,
- ectopic (tubal) pregnancies and/or sterility (due to blocked fallopian tubes),
- severe acute conjunctivitis and Iritis (spread by fingers),
- abscess in labia,
- bacteraemia with pustular skin rash,
- acute infective arthritis,
- Septicaemia.

Newborns may develop gonococci ophthalmia if born to a mother with active gonorrhoeal infection. Gonococci ophthalmia neonatorum may result in severe conjunctivitis which, if untreated, may result in permanent blindness.

Non-drug treatment

Advise on the importance of good hygiene and the need to avoid sharing towels, clothing, bedclothes etc.

Keep skin clean using soap and water?

DRUG TREATMENT,

Uncomplicated gonococci infections) **in ADULTS**

Treatment regimens for uncomplicated anogenital infections

Use ceftriaxone or ciprofloxacin (gonococci) PLUS either Doxycycline or azithromycin (1g STAT) (Chlamydia)

Ciprofloxacin, oral 500 mg as single dose, 30 minutes before food OR Ceftriaxone, intramuscular 250 mg as a single dose **PLUS** Doxycycline oral, with food 100mg every 12 hours for 7 days. If pregnant replace Doxycycline with erythromycin 500mg every 6 hours. I.e. 2 drugs.

Gonococci eye infections in ADULTS

Ceftriaxone, intramuscular 250 mg as single dose OR Ciprofloxacin, oral 500 mg as single dose Together with frequent irrigation of the infected eye with saline.

Disseminated gonococcal infections in ADULTS

Ceftriaxone) intramuscular or intravenous 1 g once daily for 7 days

Gonococcal infections in INFANTS and CHILDREN

Infants born to mothers with gonorrhoea are at high risk of infection and require prophylactic treatment.

Ceftriaxone, intramuscular 50 mg/ kg as a single dose (maximum 125 mg)

Are we assuming penicillin resistance?

Key points

- Treat for gonorrhoea all clinical cases of gonorrhoea including:
- all persons with urethral discharges,
- all persons with “urinary tract infections” especially young adults if there is a possibility of gonorrhoea,
- all persons with vaginal infections especially if cervicitis present and especially if the patient is a young woman and has had a recent change of sexual partner and especially if there is any other reason to suspect STD.
- Note that 30% of patients will have both gonococcal and chlamydial infections.
- Find out if there is or was also a sore on the genitalia or anus. If so, treat for syphilis too.
- Treatment for syphilis is not adequate for gonorrhoea.

13.3 Chancriod

Chancriod is a sexually transmitted disease caused by *Haemophilus ducrey.* It is a frequent cause of genital ulceration and a risk factor in the transmission of HIV. Chancriod is much more common in males, suggesting a female carrier state.

Symptoms/Signs

- 3-7 days post-infection, painful vesicular papules form which rapidly develop into soft ulcers with undermined, ragged edges.
- Ulcers are haemorrhagic and sticky (often secondarily infected).
- If multiple, they may become confluent and they occur at sites of trauma during intercourse (extra genital is rare).
- Commonly 7-14 days later, inguinal nodes become involved: painful, matted, and tethered to erythematous skin = *bubo.*
- A discharging sinus may develop, in time becoming a spreading ulcer.
- The lesions heal slowly and commonly relapse.

Non-drug treatment

Advise on the importance of good hygiene and the need to avoid sharing towels, clothing, bedclothes etc.

Keep skin clean using soap and water.

Drug treatment

Recommended treatment regimens:

Erythromycin, oar)
500 mg 4 times daily for 7 days
OR
Ciprofloxacin, oral, 30 minutes before food
500 mg twice daily for 3 days
OR
Ceftriaxone 250mg IM as a single dose

Key points

- Chancriod) can be the commonest cause of genital ulcers.
- By examination alone it is not possible to tell, if the condition is definitely due to Chancriod or syphilis or due to other infection.
- If the condition is not cured, consider an antibiotic resistant organism, HIV infection and other conditions and refer.

-

13.4 Chlamydial infections

Chlamydia trachomatis, an intracellular bacterium, causes two sexually transmitted diseases in adults, depending on the serotype:

1. Infection of urethra, endocervix or rectum;
2. Lymphogranuloma venereum.

It is also the cause of ocular trachoma, which is a major cause of blindness worldwide.

Urethritis / endocervicitis / proctitis

Symptoms/Signs

- Frequently coexisting with gonococcal infections.
- In ***men*** commonest cause of non-gonoccal urethritis (NGU).
- Complications include epididymitis and, in homosexual men, proctitis.
- In ***women*** infection is often subclinical or non-specific,
- Associated with cervicitis, salpingitis and endometriosis.
- Major cause of female sub fertility worldwide.

13.5 Lymphogranuloma venereum (inguinal bubo)

Symptoms/Signs

- Usual signs: no ulcer on the genitalia but much enlarged inflamed inguinal lymph nodes with toxaemia and the ulceration of the inguinal lymph nodes.
- 1-3 weeks after infection, a small blister or ulcer appears on the genitalia, and is usually not noticed.
- About 2-6 weeks later the lymph nodes in the groin become enlarged and inflamed. Pus forms in the lymph nodes which then burst.
- As more nodes are affected, many abscesses discharging whitish fluid develop. Abscesses can join to make large ulcers.
- The area affected increases. Sometimes abscesses and ulcers form in the anal region.
- During this time the patient may have general symptoms and signs of infection such as malaise, fever, etc.
- After some months the ulcers usually get better. But there is often a lot of deformity left. There may be strictures (narrowing) of the rectum or urethra or vulva. There may also be chronic oedema of the genitalia.

Non-drug treatment

Advise on the importance of good hygiene and the need to avoid sharing towels, clothing, bedclothes etc.

Keep skin clean using soap and water.

Drug treatment

Recommended treatment regimens from WHO

Chlamydia trachomatis infections (other than Lymphogranuloma venereum):

Uncomplicated urethral, endocervical, or rectal infection

Doxycycline, oral, with food
100 mg twice daily for 7 days
OR in pregnant women
Erythromycin, oral
500 mg 4 times daily for 7 days

Lymphogranuloma venereum

Doxycyclin, oral, with food

100 mg twice daily for 21days

OR in pregnant women

Erythromycin, oral

500 mg 4 times daily for 21 days

Children born to women with untreated Chlamydia trachomatis infection

They may develop severe conjunctivitis and blindness or pneumonia. As well as the mother, the baby should be treated immediately as for gonococcal conjunctivitis or ophthalmia neonatorum and if there are still any eye symptoms or if the child develops pneumonia the following treatment is recommended:

In children / newborns it may cause pneumonia / respiratory infections, as well as conjunctivitis.

Atypical pneumonia in young children / infants

- typically staccato cough
- pneumonia that doesn't respond to antibiotics

Conjunctivitis

- typically starts in 2nd week of life
- may be associated with pneumonia / cough

Erythromycin, oral

10 – 15 mg/kg/dose every 6 hours for 14 days.

There is no evidence that additional treatment with a topical agent provides further benefit. If inclusion conjunctivitis recurs after treatment has been completed, erythromycin treatment should be reinstituted for 2 weeks.

Key points

- Chlamydia trachomatis is the commonest cause of non-gonoccal urethritis (NGU) in men.
- Chlamydia trachomatis is the major cause of female infertility worldwide.
- Children born to women who have untreated Chlamydia trachomatis infection have to be treated immediately.
- Gonococcal and chlamydial infections frequently occur together. Treatment for the two infections should be given concomitantly otherwise postgonococcal urethritis due to Chlamydia trachomatis may follow the cure of gonorrhoea.

- Treatment of the sexual partner(s) is essential.

13.6 Candida vaginalis

This is normally not a sexually transmitted disease (STD). I results from over growth of *Candida albican* which is a normal flora in the vaginal mucosa. It results from broad spectrum antibiotic therapy, a woman on contraceptive pills, pregnancy or diabetic woman. It is recognised by positive gram stain. It causes intense pruritus with thick, curdy secretion. The infected female can transmit the infection to the male partner leading to balantitis**.**

Treatment:

Nystatin **pessaries 100,000 units dail for 14 days.**

Alternatively

Flucanazole **capsules 50mg single dose, orally**

13.0 COMMON SKIN CONDITION

14.1 Bacterial skin infection.

14.1.1 Boils & Abscesses

A boil/abscess is a bacterial infection of hair follicles of the skin. Usually painful, and most frequently caused by *Staphylococcus aureus.*

Symptoms/signs

Swellings with pus in them, which may be red, warm and painful.

If multiple or recurrent boils/abscesses occur consider diabetes mellitus or immunodeficiency (change terminology just because tests per se are so limited).

Non drug treatment

Encourage general good hygiene

A boil/abscess will often develop into a swelling with a mass of pus in the middle. When "ripe" this will burst or can be incised and drained after which the skin will heal.

Application of hot compresses placed over the boil/abscess three times daily may help to bring it to the stage when it will burst or can be incised and drained.

Often resolves itself.

If not improving after two days and it is fluctuant (has movement) and large then consider surgical incision and drainage.

Drug treatment

Consider antibiotics only if the boil/abscess causes swollen lymph nodes or fever.

Cloxacillin, oral, at least 30 minutes before food

ADULT: 250mg – 500mg 4 times a day for 7 days.

Birth to 12 years of age: 12.5mg to 25mg/kg/dose every 6 hours

EXCEPT

Neonates: week 1 of life give every 12 hours

Week 2-4 of life give doses every 8 hours

If patients are allergic to penicillin then give:

Erythromycin (oral)

ADULT and CHILD (10mg/kg/dose) over 8 years:

250-500 mg every 6 hours

Up to 4 g daily in severe infections;

CHILD up to 2 years: 125 mg every 6 hours,

CHILD 2-8 years: 250 mg every 6 hours,

Doses doubled for severe infections

Duration: every 6 hours for 5 days

Doses doubled for severe infections

In young babies skin pustules are covered in IMCI (in the young infant module)

Key points

- Most boils are self-limiting and will resolve without the need for antibiotics.
- Because antibiotics cannot penetrate the pus found in a fluctuant boil/abscess, unnecessary treatment with antibiotics may slow down the natural course. A fluctuant boil/abscess may not develop and therefore incision and drainage will be delayed
- Boils/abscesses in diabetic or immunocompromised patients required careful management
- Refer when there is no response to antibiotic therapy.

14.1.2 Impetigo

Impetigo is a staphylococcal or streptococcal skin infection common in children. It is highly contagious.

Symptoms/signs

Blisters and pustules rapidly spread and turn into irregular pussy sores with shiny yellow weeping crusts.

The sores are painful.

May be associated with conditions such as scabies, eczema, lice infestation and herpes simplex infection or any condition where the skin is broken.

Treatment is initiated to eliminate infection and to prevent transmission.

Non drug treatment

Prevent infection by keeping breaks in the skin clean.

Cut fingernails and keep these clean.

Bathe affected parts; soak off the crusts with soap and water or use:

> Chlorhexidine 0.5% solution
>
> Use to clean the wound at each dressing change.
>
> **Dilute 10ml of Chlorhexidine 5% with 90ml of water to make 100ml of 0.5% solution**

Avoid spreading to other parts of the body or to other people by keeping the infected areas clean and taking care with towels, clothes, bedding etc. Keep these clean and wash separately.

Drug treatment} Dress wounds with

> Polyvidone iodine 10% solution (undiluted). Apply three times a day.

When severe give

> Cloxacillin, oral, at least 30 minutes before food
>
> ADULT: 250mg – 500mg 4 times a day for 7 days.
>
> Birth to 12 years of age: 12.5mg to 25mg/kg/dose every 6 hours
> **EXCEPT** Neonates: week 1 of life give every 12 hours
>
> Week 2-4 of life give doses every 8 hours

When patient is allergic to penicillin the give:

> Erythromycin (oral) ADULT and CHILD (10mg/kg/dose) over 8 years:
>
> 250-500 mg every 6 hours
>
> Up to 4 g daily in severe infections;
>
> CHILD up to 2 years: 125 mg every 6 hours,
>
> CHILD 2-8 years: 250 mg every 6 hours,
>
> Duration: every 6 hours for 5 days
>
> Doses doubled for severe infections

Key points

- Impetigo is highly contagious and care must be taken to prevent spread to other parts of the body or to other people.
- Keep infected areas clean

- Avoid sharing towels, clothes and bedding etc. Wash these separately and frequently.
- Refer is there is no improvement after 10 days.

14.1.3. Cellulitis

Streptococcal or staphylococcal infection causing inflammation of the soft tissue under the skin. Often follows an infected wound or prick by a pin, nail or thorn or insect bite. Diabetes mellitus may be a predisposing factor.

Symptoms/signs

Painful, tender and erythematous swelling of the area, fever, malaise, inflamed nodes in that region.

If severe may also cause septic shock (fever, chills, tachycardia, headache, hypotension and delirium)

Requires immediate drug treatment

Drug treatment

In mild cases give:

Cloxacillin, oral, at least 30 minutes before food

ADULT: 250mg – 500mg 4 times a day for 7 days.

Birth to 12 years of age: 12.5mg to 25mg/kg/dose every 6 hours

EXCEPT

Neonates: week 1 of life give every 12 hours

Week 2-4 of life give doses every 8 hours

When patient is allergic to penicillin the give:

Erythromycin (oral)

ADULT and CHILD (10mg/kg/dose) over 8 years:

250-500 mg every 6 hours

Up to 4 g daily in severe infections;

CHILD up to 2 years: 125 mg every 6 hours, CHILD 2-8 years: 250 mg every 6 hours, Duration: every 6 hours for 5 days Doses doubled for severe infections

When severe, refer for admission into to hospital; take swab for culture and sensitivity tests.

For the pain also give an analgesic – See Chapter 3 Pain Management

Key points

- Important to treat diabetic patients quickly and affectively to avoid ulceration, gangrene and amputation.
- Refer if the cellulitis is associated with underlying conditions such as varicose ulcers of if it is acute, severe or has a very speedy onset with systemic symptoms.

14.1.4 Large chronic sores

An ulcer or a sore is a breach in the continuity of the skin and the underlying tissue. Can be caused by infections such as Yaws, Tuberculosis, or as a result of diseases such as diabetes, or by a trauma or malignancies such as melanoma.

Symptoms/Signs

The sore may be painful or painless, there may be offensive discharge and the sore may cause disfigurement or disability.

Some sores have sloping edges, undermined edges, punched out edges, or raised averted and causing deformity.

There may be an underlying disease or cause of the sore or ulcer and investigations to identify these should be undertaken. These include – Hb and sickling test, fasting blood sugar, VDRL/RPR test, wound swab for culture and sensitivity, Biopsy, X-ray of underlying bone.

If the patient has no sensation of pain in sore/ulcer, then suspect diabetes, leprosy and yaws or syphilis.

Non-drug treatment

Keep the wound clean with chlorhexidine solution.

Change dressing every day

Rest and elevate the affected limb as much as possible.

Refer for culture and sensitivity testing.

Drug treatment

Use topical antiseptics such as chlorhexidine

Chlorhexidine 0.5% solution

Use to clean the wound at each dressing change.

Dilute 10ml of Chlorhexidine 5% with 90ml of water to make 100ml of 0.5% solution

After swab and culture use specific antimicrobial treatment as indicated by the results.

NOTE: See Chapter onInfectious diseases, for treatment guidelines for some specific diseases.

Key points

- Refer if the sore fails to show signs of healing.
- It is very important that sores that fail to heal are treated or referred quickly as if the patient is diabetic, the sore may eventually cause the limb or part of limb to be amputated.

14.2 Fungal skin infections

14.2.1 Ringworm (Tinea Corporis)

Fungal infection of the body or face. Highly contagious

Symptoms/signs

Round expanding lesions with white, dust-like scales and distinct thickened raised edges. Patches slowly grow bigger, as the patch extends a clear area develops in the centre. Flexures of the toes, fingers, armpits, groin and skin below the breasts as well as nails may be affected.

Treatment is initiated to eliminate the infection as well as to prevent transmission to others:

Non-drug treatment

Keep infected areas clean

Avoid sharing towels, clothes and bedding etc. Wash these separately and frequently.

Wash skin well and dry carefully before applying treatment.

Drug treatment

Tinea versicolor: miconazole cream. Griseofulvin is NOT effective

Tinea capitis: griseofulvin

Tinea corporis, pedis and cruris: Whitfield's, miconazole or griseofulvin is not responsive to topical therapy

Tinea unguis (Onychomycosis): griseofulvin.

The first line antifungal treatment is

Benzoic acid 6% and salicylic acid 3% ointment apply twice daily until infected skin is shed (usually at least 4 weeks)

If the infection is in the groin area or if the above treatment is unsuccessful then use second line antifungal treatment:

Miconazole 2% ointment/cream Apply twice daily to clean dry lesions, continuing for at least 10 days after the condition has cleared.

If the fungal infection covers a large area of the body or involves the nails then give oral treatment with

Griseofulvin, oral ADULT: 500 mg daily, in divided doses or as a single dose, in severe infection dose may be doubled, reducing when response occurs. CHILD: 10 mg/kg daily in divided doses or as a single dose

Note: The duration of treatment depends on the thickness of the keratin layer: 2 to 6 weeks for infections of the hair and skin, up to 6 months for infections of the fingernails, and 12 months or more for infections of the toenails.

Key points

- Advise the patient to continue with the treatment for the recommended duration to ensure that the infection has been eliminated. Stopping treatment early may cause the infection to re-emerge.
- Treatment of nail infections takes at least 8 weeks. Trim nails to remove infected areas during this time.
- Refer if there is no response to the treatment

14.2.2 Athletes foot (Tinea pedis)

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

Symptoms/signs

Itchy, burning and stinging skin often between the toes spreading to sole of the foot.

Often wet or weepy, with the skin layers flaking off. Reinfection is common.

Non-drug treatment

Discourage the use of shared bathing or swimming areas until healed, avoid sharing towels and toiletries.

Keep the area clean and **dry** as possible, dry between toes after washing or walking in water.

As far as possible avoid wearing socks/closed in shoes (or wear cotton socks).

Wash feet and dry thoroughly before treatment application

Drug treatment what follows is very much repetition of what is written above

First line treatment is:

> Benzoic acid 6% and salicylic acid 3% ointment
>
> Apply twice daily until infected skin is shed (usually at least 4 weeks)

If first line treatment fails then use the second line treatment, which is:

> Miconazole 2% ointment/cream
>
> Apply twice daily to clean dry lesions, continuing for at least 10 days after the condition has cleared.

In very severe infection and involves the nails use oral therapy:

> Griseofulvin, oral BNF297
>
> ADULT: 500 mg daily, in divided doses or as a single dose, in severe infection dose may be doubled, reducing when response occurs.
>
> CHILD: 10 mg/kg daily in divided doses or as a single dose

Key points

- Fungal infections of the feet commonly occur where the feet are often wet e.g. through not drying the feet carefully after bathing, sweat from having the feet in socks and closed shoes. Therefore, take care to keep feet and especially area between toes clean and dry.
- Change socks daily, wash carefully, wash out shoes and allow drying thoroughly.

- Sprinkling the shoes and socks with talcum powder can also help to keep feet dry.

14.2.3 Pityrias versicolor (Tinea versicolor)

Caused by fungi which produce depigmented diffusely scaly patches

Symptoms/signs

Hypopigmented (light coloured) patches of skin of varying size on chest, back, arms and occasionally neck and face.

Drug treatment

Treatment is initiated to eliminate the infection as well as to prevent transmission to others:

Miconazole 2% ointment/cream Apply twice daily to clean dry lesions, continuing for at least 10 days after the condition has cleared.

Key points

- Griseofulvin is not effective as a treatment and therefore should not be prescribed.

14.2.4 Scalp ringworm (Tinea capitis)

Caused by fungi which have grown into the hair follicle

Symptoms/signs

Bald patches of ringworm on scalp.

Drug treatment repetition of above

Treat with the following:

Griseofulvin, oral BNF297 ADULT: 500 mg daily, in divided doses or as a single dose, in severe infection dose may be doubled, reducing when response occurs. CHILD: 10 mg/kg daily in divided doses or as a single dose

NOTE: The duration of treatment depends on the thickness of the keratin layer: 2 to 6 weeks for infections of the hair and skin, up to 6 months for infections of the fingernails, and 12 months or more for infections of the toenails.

Key points

- Topical treatment is likely to be ineffective because it cannot penetrate into the hair follicle therefore oral antifungal treatment must be taken.

14.2.5 Candidiasis of the skin

An infection of the skin caused by Candida albicans (Vaginal Candidiasis: see chapter 16 on STDs)

Symptoms/signs

Moist, weepy lesions, red raw looking patches appear commonly under the breasts, axilla, groin, perineum, and nail folds.

Infants in nappies frequently present with this infection in the nappy area. The rash is commonly present in the skin creases and there are often scattered "satellite" lesions

Non-drug treatment

Try to keep the area clean and dry. Wear cotton clothing. Change infants' nappies frequently.

Drug treatment

Treat with

Miconazole 2% ointment/cream Apply twice daily to clean dry lesions, continuing for at least 10 days after the condition has cleared.

Key points

- Refer if the infection is not responding to the topical treatment.

14.3 Viral skin infections

14.3.1 Herpes Simplex

Commonly known as “cold sores”, with sores occurring around the lips and gums (but may occur elsewhere e.g. genitals). May recur during times of decreased well-being.

Symptoms/signs

Small vesicles appear which then develop into a larger sore. The sores are painful.

The first time the patient has cold sores (usually a small child) there may be a high fever and the mouth may be covered with small blisters and superficial sores.

Non-drug treatment

Keep the sores dry. Identify the reason for decreased well-being and treat this.

Drug treatment

There is no specific drug treatment available in East Timor but apply antiseptic lotion e.g. Gentian violet) paint 0.5%

Treat the pain and fever, if necessary, with an analgesic – See chapter 3 - Pain management.

Key points

- Cold sores will heal up. However, they do recur during times of stress and will do throughout a person’s life.
- Young infants and children with florid herpes simplex gingivitis (mouth ulcers) not infrequently require hospitalisation in order to ensure adequate fluid intake (their mouths are often too sore to drink)

14.3.2 Shingles (Herpes zoster infections)

Acute infection caused by the varicella zoster virus.

Symptoms

Painful blisters on any part of the body that are preceded a few days earlier by pains on the affected site. Pain at the site may continue for some months after the blisters have disappeared.

Severe eye damage may occur if it affects the upper part of the face.

Immunosuppression If the lesions are widespread or haemorrhagic it may indicates such as in. HIV infection or malignancies.

Drug treatment

Treatment of the lesions includes:

> Gentian violet paint 0.5%
>
> Apply twice daily for 5 – 10 days

Pain relief must be provided and can include: See Chapter 3 – Pain management

Refer patient to hospital if lesions are haemorrhagic, widespread, affect the eyes or if they are recurrent.

Post-herpetic neuralgia (pain*)*

This can occur after the rash has disappeared. Some relief can be gained with tricyclic antidepressants. Success is more likely if started early

> Amitriptyline, oral (EML tabs are 25mg)
>
> 12.5mg – 50 mg, at night. Take for 3-6 months after pain is reduced or abolished

For elderly patients, a low initial dose of antidepressant should be prescribed and the dosage increased weekly until pain relief or unacceptable side effects occur. The maximal effect may take weeks, a point that needs to be communicated to the patient.

In the small subset of patients with lancinating pain, the addition of Carbamazepine may be useful

> Carbamazepine, oral
>
> 100 mg twice daily initially, increasing the dose gradually until relief is obtained, to avoid drowsiness.

Doses of 400 mg orally, twice a day may be required by some patients.

Key points

- The skin lesions are usually transient; keep these clean to avoid bacterial super infection.
- Shingles (herpes zoster infection) is very painful both preceding the outbreak of the lesions and for a long time after the lesions have disappeared (up to months later). Pain relief may be needed for some months.

14.3.3 Chicken Pox (Varicella-zoster infection)

This is a communicable disease caused by Varicella Zoster virus.

Symptoms/Signs

Mild headache, fever, malaise occurring about 2 weeks after exposure to an infected person, this occurs about 2-3 days before rash appears. (Incubation period is 12-21 days)

Rash occurs firstly on trunk then spreads to face and scalp. Papules, vesicles and crusts appear and are very itchy.

Non-drug treatment

Avoid scratching, in children keep nails clipped short and hands clean.

To dry out lesions, bathe in saline solution (Measure roughly one handful of salt to 10 litres of water)

Drug treatment

For the itching use:

Calamine lotionApply as frequently as needed for as long as required. PLUS6 – 12 years 2mg every 4 to 6 hours (Maximum 12mg per day).

Promethazine, oral) ADULT: 25 mg at night, increased to 25 mg twice daily if necessary CHILD under 2 years: not recommended (Child over 2 years: 0.125mg/kg/dose every 8 hours or 0.5mg.kg at night) CHILD 2-5 years: 5mg once to twice a day, CHILD 5-10 years: 10mg once to twice a day...

Key points

- In children it is not usually a severe infection however infection may be very severe in adults, newborns of nonimmune mothers and in Immuno-compromised patients.

14.4 Parasitic infections

14.4.1 Scabies

Caused by mites *Sarcoptes scabiei* transmitted by skin to skin contact, the lesion is a burrow (a whitish zigzag channel) the resting place of the female mite.

Symptoms/Signs

Itchy rash (burrows) mainly between the fingers, on the wrists, in the axilla, around the naval, genitals and inner sides of feet.

The itching may be much worse at night.

Because the mite-infection/rash is itchy, scratching may cause secondary bacterial infection. Frequently more than one household member is infected.

Non-drug treatment

All members of the household should be examined.

Cut fingernails and keep them clean. Wash clothing and bedding and leave in the sun to dry.

Bath thoroughly with soap and water and dry carefully with a clean towel. Put on clean clothes after applying treatment.

Drug treatment

If there is secondary bacterial infection then treat this first with:

Cloxacillin, oral, at least 30 minutes before food

ADULT: 250mg – 500mg 4 times a day for 7 days.

Birth to 12 years of age: 12.5mg to 25mg/kg/dose every 6 hours

EXCEPT

Neonates: week 1 of life give every 12 hours

Week 2-4 of life give doses every 8 hours

When patient is allergic to penicillins the give:

Erythromycin (oral)

ADULT and CHILD (10mg/kg/dose) over 8 years:

250-500 mg every 6 hours

Up to 4 g daily in severe infections;

CHILD up to 2 years: 125 mg every 6 hours,

CHILD 2-8 years: 250 mg every 6 hours,

Duration: every 6 hours for 5 days

When the bacterial infection has healed then treat the scabies with

Benzyl benzoate 25%

ADULT: Use full strength (around 100 ml will be required to treat an adult)

Note: Dilution reduces efficacy, permethrin is a better choice.

CHILD: dilute 1:1 with water (25ml with 25ml of water will provide enough lotion to treat a child)

Infants: dilute 1:3 with water (5 - 10ml with 10 -20ml of water will provide more than enough to treat an infant)

Wash the patient; apply the product all over the body, except for the face and the mucous membranes; leave the product on the body for 24 hours (12 hours for children under 12 years), wash and repeat treatment after 5 days. A third application may be necessary.

Children 15kg to adults: 0.2mg/kg single dose: Permethrin Cream 5%

ADULT: Apply over whole body and wash off after 8-12 hours;

CHILD: Apply over whole body including face, neck, scalp and ears; if hands washed with soap within 8 hours of application, they should be treated again with cream.

Note: Manufacturer recommends application to the body but to exclude head and neck. In young children, however, application may need to be extended to the scalp, neck, face, and ears; this extended application may also be necessary for the elderly, for the immunocompromised and for those who have experienced treatment failure.

The itching may continue for days or weeks afterward. This may be relieved with:

6 – 12 years 2mg every 4 to 6 hours (Maximum 12mg per day).

Promethazine, oral

ADULT: 25 mg at night, increased to 25 mg twice daily if necessary

CHILD under 2 years: not recommended

(Child over 2 years: 0.125mg/kg/dose every 8 hours or 0.5mg.kg at night)

CHILD 2-5 years: 5mg once to twice a day,

CHILD 5-10 years: 10mg once to twice a day...

Key points

- Persons living in the same house should also be treated.
- In prepubertal children the lotion is washed off after 12 hours.
- Do not continue if rash or swelling develops.
- Hot baths and scrubbing should be avoided.
- It is an irritant drug, avoid, contact with the eyes, broken skin or sores and mucous membranes.
- Do not use on broken skin or areas infected with bacteria. Treat the skin damage or infection first, then after it has healed use benzyl benzoate
- When mothers are breast-feeding avoid application to the nipples.
- In case of ingestion do not induce vomiting, refer to the clinic. Keep out of reach of children.
- The itching may take days or weeks to disappear.
- Refer if there is severe secondary infection, if glands are swollen or if there is fever.

Pediculosis; An infestation of the hairy parts of the body with lice.

There are three types' Pediculosis investations:

a. Head louse. Pediculosis capitis

b. Body louse

. Pediculosis humanis (Also can transmit typhus fever)

c. –Pubic louse or crab louse (Phtherus pubis)

All transmitted by intimate contact between humans, e.g. sex, family and institutions.

Symptoms/Signs

Eggs (nits) appear as fixed white specks on the hair. Body lice live in the seams of clothing and only come to the skin to feed.

Bite marks may be apparent and the skin will be itchy.

Secondary eczema and infection may be present.

Non-drug treatment

Use a fine tooth comb to comb out the eggs and dead lice after treatment. The head can be shaved but it may not be necessary. Do not shave the pubic area.

Treat the whole family as the conditions spreads easily.

Regularly wash bed linen and clothing in warm water and leave in the sun to dry.

Drug treatment: Treat the lice with

Benzyl benzoate 25%
ADULT: Use full strength (around 100ml will be required to treat an adult)
Note: Dilution reduces efficacy.
CHILD: dilute 1:1 with water (25ml with 25ml of water will provide enough lotion to treat a child)
Infants: dilute 1:3 with water (5 - 10ml with 10 -20ml of water will provide more than enough to treat an infant)
Wash the patient; apply the product all over the body, except for the face and the mucous membranes; leave the product on the body for 24 hours (12 hours for children under 12 years), wash and repeat treatment each week for up to 3 weeks.

Or use

Permethrin) cream rinse/ lotion
Apply to clean damp hair and leave for 10 minutes before rinsing. Do not apply to broken skin or sores. Avoid contact with the eyes.

Ticks can be can be irradiated by washing the hair in 50% vinegar and then combed with a comb socked in 50% vinegar.

Key points

- Refer if there is secondary infection, swollen glands or fever.
- Do not use commercial insect sprays, they can cause severe illness
- The lotions used for the treatment of lice are toxic when swallowed.

14.5 Skin inflammatory conditions

14.5.1 Eczema

An itchy skin that could be reacting to a number of factors. The types of eczema include:

Allergic contact dermatitis: results from an acquired allergy after skin contact with particular chemicals or drugs.

Atopic dermatitis/eczema: often a personal or family history of Atopic disease e.g. asthma, hay fever. Cause is not known.

Infantile eczema: usually appears at 3 months with oozing and crusting affected the cheeks, forehead and scalp. (The term cradle cap usually refers to seborrhoeic dermatitis)

Flexural eczema: affects the flexor surfaces of elbows, knees and nape of neck.

Dermatitis

Chronic fluctuating inflammatory condition of the skin. It may start at the age of 2 to 6 months and can spontaneously resolve around the age of 30 years.

Starts on the face and is characterized by red, webbing crusted lesions, spreads to the hand, flexures of the knee, elbows, wrists, ankles and sides of the neck..

☞ Itching is predominant. Temperature and humidity exacerbarate the condition.

☞ An oral antihistamine may be required to relieve itching which may be severe:

. Contact Dermatitis

Contact dermatitis / eczema are due to contact of the skin with irritants or allergens.

☞ The rash is confined to a specific area and has often clear boundaries.

☞ Cosmetics, hair dyes and chemicals used in washing clothes are common causes.

Exfoliative Dermatitis

Is an inflammatory condition of the skin affecting a large area of the whole body? The cause is unknown although it may be precipitated by other skin conditions such as psoriases. Also drugs as Penicillins, barbiturates, streptomycin or phenytoin may be the cause.

☞ Sudden onset, wide-spread erythema, fever, shivering and malaise, sometimes purities.

☞ In its progress the skin becomes thick and dry. After some weeks the skin, scalp hair and nails may shed

☞ In chronic cases this may lead to hypothermia, fluid loss and in susceptible patients to respiratory infection and heart failure.

Sebborrhoeic dermatitis

Is characterized by dry or greasy scales affecting the scalp, eye brows, external ears and the area behind the ears. It is generally resolved by medicated shampoos for dandruff.

Symptoms/Signs

Itchy red rash or rough and dry skin appears on inner surfaces of elbows, knees and creases of the neck. Very itchy at night. Can become chronic and infected

Papules, blisters and oozing characterise the lesions when acute. There is thickening, prominent skin lines and scaling when chronic.

Non-drug treatment

Remove any obvious cause e.g. skin irritants or allergens.

> If eczema is weepy, wash with saline then dry Drug treatment

Avoid soap and cosmetics if it is the cause.

> Benzoic acid 6% and salicylic acid 3% ointment = Whitfield's ointment)

If skin is scaling add a keratolytic preparation such as:

> Salicylic acid ointment 2% Apply twice a day as needed
>
> OR
>
> Coal tar ointment 5% in salicylic acid ointment 2%
>
> Apply twice a day as needed.
>
> Betamethasone ointment/cream 0.1%
>
> Apply once or twice a day for not more than 2 weeks. Use only on body, not face or delicate skin
>
> OR Hydrocortisone cream/ointment 1.0%

Apply twice a day for not more than 2 weeks. (Use on delicate skin or face)

Treat secondary infections:

Cloxacillin, oral, at least 30 minutes before food

ADULT: 250mg – 500mg 4 times a day for 7 days.

Birth to 12 years of age: 12.5mg to 25mg/kg/dose every 6 hours
EXCEPT

Neonates: week 1 of life give every 12 hours

Week 2-4 of life give doses every 8 hours

When patient is allergic to penicillins the give:

Erythromycin (oral)

ADULT and CHILD (10mg/kg/dose) over 8 years:

250-500 mg every 6 hours , Up to 4 g daily in severe infections;

CHILD up to 2 years: 125 mg every 6 hours,

CHILD 2-8 years: 250 mg every 6 hours, every 6 hours for 5 days

Key points.

- Refer if no improvement after 2 weeks or the eczema is severe, acute and moist (weeping).
- If lesions are wet use creams, if dry use ointments.
- Use steroids sparingly (apply thinly and avoid prolonged use as these will cause thinning of the skin.
- Betamethasone is more potent than hydrocortisone and should only be prescribed by a specialist.
- Do not use corticosteroids on weepy skin.
- Use non drug measures
    - Avoid hot water
    - Avoid friction with rough clothing
    - Avoid soaps and rough drying (pat dry with towels)
    - Wrap in wet dressings especially at night'
    - Wrap hands to stop / lessen scratching

14.6 Psoriasis:

Is a common recurrent chronic skin condition of an unknown cause. There might be genetic predisposition. It is characterized by thickening and scaling of the skin. Emotional disturbances, over exposure to the sun, hormonal changes and certain drugs e.g. chloroquine may precipitate individual attacks.

- The onset is gradual and usually occurs in young adults. Proliferation of epidermal cells results in well defined slightly raised lesions covered by silvery scales.
- Common sites involve scalp, elbow, knee and lower back. Less common I involvement of the axilla and anogenital region. There may be remission and relapse...

Treatment of eczema

- for mild conditions, treatment other than reassurance and an emollient and keratolytic may be unnecessary

☞ If not responding well, refer to a hospital with a dermatology specialist. Immuno suppressants may be necessary in severe conditions, but can only be given under specialist supervision.

Is a sensation that the patient instinctively attempts to relieve by scratching? It may accompany a primary skin disease or may be a symptom of a systemic disease.

ITCHING

Skin diseases causing itching include:

- Scabies
- Pediculosis (body lice)
- Insect bites (fleas, bed bugs)
- Dry skin (especially in the elderly)
- Atopic eczema
- Dermatitis and contact dermatitis
- Urticaria
- Prickly heat

Systemic conditions causing itching include:

- Obstructive liver disease

- Uraemia (in renal failure)
- Malignancies
- Pregnancy – during the latter months itching may occur
- Drugs e.g. chloroquine and other antimalarials
- Psychogenic – that is no obvious cause but itching occurs from the patients mind.

Non-drug treatment

The cause of the itching should be identified which could be a skin condition or an underlying systemic condition.

Avoid contact with substances known to cause itching.

If itching is due to medicines, then inform the patient that the itching will stop once the treatment is completed or if possible review the treatment and if it is possible then change the drug treatment.

Drug treatment

The following may be useful:

Calamine lotion

Apply as frequently as needed for as long as required

PLUS

Promethazine, oral (BNF155)

ADULT: 25 mg at night, increased to 25 mg twice daily if necessary

CHILD under 2 years: not recommended

(Child over 2 years: 0.125mg/kg/dose every 8 hours or 0.5mg.kg at night)

CHILD 2-5 years: 5mg once to twice a day,

CHILD 5-10 years: 10mg once to twice a day

.

Key points: Important to identify the underlying cause of itching and where possible treat the cause.

- In infants / young children should ensure fingernails are kept short and it is also helpful to bandage / glove the hands at night time and / or to cover the rash.

CHAPTER 15 MESCELANIOUS CONDITONS.

15.1 Pain management

15.1.1 Pain management in adults

15.1.1.1 Mild pain

The drug of first choice for analgesia (pain relief) as well as antipyretic (to reduce fever) and anti-inflammatory actions is:

> Aspirin, 300 mg, oral, with food
>
> ADULT: 1 tablet three times a day, increasing to a maximum of 6 tablets daily if needed.
>
> Do not give to children under 16 years of age
>
> Children can use ibuprofen

Aspirin (acetylsalicylic acid) should not be taken by patients with peptic ulceration, blood clotting defects, low platelet counts, who are breast feeding and who are due to go for surgery,

Therefore use:

> Paracetamol, 500 mg, oral
>
>) 1 to 2 tablets every 4 to 6 hours (not more than 8 tablets in 24 hours) if required.

15.1.1.2 Moderate Pain

When mild pain management is inadequate then introduce in addition to Aspirin or Paracetamol the following:

> Codeine phosphate, oral
>
> 15-60 mg every 4 hours, maximum 240 mg/day.

15.1.1. 3 severe pain)

When pain is acute and severe, codeine should be stopped, the mild pain relief can be continued (either aspirin or Paracetamol) and morphine) can be introduced. Morphine is the drug of choice.

Morphine, injection, intramuscular or subcutaneous

10mg every 4 hours if necessary.

If giving by slow intravenous injection, give only quarter to half the corresponding intramuscular (or subcutaneous) dose.

Note: when calculating the intramuscular (or subcutaneous) dose, use one third of the existing or estimated oral dose.

Side effects of morphine

These are generally transient and treatable and should not contraindicate the continued use of morphine:

Constipation – very common and patients should be encouraged to have high fibre diet and high fluid intake. Regular laxative use may be needed in addition.

Nausea and vomiting – May be beneficial to give an ant emetic for the first three days or more if problem continues.

Metoclopramide

, oral

10 mg three times daily as required; (5 mg in young adults 15-19 years under 60 kg).

OR

Promethazine,) 25 mg

12, 5 mg to 25 mg, repeated at intervals not less than 4 hours (usual maximum, 100 mg in 24 hours)

If vomiting is severe then ant emetics may need to be given parent rally or rectally.

Drowsiness, dizziness or confusion – usually improves in 3 to 5 days. Do not discontinue morphine.

Allergy – very rare with morphine, however, an alternative is less potent than morphine.

Tramadol) injection, intramuscular, intravenous

50 – 100 mg every 4 – 6 hours (maximum 600 mg daily)

Tramadol, oral

50 – 100 mg not more often than every 4 hours; total of more than 400 mg daily by mouth not usually required.

Have fewer of typical opioid side-effects (notably, less respiratory depression, less constipation and less addiction potential).

Key points

- Pain can be either acute or chronic and in each case should be graded as mild, moderate or severe.
- Pain may occur at more than one site and the cause at each site may be different and therefore require different treatment.
- Anxiety, depression and fear should be assessed and discussed. If overlooked these underlying conditions may aggravate the pain making control more difficult.
- In chronic pain, long-term pain relief is required. Analgesics should be given orally wherever possible and should be given at regular intervals to prevent recurrence of pain. In the case of chronic pain analgesics should not be given “as required” except when “break through” doses are needed.
- Tolerance, addiction and respiratory depression are very unlikely if doses of morphine are adjusted to the needs of individual patients.
- Long-term use of morphine should be restricted to cancer patients.

Age or weight	Paracetamol) tablets 500mg	Paracetamol Syrup 120mg/5ml	Paracetamol) suppository 100mg
2 months up to 6 months (4-<7kg)	1/8 = 62.5 mg	2.5ml (1/2 teaspoon) = 60 mg	½ = 50 mg
6 months up to 3 years (7 - < 14kg)	¼ = 125 mg	5.0ml (1 teaspoon) = 120 mg	1 = 100 mg
3 years up to 5 years (14 - <19kg)	½ = 250 mg	10ml (2 teaspoon) = 240 mg	2 = 200 mg
5 – 8 years (19 - < 21kg)	½ = 250 mg	-	2 = 200 mg
8 – 11 years (21 - < 30kg)	¾ = 375 mg	-	-
11 – 15 years (30 - < 40kg)	1 = 500 mg	-	-
15 + years (40+kg)	2 = 1000 mg	-	-

)

children

Mild pain

Aspirin is contraindicated in children under 16years of age therefore use:

Paracetamol, oral or rectal
15mg/kg 4-6 hourly to max of 90mg/kg/day

Always calculate the dose of Paracetamol according the weight of the child.

To assist with calculating the correct dose the following chart can be used as a guide.

These doses may be given every 4 – 6 hours if necessary, maximum 4 doses in 24 hours. (Mart.73)

Moderate pain

Continue the Paracetamol but in addition give:

Codeine phosphate - in hospital only

0.5 mg/kg every 4 hours; (maximum 3 mg/kg/day)

To prevent constipation increase fluid intake and ensure high fibre diet where feasible.

Severe pain

Continue the Paracetamol, stop the Codeine but in addition give:

Morphine injection, intramuscular or subcutaneous (0.15mg/kg)

Give every 4 hours if necessary.

Up to 1 month – 150 micrograms/kg

1-12 months – 200 micrograms/kg

1-5 years – 2.5-5 mg

6-10 years – 5-10 mg

If giving by slow intravenous injection, give only quarter to half the corresponding intramuscular or subcutaneous dose.

Review the pain management after every 2 to 3 doses and adjust if necessary until pain is well controlled.

Patients with nausea and vomiting may benefit from:

Metoclopramide, oral

1-3 years (10 -14 kg) – 1 mg 2 to 3 times daily NO

3-5 years (15 -19 kg) – 2 mg 2 to 3 times daily

5-9 years (20 – 29 kg) – 2 mg 3 times daily

9-14 years (30 kg and over) – 5 mg 3 times daily

How do they get these small doses from a 10mg tab? No syrup on EML

Metoclopramide should not be to given less than 12 months of age.

Key points

- Pain in children needs careful and regular assessment, as children may not complain of pain. Babies also experience pain and may require analgesics. Parents are good judges of their child's pain.
- When available/necessary suppositories should be used.
- If the pain cannot be treated then refer for specialist management.

15.2. FEVER

- Measure axillary temperature. 38°C or over indicates significant fever.
- Investigate (by clinical assessment, assisted, where available, by laboratory tests) and treat the underlying cause.
- in neonates, failure to feed may precede development of fever in cases of septicaemia.
- Tepid sponging with lukewarm (not icy!) water may be used as a supportive measure to reduce fever.
- Antipyretics should not be given for more than 3 days. Prolonged fever may indicate another condition and/or failure of treatment.

Adults:

Acetylsalicylic acid 600 mg orally every 6 hours as required, preferably after food., Alternative:
Paracetamol 1 g orally every 6 hours as required. ((Max: 4 doses/24 hours)

:

ASPRIN SHOULD NOT BE GIVE TO UNDER 16 YEARS OF AGE, PARTICULARY WHEN FEVER IS OF UNKNOWN ORIGIN I

NB. Do not use Acetylsalicylic acid in children with chicken pox or influenza because of the risk of Reye's syndrome. Paracetamol or Ibuprofen may be given as an alternative:
In children and pregnant women always suspect malaria and dengue fever in this case other symptoms may be apparent such as bleeding in the eye and painful jaws.

15.3. Superficial injuries

- For local cleansing: **Chlorhexidine** solution 5%
- Alternative: **Povidone iodine** solution 10%

Drug treatment

If the wound is grossly contaminated, give:

- **Anti-tetanus immunoglobulin** 250 ml
- **Tetanus Toxoid Vaccine** according to YTG 7.6.3
- **Benzylpenicillin** 1 MU (children 25,000 U/kg) i.m single dose followed by
- **Amoxicillin** 250 mg (children 12.5 mg/kg) every 6 hours for 7 days.

If allergic to penicillin: **Erythromycin** 250 mg orally (children 10 mg/kg) every 6 hours for 5 days.

15.4 Open wound)

Management

 If possible, ascertain the cause of the wound: it has important implications for the treatment.
 Fresh (<6 hours) wounds can be cleaned and sutured.
 any skin damage overlying a fracture **makes it an open fracture**.
 Penetrating wounds should not be sutured but be explored to assess deeper tissue damage.

Adults and Children:

Prevention of Infection: **Wound cleansing** is the most importing therapy to prevent infection particularly in open wounds:

☞ Rinse the wound copiously with **Povidone iodine** solution 10%, followed by: **Sodium Chloride** 0.9% (Normal Saline) rinse.

Drug treatment

- **Lignocaine hydrochloride** injection 1% for local infiltration or as a peripheral nerve block.
  Maximum: adults 25 ml, children 0.4 ml/kg.
- **If lignocaine 1% + adrenaline** 1:200,000 injection is used instead the corresponding
  Maximum doses are: adults 40 ml, children 0.7 ml/kg.

☞ If the wound is grossly contaminated, give:

- **Anti-tetanus immunoglobulin** (ATI) 250 ml
- **Tetanus toxoid Vaccine** according to YTG 7.6.3
- **Benzylpenicillin** 1 MU (children 25,000 units/kg) i.m single dose followed by **Amoxicillin** 250 mg (children 12.5 mg/kg) every 6 hours for 7 days.

If allergic to penicillin: **Erythromycin** 250 mg orally (children 10 mg/kg) every 6 hours for 5 days.

15.5 Animal & Human bites

The method of repair used for bite wounds depends on the risk factors associated with the particular injury. Healing by delayed repair should be considered in high risk bites; where as primary closure can be safely performed in low risk bites.

Management:

- Avoid suturing any kind of bite wound.
- The combination of local wound treatment, passive immunization with rabies immunoglobulin (RIG), and vaccination is recommended for all severe exposures to rabies
- Thorough and prompt local treatment of all bite wounds and scratches which may be contaminated with rabies virus is very important as elimination of the rabies virus at the site of infection by chemical and physical means is the most effective method of protection
- Avoid contact with the patient's saliva, which is potentially infective.

Perform Wound Cleansing:

- Flush and cleanse (scrub) the wound with **Chlorhexidine** solution 5%

Alternatives: **Povidone iodine** topical solution 10%, **soap** or **detergent**.

Drug treatment Adults and Children;

Give **Rabies vaccine**, only if necessary according to the Recommendations in the rabies section.

- **Phenoxymethylpenicillin** 500 mg (children 25 mg/kg) every 6 hours for 7 days.
- Give **Tetanus toxoid vaccine**, if indicated: see YTG 7.6.3.

Give **Anti-tetanus immunoglobulin** (ATI) 250 ml

For Animal Bite

☞ If possible, capture and observe the animal for 10 days. If it is still alive at the end of this period, it could not have been rabid.

15.6 Insect stings and bites, and snake bites

15.6.1 Envenomation by insects

 Bees, wasps: usually benign, but may provoke either laryngeal oedema or anaphylactic shock

In the case of spiders and scorpions: majority are benign. If a truly toxic species is thought to be responsible, apply first aid and supportive measures **as for snake bite** (see below).

15.6.2 Snake bite)

Management:

- Patient should be immobilized, with the bitten part held lower than the rest of the body.
- clean the site of the bite, but do NOT incise. If venom has been spat into the eye, wash with copious amounts of clean water.
- Look for fang marks. If definitely absent, no further action is necessary. If present or unsure, follow management as outlined below.
- in all cases give first:

- **Tetanus toxoid vaccine**, if indicated:

- **Anti-tetanus immunoglobulin** (ATI) 250 ml if snake has actually bitten:

 Treat shock if any

☞ Give analgesics for pain if not severe:

- **Acetylsalicylic acid** 600 mg, preferably after food, every 6 hours as required.

Alternative: **Paracetamol** ½-1 g (children: 10 mg/kg) every 6 hours as required.

If pain is severe:

- **Pethidine** 25-50 mg s/c or i.m (children: 0.5-2 mg/kg i.m) may be required if pain is severe, repeated after 4 hours if necessary.

 Cleanse the wound with **Chlorhexidine** solution 5%
Alternative: **Povidone iodine** topical solution 10%

 Apply firm constant pressure to the site of the bite; apply a crepe bandage firmly to the entire limb.

☞ Immobilize the limb with a splint and immobilize the patient.

Note: Venom diffuses mainly via the lymphatic, not via blood vessels. Tourniquets are thus of little use. If a tourniquet is used, apply it high on the thigh, release it once every 30 minutes, and leave it definitely not longer in place than 90 minutes.

Further Management

 Transfer the patient to a hospital with facilities to give snake ant venom.

 in the hospital, remove any constrictive bandage if applied. Observe the patient for 24 hours. If there are no signs of Envenomation discharge the patient.

 Signs of Envenomation are:

Systemic poisoning (e.g. hypotension, vomiting, neurotoxicity, haemotoxicity, or spreading local damage such as progression of swelling judged by measurements of the circumference at a point marked on a limb.

 In case of Envenomation, snake venom antiserum can effectively reverse systemic poisoning, even if given hours after the bite. However, snake venom antisera are costly, problematic to store, difficult to use, sometimes dangerous (they may cause anaphylaxis!), and of arguable efficacy. Therefore, they should only be used for patients with true signs of Envenomation.

Administration of snake venom antiserum:

 Ensure that the anti-venom solution is clear.

- Check that the patient has no history of allergy (keep a syringe with a 0.5 ml **Adrenaline** injection 1/1,000 ready for s/c use, in case of allergy).
- Give 100 ml of the **Snake venom antiserum** as an IV .infusion, diluted in 300 ml of normal saline (children 0.4 ml/kg). The infusion should be given slowly for the first 15 minutes (most reactions will occur within this period). Thereafter the rate can be gradually increased until the whole infusion is completed within 1 hour.

NOTE. **NEVER** give snake venom antiserum by any other route than IV

If there is no clinical improvement by the end of the infusion, the same dose should be repeated. •

If there is a reaction to the ant venom, give **Adrenaline** 1/1,000, 0.5 ml s/c. cautiously restart the infusion, repeating the adrenaline injection if necessary.

15.7 Burns

Burns are classified as follows:

- first degree (only reddening of the skin),
- second degree (if there are blisters), or
- Third degree (if the skin is destroyed, exposing the underlying tissues).

 Important complications are:

- **Shock** due to a combination of loss of body fluid, severe pain and fever. Hence rehydration and pain and fever management are crucial; specifically in severe degrees of burns.
- **Infection**; large areas of damaged skin leaves tissue open to infections, including tetanus. Hence, keep the burned area clean.
- **Contractures** can develop from shrinking scar tissue. Hence **early referral** is an important preventive measure.

- Burns are by nature (initially) sterile. The aim of the treatment is to speed healing while minimizing the risk of infection.

Management:

- Comfort and reassure is an important component of management of the patient with burns.

Before anything else, determine the degree of the burn according to the area affected. Use the following table to calculate the Body Surface Area affected:

- All cases **of burns with chemical substances** have to be cleaned out with copious amounts of clean water before any wound treatment.

Body surface (BSA)	Age < 2 (%)	Age 2 or over (%)
Entire head	18	9
Upper limb (each)	9	9
Trunk (each side)	18	18
Lower limb (each)	14	18
Perineum	1	1

General rules for referral:

- **First degree** burns do **not** need to be referred
- **Second degree** burns **sometimes** need to be referred
- **Third degree** burns **always** need to be referred
-

Patients with burns of more than 9% of body surface area (BSA) should be referred to hospital on IV fluid therapy, do not dress the burns.

- Deep burns of the face, neck or hands and burns into underlying tissues (e.g. muscles, fat, tendons, nerves etc.) should also be referred for further assessment.

Treatment

A. First degree burns

- Cool with water to prevent further tissue damage and to relieve pain: continue cooling for at least 15 minutes

For pain give: Adults:

- **Acetylsalicylic acid** 600 mg every 6 hours as required, preferably after food, for 3 days.

(Not recommended for children)

Alternative: **Paracetamol** 500 mg-1 g every 6 hours as required.

Children: **Paracetamol** 10 mg/kg every 6 hours as required

B. Second degree burns without blisters:

- Put burned body part in cold water immediately.

For pain give: Adults:

- **Ibuprofen** 400-600 mg every 6-8 hours after food with plenty of water.

Children: **Paracetamol** 10 mg/kg every 6 hours as required.

C. Second degree burns with blisters:

- Put burned body part in cold water immediately.
- do NOT open the blisters as they protect against infection.

If blisters are broken, gently cleanse the lesion with:

- **Chlorhexidine** solution 5%.

Alternative: **Povidone iodine** topical solution 10%

- Apply **Silver Sulfadiazine** 1% cream to affected area

NB. Silver sulfadiazine may NOT be used in term-pregnant women, and infants younger than 1 month.

- Reapply Silver Sulfadiazine after 2-3 days, and as necessary thereafter.

For pain give: Adults:

- **Ibuprofen** 400-600 mg every 6-8 hours after food with plenty of water.

Children: **Paracetamol** 10 mg/kg every 6 hours as required.

D. Third degree (deep) burns:

Management in hospital only!

Give intravenous fluid according to a calculation of fluid replacement. A general formula that may be used for the first 24 hours is:

- **Ringer's lactate**: 1-1.5 ml/kg/% BSA burned.

  Give ½ in the first 8 hours,

  ¼ in the second 8 hours and ¼ in the third 8 hours.

- In addition, give the patient **ORS** and let him/her drink freely.

NB.1 Albumin has NO advantage over Ringer's Lactate

NB.2 The object of fluid therapy is to maintain normal physiology

As reflected by urine output (0.5-1 ml/kg/hr), vital signs and mental status.

☞ Gently cleanse the lesion with clean water, followed by

- **Chlorhexidine** solution 5%.

Alternative: **Povidone iodine** solution 10%

- Apply **Silver sulfadiazine** 1% cream

NB. Silver sulfadiazine may NOT be used in term-pregnant women, and infants younger than 1 month.

 Re-apply **Silver sulfadiazine** after 2-3 days, and as necessary.

Pain management

Mild to moderate pain: Adults:

- **Indomethacin** 25-50 mg orally every 6-8 hours, or,
- **Ibuprofen** 400-600 mg every 6-8 hours after food with plenty of water.

Children: **Pethidine** 0.5-2 mg/kg repeated every 4 hours as required.

Moderate to severe pain: ADULTS:

- **Pethidine** 25-100 mg s/c or i.m, every 4 hours as required.

Alternative: **Morphine** 10 mg (15 mg in heavier, well-muscled patients) s/c or i.m, every 4 hours, as required.

Children: **Pethidine** 0.5-2 mg/kg i.m every 4 hours as required.

Alternative: **Morphine** s/c or i.m, repeated every 4 hours, as required:

CHAPTER 16 MEDICAL MERGENCIES

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16.1 Diabetic emergencies

16.1.1 Hypoglycaemia (Low blood glucose)

Occurs when the blood glucose level becomes so low that symptoms and signs occur. It can occur at any time of the day or night and are caused by:

- Inappropriately high doses of insulin or oral anti-diabetic drugs
- Patients takes the treatment but forgets to eat or delays having a meal
- Patient undertakes some unplanned exercise or exercise that is unusual.
- Alcohol intake

Signs & symptoms

Pale skin, sweating, shaking, palpitations / tachycardia and feeling of anxiety, dizziness, headaches. In young babies may also cause irritability and apnoea / cyanosis.

Hunger, inappropriate or abnormal behaviour, confusion, coma and seizures.

Hmmm this is a bit tricky as you talk about diabetes only in adults (and I am not advocating you include children as it is a relatively rare diagnosis – fortunately I saw none while I was in ET – and the treatment needs specialist paediatrician – not to mention insulin which, at least in my time, was not available!) but now you talk about / include children in the "complications of diabetes" section. Maybe leave out that heading and just list it as hypoglycaemia.

What about a definition of hypoglycaemia – i.e. in babies < 1 month 2.5mmol and in kids 4 mmol??

Treatment

Determine cause of hypoglycaemia (it is a symptom and not a diagnosis)

Mild to moderate cases

If patient is conscious and cooperative then give a sugar containing food e.g. sweets containing sugar or soft drink containing sugar (not "diet" drinks as these do not contain sugar) or glass of milk or fruit drink and a tablespoonful of honey.

This must be followed by a meal or snack that contains carbohydrates e.g. sandwich or dried fruit etc.

Severe cases (i.e. patient is unconscious or unable to drink)

Give:

> Dextrose50%, ADULT: 25 ml over 3 minutes through a large vein followed by 500 ml of Dextrose 5% every 4 hours until the patient is able to eat normally.

When the person is awake, give them something to eat e.g., 1 piece of fruit, 4 biscuits or 1 glass of milk

Note: The excessive use of dextrose 50% has caused deaths in children due to hyperosmolality thus dextrose 10% is recommended in children.

Patients should wake within 4 to 5 minutes following IV Dextrose.

Hypoglycaemia due to a long-acting oral treatment can take prolonged treatment with IV Dextrose.

Key points

- Educate patients about hypoglycaemic symptoms. Patients should be encouraged to carry sweets or sugar containing food for these emergencies. The patients close relatives and friends should be instructed in management of hypoglycaemic attacks.
- If a diabetic is confused or losing consciousness there should be no hesitation is administering a trial injection of IV dextrose.
- If the period of hypoglycaemia is prolonged or extremely severe and/or associated with a seizure complete recovery may take several hours even though blood glucose levels are restored to normal. Check for other causes of the unconscious state.

16.1.2 Diabetic ketoacidosis

(DKA)

Diabetic ketoacidosis is common in newly diagnosed type 1 diabetics and can be fatal.

It is caused by:

- Previously undiagnosed diabetes
- Interruption of insulin therapy i.e. the patients stops the insulin therapy for various reasons
- Stress of another illness e.g. infection, stroke etc

It is a medical emergency and patients should be referred to hospital immediately.

Symptoms/signs

Passing excessive urine

Drinking very large amounts of water

Nausea, vomiting

Abdominal pain

Dehydration

Deep and fast breathing

Signs of hypovolaemic shock: Low blood pressure, fast / weak pulse

Confusion, stupor or unconsciousness

Treatment

The principles of management are:

- Replace the fluid losses
- Replace the electrolyte losses and restore acid-base balance
- Replace deficient insulin
- Monitor blood or urine glucose and urine ketones regularly
- Monitor vital signs and urine output regularly
- Seek the underlying cause and treat

Fluids

Sodium chloride 0.9% is the fluid of choice and in **adults** as much as 7 or 8 litres of fluid may be required in 24 hours. Give:

Sodium chloride 0.9%

ADULT: 15-30 ml/kg/hour over the first 2 hours, then reduce to 7.5ml/kg over the third and fourth hours then give according to further clinical assessment thereafter.

Caution: specialist care is needed when treating children as rapid rehydration increases the risk of precipitating acute cerebral oedema.

In children aim to give approximately **200ml/kg in 24 hours**.

For rehydration. Give:

> Sodium chloride 0.9%
>
> CHILD: 20 ml/kg fast then give half the remaining volume in 8 hours then give the remaining volume in 16 hours.

Electrolytes

Patients are depleted in total body potassium. Ideally potassium therapy should not be initiated until serum potassium levels area known and adequate in- and output has been established.

Initial therapy should commence with potassium 20mmol per hour at about the second hour. Then adjust the infusion rate according to the serum potassium level as follows:

> Potassium chloride solution, 1.5 mmol/ml < 3 mmol/l:
>
> Give 39 (40) mmol/hour = 25**mL**/hour
>
> 3-4 mmol/l: give 26 (25) mmol/hour= 15**mL**/hour
>
> 4-5 mmol/l: give 13.4 (15) mmol/hour=10**mL**/hour
>
> > 5 mmol/l: stop infusion of potassium

Insulin

Only short acting insulin should be used in the treatment of diabetic ketoacidosis. The intravenous route is preferred if methods are available to regulate the infusion rate.

Commence intravenous insulin therapy with an infusion rate of 2-6 units per hour (CHILD: 0.1units/kg/hour).

The intramuscular or s/c route can be equally successful with 8-10 units given every hour.

Monitoring

Blood glucose levels should be monitored every hour

When blood glucose level approaches 12-15mmol/L the rate of insulin infusion should be halved. Change to subcutaneous route if IM route has been used.

Infusion fluid should be changed to Dextrose 5%

Monitor potassium and acid-base status at 2 to 4 hourly intervals

Search thoroughly and treat the underlying causes.

Key points

- Sodium bicarbonate injection should be used only in extreme acidosis and if complete biochemical data are available (arterial pH less than 7 or bicarbonate less than 9mmol) This is all a bit tricky – at last count there was no blood gas machine available in East Timor – well not one that was functioning anyway….

- In the months after diagnosis insulin requirements may decline and the pancreas continues to produce some insulin. Eventually the insulin produced by the pancreas declines and injected requirements are increased. Explain this to the patient. Should this be in here? – treatment of DKA

16.2 Status epilepticus

Two or more generalised seizures without regaining consciousness, or continuous partial seizures. See above

This condition may be life-threatening and is therefore a medical emergency.

Treatment

1st aid – as above

Protect the airway – if necessary insert an oropharyngeal tube, remove false teeth.

Give oxygen if available

Give:

Dextrose 50%, intravenous (IV at 3mL/min)
ADULT: 50 ml
CHILD: 10-20 ml

Give:

Diazepam, intravenous
ADULT: 10-20mg, slowly (0.5ml per 30 seconds) repeat if necessary after 30-60 minutes. May be followed by intravenous infusion to maximum 3mg/kg over 24 hours.
CHILD: 0.1-0.4mg/kg, slowly, repeated every 15 – 30 minutes as required)*
If not possible intravenously then remove the needle and give rectally 0.3 – 0.5 mg/kg/body weight.

Key points

- Febrile convulsions should be treated with tepid sponging, Paracetamol and diazepam as above if necessary. They do not require long term anticonvulsants unless recurrent and with neurological deficit.
- If seizures cannot be controlled arrange referral
- Phenobarbitone or sodium valproate, but NOT phenytoin or carbamazepine, will prevent recurrence of febrile convulsions

For kids I think there should be something on febrile convulsions

Definition: generalised seizure in an otherwise normal child that occurs in the setting of fever (> 38oC) in a child aged 6 months – 6 years and

ANAPHYLACTIC AND OTHER SHOCKS

Shock is a complex clinical syndrome of various aetiologies. The common factor is the inability of the circulatory system to maintain cell perfusion and function.

16.3 shock

16.3 1 Anaphylactic shock

General management

- The priority is to give adrenaline i.m.
- Determine and remove the cause.
- Lay the patient down, keep him/her warm, and elevate the legs.

Drug Treatment

- **Adrenaline** 1/1,000, 1 ml (children: 0.01 ml/kg) i.m. This may be repeated (several times if necessary) every 10 minutes according to BP and pulse until improvement occurs.
- **Sodium chloride 0.9%**, 20 ml/kg by IV infusion over 60 minutes.

NB. In case of **shock due to allergy** antihistamines orally are a useful additional treatment:
Adult

- Promethazine hydrochloride 25mg one or twice daily until symptoms stop

Children older than 1 year:

- **Chlorpromazine HCl 5mg twice daily**.

☞ This is given after adrenaline and continued for 24-48 hours to prevent relapse.

16.3.2. Specific shock conditions

16.3.2.1. Hypovolaemic shock

This is due to internal or external blood loss

Initial management includes an assessment of the patient's airway and the determination of adequacy of ventilation and oxygenation

☞ Apply direct pressure on bleeding external wounds,

- Infuse **Ringer's lactate** IV (isotonic electrolyte solution),

☞ Consider **Blood transfusion** if hypertension still exists after 2-liter fluid challenge

16.3.2.2. Cardiogenic shock

Is a result of the loss of the contracting function of the heart muscles, precipitated by MI or ventricular fibrillation? In the later case fibrillation should be treated first.

The treatment will centre on improving the cardiac filling by:

• Administration of i.v e.g. **Ringers lactate,**

☞ Place the patient in Trendelenburg position,

☞ **Refer** immediately to hospital

• **Dopamine** *5-20 mom/kg/min i.v* in 500 ml **Sodium Chloride** 0.9%, adjusted according to response, until patient recovers.

16.3.2.3. Septic shock

This is a systemic reaction to infection

Patients with sepsis should be treated with

☞ Appropriate antibiotics,

☞ Surgical debridement, and when indicated,

☞ Drainage

16.4 Acute sever asthma attacks (status asthmaticus)

The clinical features of severe life-threatening asthma are:

- Silent chest on auscultation,
- Respiratory rate > 25 breaths / minute in adult
- Tachycardia heartbeat > 120 beats / minute
- Systolic blood pressure < 100 mmHg

If possible, refer patient to a hospital for treatment, before referral

Adrenaline injection 1/1,000, 0.01 ml/kg s/c, (and repeat if necessary after 20 minutes 2 to 3 times only,)

Treatment:

- **Adults: Start treatment before investigation**. **Give OXYGEN** in high concentration, 60 – 100 %
- **Antibiotic** may be given if accompanied by pneumonia
-
- SALBUTAMOL 5mg nebulized a 6 – 8 litres/ min., maximum dose if side effects allows (Tachycardia, arrhythmia & tremor.)
-
- **Hydrocortisone 200mg IV** and prednisolone 30mg/24hr orally.
- **IF NO IMPROVEMENT AFTER 20 MINUTES**
-
- Continue COXYGEN in the same dose
- Nebulized SALBUTAMOL every 15 – 30 minutes
- **Aminophylline 250mg IV**. over 20 minutes (NOT IF THE PATIENT ON PREVIOUS TREATMENT0, alternatively salbutamol 25mg IV. over 10 minutes
- **Hydrocortisone** 200 mg IV single dose, then change to
- • **Prednisolone** 30 mg/day orally in divided doses, every 8 hours, for 3-4 days, then tail off gradually.
- • **Aminophylline** 6 mg/kg by slow IV over 20 minutes, i**f the patient did not take**

Aminophylline or theophylline recently. This may be repeated after 30 minutes. If no response: give aminophylline 0.6 mg/kg/hour as an IV infusion in glucose 5% until patient responds.

Treatment: Children:

Administer **Oxygen** if there is cyanosis or restlessness

- **Hydrocortisone** 5-10 mg/kg IV single dose, followed by
- **Prednisolone** 2 mg/kg/day orally in divided doses for 3-4 days,

Then tail off gradually.

- **Aminophylline** 6 mg/kg by slow IV over 20 minutes (watch carefully for cardiac arrhythmias , convulsions, or vomiting).

If the child recently took aminophylline or theophylline, administer**:**

- **Aminophylline** 3 mg/kg by slow IV over 20 minutes, if no improvement:
- **Aminophylline** 5 mg/kg by slow IV over 20 minutes (watch carefully).
  This may be followed by IV infusion of 1 mg/kg/hour (children 6 months - 9 years) or 0.8 mg/kg/hour (children 10 - 16 years) in glucose 5%.
- **Antibiotic** may be given if accompanied by pneumonia

The use of **streptomycin or rifampicin** in any other condition than TB is strongly discouraged e an asthma attack!

Annex 1, Drug Interaction Tables

The list is not extensive but relevant to the EML of East Timor

Drug affected	Drugs causing effect	Effect
ACE inhibitors ↑	Anaesthetic Diuretics	↑ Hypotensive effect
ACE inhibitors ↓	Non-steroidal anti-inflammatory drugs	↓ Hypotensive effect
Alpha blockers (Proposing) ↑	Anaesthetics, Antidepressants Beta blockers, Calcium channel blockers, Diuretics	↑ Hypotensive effect
Amiloride / spironolactone ↑	Captopril	↑ Potassium levels
Aminglycosides ↑	High dose frusemide	↑Ototoxicity & nephrotoxic Effects
Anticoagulants ↑	Aspirin	↑ Risk of bleeding
Anticoagulants ↓	Carbamazepine	↑ Metabolism
Anticoagulants/warfarin ↑	Alcohol, Imidazole antifungals	↑ Anticoagulants effect
Antidepressants (tricyclic) ↑	Alcohol, other antidepressants & Anti-epileptics	↑ Sedative effect
Anti-epileptics ↓	Antidepressants (tricyclic)	Lowered threshold
Anti-epileptics ↓	Isoniazid	Inhibited metabolism
Benzodiazepines ↑	Cimetidine	↑ Action
Beta-blockers /Atenolol /propranolol↑	Anaesthetics	↑ Hypotensive effect
Calcium channel blockers ↓	Phenobarbitone, Rifampicin & Phenytoin	↓ Effect
Calcium channel blockers ↑	Anaesthetics	↑ Effect
Calcium channel blockers ↓	Rifampicin	↑ Metabolism
Carbamazepine ↑	Erythromycin, Isoniazid & Cimetidine	↑ Action of carbamazepine

Drug affected	Drugs causing effect	Effect
CNS depressants ↑	Alcohol, Sedative drugs & Phenobarbitone	↑ Action
Corticosteroids ↓	Phenobarbitone	↑ Metabolism
Digoxin ↑	Thiaszides, Frusemide & Quinine	↑ Toxicity
Doxycycline ↓	Carbamazepine	↑ Metabolism
Imidazole antifunguls ↓	Rifampicin & Phenytoin	↑ Metabolism ↓ Plasma conc.
Fluconazol ↓	Antacids, Antimascarinic drugs & Cimetidine	↓ Absorption
Lithium ↑	Diuretics	↑ Toxicity
Metronidazole ↓	Phenytoin	↓ Plasma conc.
Metronidazole.	Alcohol	Antabuse reaction
Neuromuscular blockers ↑	Aminoglycosides	↑ Effects
Non-steroidal anti-inflammatory drugs ↑	ACE inhibitors	↑ Risk of renal damage
Oral contraceptives ↓	Rifampicin, Broad spectrum Abs, Phenobarbitone, Carbamazepine & Phenytoin	↓ Contraceptives effects
Oral hypoglycaemics / insulin ↑	Alcohol	↑ Hypoglycaemics effect
Sulphonylureas ↑ (Glibenclamide/ metformin)	Chloramphenicol, Cotrimoxazole & Fluconazole	↑ Action
Theophylline ↑	Cimetidine, Erythromycin, Oral contraceptives & Calcium channel blockers	↑ Theophylline level

Some Interactions between Drugs and Food & Vitamins

Antibiotics Penicillin Erythromycin	Acidic Foods: Caffeine, Tomatoes, fruit juices	↑ Stomach acid from acidic foods can increase destruction of the drug in the stomach
Metronidazole	Alcohol	Can cause flushing, hypotension, nausea, vomiting.
Tetracycline Ciprofloxacin	Foods rich in calcium, such as milk, cheese, ice cream, yoghurt.	Calcium can decrease absorption of the drug.
If you take **Antibiotics**	You need **Vitamin. K**	BecauseAntibiotic decreased production of Vitamin.K.
If you take **Furosemide & Hydrochlorthiazide**	You need **Ca, K, Mg**	As Furosemide increases excretion of Ca, K, and Mg.
If you take **Isoniazid & cycloserine**	You need pyridoxine	Because these drugs inhibits conversion to active form of nutrient.
If you take **Mineral oil**	You need fat-soluble vitamins, A, D, E & K	Because Mineral oil decreases absorption of fat soluble Vitamins.
If you take **oral contraceptives**	You need Vitamins & trace minerals	Contraceptives. May cause selective malabsorption or increased metabolism turnover
If you take Anti-ulcer,imetidine, Ranitidine,Famotidine or zatidine	You need iron	Alkaline pH decreases absorption

Incompatibilities between Drugs and IV Fluids

Drug	Effect	Solution/incompatibility
Benzylpenicillin Ampicillin	↓ lose potency after 6-8 hrs, (due to acidity)	Dextrose solutions -use within 1 hour
Diazepam, Insulin	↓ effect due to be binding	Plastic containers, tubing-Titrate against response
Aminoglycosides (Gentamicin)	Incompatible	Penicillins Heparin
Hydrocortisone	Incompatible	Heparin, Chloramphenicol & Tetracycline
Oxytocin		At high doses dilute with dextrose, not normal saline
Potassium chloride		Mix thoroughly to avoid 'layering'

Annex 2 Emergency treatment of Poisoning

All patients showing signs of poisoning should generally be admitted to hospital. Patients who have taken poisons with delayed actions should also be admitted even if they appear to be well.

Delayed action poisons include aspirin, iron, Paracetamol, tricyclic antidepressants, (diphenoxylate with atropine = Lomotil), and paraquat; this also applies to modified release modifications. A note should be sent with the patient to the hospital about what is known and what treatment has been give.

It is often impossible to establish with certainty the identity of the poison taken and the quantity of the dose. Fortunately this is usually not important because only a few poisons (such as opioid, Paracetamol and iron) have specific antidotes and few patients require active removal of the poison. Most patients must be treated symptomatically. Nevertheless knowledge of the type of poisoning does help in anticipating the course of events. Generally patient's reports are of little help as they may be confused or may only be able to say that they have taken an undefined amount, possibly of mixed drugs. Parents may think their child has taken something, which could be poisonous and may exaggerate or underplay the risk out of anxiety or guilt, Sometimes the symptoms are due to an illness such as appendicitis.
Accidents can arise from a number of domestic and industrial products (contents of which are not generally known).

Drugs available for emergency treatment for poisoning:

Removal from the stomach:

The dangers of attempting to empty the stomach have to be balanced against the toxicity of the swallowed poison, assess quantity, type and time since ingestion. Do not attempt gastric emptying if the risk of toxicity is small or if patient presents too late.

Ipecacuanha Emetic Mixture

Dose Child 6-18 months: 10 ml, older children: 15 ml, Adults 30ml

Prevention of absorption and elimination

Absorption: Give by mouth activated charcoal can bind many poisons in the stomach, thereby reducing their absorption. The sooner it is given, the more effective it is. It may be still effective up to 1 hour after swallowing, longer in the case of modified release medicines. Activated charcoal is relatively safe and particularly useful for the prevention of absorption of poisons which are toxic in small amounts, e.g. antidepressants.

Activated charcoal powder

Dose Reduction of absorption
Child < 12 years 25 g (in severe cases 50 g, Adult: 50 g

Elimination: Possible for some drugs given in overdose: Carbamazepine, Dapsone, Phenobarbital, Quinine and Theophylline. Treat vomiting with anti-emetic since this reduces the efficacy of charcoal treatment.

Activated charcoal powder : Adult: Give repeated doses 50 g every 4 hours, In case of intolerance reduce quantity and increase number of treatments: e.g. 25g every two hours or 12.5 g every hour.

Antidotes for Specific drugs; Consult the poison centres and/or your literature

Paracetamol Acetylcystine 200mg/ml in 10 ml amp.
Opioid Naloxone HCl 400 mcg/ml in 1 ml ampoule.
Iron salts Desferrioxamine Mesilate
Cyanides Sodium Nitrite 3% in water for injection in combination with Sodium Thiosulfate 50% in water for injection,
Heavy metals Dimercaprol, Penicillamine, Sodium Calcium edetate,
Pesticides Pralidoxime mesilate.

First Aid in case of poisoning

First do not panic, try to get information on what has been the cause of the poisoning, and collect if available the bottle or container in which the suspected poison was kept. Check and support vital signs.

COMMON POISONS AND THEIR MANAGEMENT

A. CHEMICALS & PRODUCTS USED AT HOME

A.1.AEROSAL SPRAYS, E.G. AIR FRESHENERS

Naphthalene, Used in solid deodorants, e.g. in toilets, and moth balls
Signs & symptoms: Irritant to the gut, Damages the brain, Destroys blood cells ز Yellow skin due to blood cell destruction, Dark Urine, fits, unconsciousness
Management: Supportive care if unconscious, including Oxygen, IV fluids if evidence of haemolysis and bicarbonate (until urine has pH>7.5

Para-dichlorobenzene: Irritant to the gut, Damages the liver and possibly the brain

Signs & Symptoms: Vomiting, Irritation to skin & eye.
Management: If conscious, and the poison ingested during last 2-4hr, make him vomit, do not give milk or food for 2-3hr. Check respiration every 10 minutes

A2. INDUSTRIAL CHEMICALS E.G AROMATIC & CHLORINATED HYDROCARBONS

Benzene: Substance of abuse, used as motor fuels and many other industrial products.
Effects: On the brain, heart, liver and kidney.
Signs & Symptoms: Euphoria, Nausea and vomiting, uncoordinated movement, Irritant to mucous membrane, irregular breathing, fits and unconsciousness.

Management: Wash the eyes for 15 – 20 minutes, Remove contaminated clothing. Wash the body with soap and water for 15 minutes. **If swallowed and the patient is conscious and breathing,** give activated charcoal. Do not give fatty meals. In hospital, monitor and support vital signs.

Toluene & xylene, Solvents in paints, glues as thinner at home & work

Effect: Damage to the eye, skin & mucous membrane. Headache & tiredness. Acute exposure to poisoning can stop the heart. Chronic exposure can cause damage the kidney and liver.

Signs & symptoms: If breathed: Excitement, euphoria, headache, dizziness, incoordination and staggering confusion, unconsciousness, lung oedema. If swallowed: + Vomiting & diarrhoea, chronic exposure to benzene causes muscle weakness. Brain, liver & kidney damage

. **Management:** Move the patient from liquid spills or fumes to fresh air, Protect your self with protective clothing and breathing equipment, Give first aid, wash the eyes and remove the clothes. Do not perform mouth to mouth to mouth breathing Move to hospital for support and resuscitation**.**

Tetrachloroethylene: Used in dry cleaning, correction fluids, paints, fungicide & insecticide... Weight loss, loss of appetite, Liver & kidney damage & heart disease. Irritant and poisonous if swallowed or in contact with wet, scratched or damaged skin, damages gut, brain and kidney. Acute poisoning leads to fits and unconsciousness

Management: as above.

Tetrachloroethylene, Cleaner & Degreaser, & in correction fluids, paints, fungicides and insecticides

Effects: Damage to the eye, skin and mucous membrane.

Signs & symptoms: Weight and appetite loss

Management: As Toluene & Xylene.

A.3. BORAX, BORIC ACID & SODIUM PERBORATE

Borax, Boric acid.

Use: Ant killer, wood preservative, Water softener, eye drops & mouth wash

Sodium perborate: Bleach,

Effects: Irritant and poisonous if swallowed or in contact with wet, scratched or damaged skin, damages gut, brain and kidney.

Signs & symptoms: If breathed: Similar to above Nausea & vomiting fits, unconsciousness, low BP, Irregular pulse. If swallowed: + Vomiting, diarrhoea, and Lung oedema, Chronic exposure: Weight loss, loss of appetite, Liver & kidney damage & heart disease.

Management: Give fist aid, if unconscious lay him or her in recovery position, check breathing every 10min, and keep warm and quite. Wash the affected area with water for 15-20 min. and remove any remaining particles

Sodium barbortae: Denture cleaner, Water softener, Bleach

Effect: Acute: leads to fits and unconsciousness

SIGN & SYMPTOMS.: In the eye: Red swollen eye led. Chronic: Loss of weight & appetite, red peeling skin, hair loss, signs of renal failure

Management: Supportive care, give oxygen, treats fits if occurs, Haemodialysis & peritoneal dialysis to remove borates.

A.4. CAUSTIC & CORROSIVE CHEMICALS FOR DOMESTIC USE

Uses: Bleach liquid for kitchen, lavatory. Contains Sodium hypochlorite in alkaline solution. Powder contains Troclosene Sod-with detergent acid, Laundry bleach contains Sodium HCl, perborate, or Troclosene, Car battery, Contains sulphuric or HCl acid, Descalers, used to remove scales from kettles, pipes, boilers etc. Contains formic or phosphoric acid, Drain cleaners, are alkaline containing Sod-Hydroxide, they are solid or liquid.

Effects: They all are irritant, burn or damage skin and other living tissues. They are either Alkaline or Acids, where alkaline irritate usually more than acids. Fumes, such as ammonia, chlorine, chloramines, hydrogen chloride and sulphur dioxide irritate the lung and cause lung oedema. Acids may also disturb the acid/base in balance of the blood.

Signs & symptoms: Will depend on the amount ingested, time of contact and the concentration

Management: If swallowed less then 10 minutes ago give at once four cups of water to drink. If more than 10 minutes do not give anything until doctor can assess the damage. Do not make patient vomit and take him straight to the nearest hospital. NEVER try to neutralise the chemical with another or give fizzy drinks. Give supportive care and if needed oxygen

A.5. DISINFECTANTS AND ANTISEPTICS FOR DOMESTIC USE

Uses: ***Cationic Detergents as Benzalkonium, Cetrimide, Chlorhexidine, Ethanol, Hydrogen Peroxide, phenol, cresol, Chlorocresol, Chloroxylenol, tartaric acid, soap***, etc. Used as disinfectants in health facilities and homes

Effects: Do not normally cause harm in small amounts, if large quantity is swallowed it may cause severe poisoning and death. People who use it in their work situation are more likely to be harmed particularly if swallowed or spilled on skin, especially with the phenolic compounds.

Signs & symptoms: Ccompounds containing H_2O_2 nausea, vomiting burns in mouth and throat, Phenols burns in mouth, throat mouth skin and eyes fast breathing, fits unconsciousness and signs of kidney and liver damage

Management: In case of home disinfectants swallowed in small amounts, give milk, generally no need to go to hospital. In case of large amounts, wipe away the chemical, if patient is unconscious give mouth to mouth resuscitation and take to hospital. If eyes are affected wash with clean water for 15 to 20 minutes. Do NOT make the patient vomit, In case of fits treat fits. In case of swallowing large amounts of "professional" disinfectants swallowed at work take to hospital also

B. PESTICIDES

B.1 Wheat preservatives & and rodenticides: When damp release phosphine gas which is poisonous.

Aluminium phosphate & Zinc phosphate:

Effect: In acute poisoning patient may die within few hours of shock, renal and hepatic failure

Signs & Symptoms: Severe vomiting, stomach and chest pain, unconsciousness & signs of pulmonary oedema

Management: Move the patient to fresh air, put him in recovery position, and give First Aid. If conscious and not vomiting give activated charcoal. If signs of renal or liver failure treat accordingly. If vomiting give fluid and electrolytes

B.2. Arsenic & Compounds containing Arsenics

Effects: Arsenic trioxide, Arsenic pent oxide, Calcium Arsenate, Copper arsenate, Dimethyl arsenate, Lead arsenate, etc. Used as: Weed, ants, termites & rat killer used in farms & forestry, wood preservative, In traditional medicine in India which is not recommended

Signs & symptoms: Poisoning occurs within 30 minutes or hours if taken with food. Sudden stomach pain & vomiting, Garlic smell in breath, sever diarrhoea, dry mouth, thirst, shock & cold extremities

Management: If fumes, in eyes & skin remove clothing, wash eyes with water for 15-20 min. remove clothing and wash skin with soap & water, if conscious give water replacement for diarrhoea. If swallowed and within 4 hours & patient conscious make patient vomit unless already vomited. Give activated charcoal. Treat signs of low BP, electrolyte imbalance & fits.

B.3 Chlorophenoxy Acetate, some products are mixtures of the above

Contains: Chlorophenoxy acetate, Examples 2,4D, MCPA (mecroprop) DCCP (dichlorprop) 2, 4, 5-T,

Used to kill broad leaves weeds in wheat fields, grass lands & ponds.

Effects: Irritants, they damage muscles, nerves & brain. Some liquid contains petroleum distillates that cause pulmonary oedema. Rashes and dermatitis and may cause brain damage.

Signs & symptoms: Burning irritation in the mouth, coughing & chocking, confusion and stomach pain with diarrhoea & vomiting. Low BP, fast breathing, unconsciousness, fits. Death within few hours

Management: If stops breathing wash chemicals from the lips, give mouth to mouth respiration. If has fit treat accordingly. Wash skin and eyes as above. If the poison is swallowed within less than 4 hours and conscious make the patient vomit, unless

already done so. Give activated charcoal. Correct acidosis, electrolytes inbalance and supportive care for vital signs

B.4. INSECT REPELLENTS

Contains: Diethyl toluamide (N, N-DIETHYL-3-TOLUAMIDE) DEET, Used on the skin to prevent mosquito bites

Effects: Rashes and dermatitis and may cause brain damage

Signs & symptoms: Poisoning occurs only when large quantity of concentrated product is ingested or on the skin for longer period especially in children.

Management: Remove contaminated clothing and wash skin for at least 15 minutes, if swallowed make patient vomit, give activated charcoal and magnesium sulphate, in severe cases support vital signs and electrolyte balance

B.5 ORGANOCHLORINE PESTICIDES

Aldin, Chlordane, DDT and dieldrin. Dieldrin and Eldred are poisonous and Lindane

Uses: Widely used in agriculture to control disease carrying insects. , the later also used as scabicidal for human.

Effects: Affect the brain and breathing. The liquid contains petroleum distillate which if swallowed or inhaled can cause pulmonary oedema.

Signs & symptoms: Poisonous if swallowed, inhaled or if it comes in contact with the skin... Can cause chronic poisoning.Diendrin and Endrin are poisonous. Main symptoms are diarrhoea, vomiting stomach pain, excitement trembling, headache and fits. Effects start with 1 – 6 hours. DDT has delay effect up to 48 hours.

Management: Move the patient to fresh air. Remove contaminated clothing and wash skin for at least 15 minutes. Move to hospital. Supportive care, Breathing, Blood Pressure and Oxygen. For fits give diazepam.

B.6 PYRETHRINS & PYRETHROIDS INSECTICIDES

Natural insecticides extracted from ***Chrysanthemum*** plants. Pyrethroids are synthesised but have similar chemical nature.

Effects: Irritant to the skin, if swallowed causes nausea and vomiting. Cause also allergic reaction and shock.

Signs & symptoms: Irritation in the skin and blistering, fumes are irritant to the eye, Nausea and vomiting, rarely fits

Management: Give first aid, if unconscious lay him/her in recovery position, support breathing and move to hospital.

C. PLANT TOXINS

C.1 Datura stramonium (Thorne apple) Hyosyamous Niger (Henbane)

Use: Contents Hyosyamous is atropine like, used in traditional medicine to treat Asthma but can cause stomach colic; the leaves are smoked for their hallucinogenic effect. In some countries, they are used to cause abortion.

The leaves and scads are smoked or used with food. It affects the

Effects: Excites the brain and nerves that control the heart, eyes, gut & bladder

Signs & symptoms: Usually feeling of well being, some time fear and panic

, sees brighter and hears louder. Hallucinogenic and euphoric effect. Red dry skill. Dilated pupil, dry mouth, blurred vision, fast pulse, can not pass urine, hot skin & hallucination. Fast pulse, inbalance, slurred speech and cough if smoked

Management: Make the patient vomit. Give activated charcoal.

C.2 CANABIS (HASHISH): Contains canabiol and other substances. It has powerful effect for asthmatic relieve. The leaves and scads are smoked or eaten with food, some time sold as extracts.

Effect: Usually feeling of well being, some times fear and panic

Signs & symptoms: Fast pulse, inbalance, slurred speech and cough if smoked.

Management: Rarely toxic unless injected**.** . Supportive care for breathing and low BP. If patient is agitated give Chlorpromazine 50 - I00mg i.m.

C.3. RICINUS COMMUNIS (CASTOR OIL): The seeds contain Recinic acid after being heat-treated and are used to produce castor oil (Laxative

Effects: If the seeds are chewed and swallowed effect start within 2hrs. Death may occur within 2 weeks

Very irritant mouth, stomach pain, blood in urine, severe vomiting

Management: If swallowed in less than 4hrs, make the patient vomit, give charcoal and magnesium sulphate. If fits occur give diazepam. Give supportive care. No antidote is available

D. MEDICINES

D.1. Acetylsalicylic Acid - Salicylates

Contents Acetylsalicylic acid (Aspirin) is used orally as analgesic & anti-inflammatory agent. Includes Salicylates & Methyl Salicylates. The last one is used in liquid form as a liniment for topical pain relieve

Effect: Increased respiratory rate and disturb acid base balance of the body which consequently affect brain function. 599mg/Kg body weight can be lethal.

Signs & Symptoms: MILD: Stomach pain, dizziness, ringing in the ear & fast breathing. MODERATE: Fast breathing, ringing in the ear & deafness, fever & sweating, dry mouth. SEVERE: drowsiness & unconsciousness, shallow and fast breathing, lung oedema, heart & respiratory arrest

Management: If unconscious give "mouth-to-mouth" breathing, treat the fits when occur, and refer to hospital. If conscious make the patient vomit & give activated charcoal (50gm/Kg & Children 10-15gm/2-4hrs). To speed up Salicylates clearace, alkilinate urine by giving Sodium Bicarbonate, in severe poisoning until urine pH is 7.5-8.5 (or a Salicylates level 800m/l) Haemodialysis is useful

D.2. Amphetamine like

Amphetamine, Dexamphetamine, Ephedrine, Pseudoephedrine.

Amphetamine like drugs are used clinically to reduce weight but apt to be miss used as stimulants. Ephedrine and Pseudoephedrine are used as decongestant, in cold and asthma.

NOTE: Ephedrine and Pseudoephedrine are not in the same group as amphetamine,

Effects: All of these are CNS stimulants. All can cause serious effects, especially if injected, sniffed or inhaled... All have the property of causing tolerance i.e. the dose increase with prolonged use. Toxic dose is close to the therapeutic dose. Children are more sensitive. Affect the nerves that control the heart, the eye, the gut and the bladder.

Signs & symptoms: Restlessness, sleeplessness, dry mouth, wide pupil, hallucination, high BP, Low BP in severe poisoning, fast breathing, fits, fever & unconsciousness

Management: If breathing stops give "mouth to mouth" resuscitation and heart massage. If medicine was taken in less than 4hours ago; in case of Atropine in less than hours ago; and in case of slow release Amphetamine <12 hours ago, give activated charcoal and repeat if patient is conscious. In case the patient is confused, anxious or aggressive keep in dimly lit room and re-assure patient. If breathing or heart stops do "mouth of mouth" resuscitation and cardiac massage

D.3. Atropine like

Atropine, Benzatropine, Belladonna Pilocarpine, etc these drugs are used to dilate the pupil, Atropine Is use for colic and as an antidote for poisoning by Organ phosphoric. Compounds,

Effects: Affects the nervous system that controls the heart, the eyes, the gut and the bladder.

Sings & symptoms: Red dry skin and mouth, wide pupil, blurred vision, confusion and excitement & aggression, fever fits and unconsciousness

Management: Give first aid for vital signs, treat fits if it occurs. Physostigmine may be necessary but dangerous to use. Make the patient vomit if the drug was taken within 4-6hrs. Give charcoal 50 gm for adults and 250mg/Kg bodyweight for children. The patient may need to be hospitalized

D.4. ANTIHISTAMINES:

Uses: Chlorpheniramine, Cyclazine, Diphenhydramine etc. Used for anti-allergic and to stop travel sickness, and cough...

Effects: They cause drowsiness and sedation. Most Antihistamines have atropine like effects

Signs & symptoms: Have similar to atropine. Children and some people also show dilated pupil.

Management: similar to atropine.

D.5. Aminophylline, Theophylline

UASE: To treat asthma.

Effects: Cause electrolytes inbalance and this cause effects on heart and fits. Effect may occur by over dose or repeat to more than what is prescribed. Toxic dose is close to the therapeutic dose

Signs and symptoms: Fast pulse, fast breathing, hallucination, low BP, Fits may occur suddenly. Vomiting blood at some occasions when theophylline blood concentration 25mg/l or more

Management: Give first aid and move to hospital, correct electrolytes, (low K), metabolic acidosis, respiratory alkalosis. Treat low BP, and fits if occurs. If patient is vomiting and unable to take activated charcoal give metoclopramide.

D.6. Tricyclic antidepressants

As Imipramine, Amitriptyline, Nortryptline etc. Used to treat Depression

Effects: These drugs affect the heart and brain. In addition, tricyclic have Atropine like

Signs & symptoms: Drowsiness, unconsciousness that may last several days low temperature, low BP, shallow breathing.

Management: Vomiting and charcoal are recommended, Support vital signs, IV fluid for low BP, barbiturate alkaline haemodialysis... Benzodiazepines have antidote

D.7. Antimalarials

Uses: Chloroquine, Used to treat Malaria, Amoebic liver Abscess and Arthritis, Quinine, Used to treat malaria, Quinidine Used as Anti arrhythmic drug

Effects: Chloroquine affects the Eyes; quinine affects the muscles, eyes and ears. Quinine and Quinidine as chloroquine plus large pupil, blurred vision, ringing sound in the ears and deafness

Signs & symptoms: Vomiting and diarrhoea, headache and dizziness, drowsiness within 10-30 minutes. Then excitement low BP, shallow and fast respiration, irregular pulse. Heart and breathing may stop. The patient may be very ill within the 1st hour and may die within 2 -3 hr

Management: As above, and give charcoal repeated doses for 24hrs. Serum potassium may be low, give KCl infusion

D.8. Anti-epileptics

Use: As Benzodiabines, Barbiturates, Phenobarbitone, Used mainly as antiepileptic. Now Phenobarbitone is the only one in common use ,

Effects: Affect the brain and cause respiratory arrest. Barbiturates can stop the gut and breathing

Signs & symptom: Drowsiness, unconsciousness that may last several days

Llow Temperature & low BP, shallow breathing> Barbiturates can stop the gut peristaltic movement and breathing.

Management: Vomiting and charcoal are recommended. Support vital signs, IV fluid to raise BP, Alkaline dialysis for barbiturates. Benzodiazepines have antidote.

D.9. Tranquilizers

Secobarbital, Amobarbital.etc, Phenothiazines, Chlorpromazine.

Uses: They are they are sedatives, increase involuntary body movements, cause fits and some atropine like effects. Used as tranquilisers, in mental illnesses

Effects: Phenothiazines are epileptogenic while barbiturates can stop breathing.

Signs & symptoms: Dry mouth, Medium to wide pupil, blurred vision fast and irregular pulse, low BP, heart and respiration may stop causing sudden death.

Management: Treat fits with Diazepam, but watch of the additive effect on breathing.

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D.10. Ant diabetics: (Chlorprobamide, Glibenclamide Gliclazide)

Lower body high blood sugar

Effects: Lowers body sugar, patient may become unconscious and this may cause brain damage.

Signs & symptoms: Sweating with out fever, fast pulse, drowsiness and unconsciousness, fits may occur.

Management: If patient is conscious, give sweets or sugar, if unconscious give IV glucose Adults 50 ml of 50% glucose, Children 25% 2-4mm 1/Kg. Monitor blood sugar until blood sugar is raised.

D.11. Digoxin:

Used to treat heart failure as tablets, syrup and injections. Affect the heart, toxic effect may occur even with the prescribed dose.

Signs & symptoms: Irregular heart beat, slow or fast pulse, nausea, vomiting and diarrhoea, low BP

Management: If patient is conscious, make him vomit and give charcoal with magnesium, support vital signs. If unconscious, vital signs, heart massage, Electrolytes inbalance should be corrected.

Essential Medicines List- Complete List E = Emergency Tray X* = this drug can be ordered on special request		Price Indicator	Level 1	Level 2
ANNEX 3 : East Timor EML **1. ANAESTHETICS**		**Price Indicator**	**Level 1**	**Level 2**
1.1 General anaesthetics and oxygen				
halothane	Inhalation	M		
ketamine	injection, 50 mg (as hydrochloride)/ml in 10-ml vial	S		
nitrous oxide	Inhalation	M		
oxygen	inhalation (medicinal gas)	M		
thiopental	powder for injection 1g (sodium salt) in ampoule	S		
Supplementary List				
nitrous oxide	Inhalation	NA		
propofol	injection, 10 mg/ml in 20-ml ampoule	XL		
1.2 Local anaesthetics				
bupivacaine	injection, 0.5% (hydrochloride) in 20-ml vial	S		
bupivacaine	injection for spinal anaesthesia, 0.5% (hydrochloride)in 80 mg/ml glucose solution in 4-ml ampoule	S		
lidocaine	injection, 2 % (hydrochloride) in vial	S	X	X
lidocaine	topical spray, 4% (hydrochloride) in 50 ml	M		
lidocaine + epinephrine (adrenaline)	dental cartridge 2% (hydrochloride) + epinephrine 1: 80 000	S		
lidocaine + epinephrine (adrenaline)	injection 2% (hydrochloride)+ epinephrine 1: 100 000 in vial	S		
Supplementary List				
ephedrine	injection, 30 mg (hydrochloride)/ml in 1-ml ampoule (For use in spinal anaesthesia during delivery, to prevent hypotension)	S		
phenylephrine	injection, 10 mg (as hydrochloride)/ml in 1-ml ampoule	L		
1.3 Preoperative medication and sedation for short-term procedures				
atropine	injection, 1 mg (sulfate) in 1-ml ampoule	S		
diazepam	injection, 5 mg/ml in 2-ml ampoule (intravenous or rectal)	S		
diazepam	tablet, 5 mg	S		
morphine	injection, 10 mg (sulfate or hydrochloride) in 1-ml ampoule	M		
promethazine	syrup, 5 mg (hydrochloride)/5ml	M		
Supplementary List				
midazolam	injection, 2mg (as hydrochloride)/ml in 5-ml ampoule	L		
2. ANALGESICS, ANTIPYRETICS, NON-STEROIDAL ANTI-INFLAMMATORY MEDICINES (NSAIMs), MEDICINES USED TO TREAT GOUT AND DISEASE MODIFYING AGENTS IN RHEUMATOID DISORDERS (DMARDs)				
2.1 Non-opioids and non-steroidal anti-inflammatory medicines (NSAIMs)				

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Essential Medicines List- Complete List E = Emergency Tray X* = this drug can be ordered on special request		Price Indicator	Level 1	Level 2
acetylsalicylic acid	tablet, 300 mg	S	X	X
ibuprofen	tablet, 400 mg	S	X	X
paracetamol *	suppository, 100 mg * not recommended for anti-inflammatory use due to lack of proven benefit to that effect	L		
paracetamol *	suppository, 500 mg * not recommended for anti-inflammatory use due to lack of proven benefit to that effect	S		
paracetamol *	syrup, 120 mg/5ml * not recommended for anti-inflammatory use due to lack of proven benefit to that effect	M	X	X
paracetamol *	tablet, 100 mg * not recommended for anti-inflammatory use due to lack of proven benefit to that effect	M	X	X
paracetamol *	tablet, 500 mg * not recommended for anti-inflammatory use due to lack of proven benefit to that effect	S	X	X
2.2 Opioid analgesics				
codeine	tablet, 30 mg (phosphate)	M		
morphine	injection, 10 mg in 1-ml ampoule (sulfate or hydrochloride)	M		
tramadol	tablet or capsule, 50 mg (hydrochloride)	M		
tramadol	injection, 50 mg (hydrochloride)/ml in 2-ml ampoule	L		
Supplementary List				
fentanyl	injection, 50mcg (as citrate)/ml, 2ml ampoule	XL		
2.3 Medicines used to treat gout				
allopurinol	tablet, 100 mg	M		
Supplementary List				
colchicine	tablet, 500 micrograms	L		
3. ANTIALLERGICS AND MEDICINES USED IN ANAPHYLAXIS				
dexamethasone	injection, 4 mg dexamethasone phosphate (as disodium salt) in 1-ml ampoule	M		
dexamethasone	tablet, 4 mg	S		
epinephrine / adrenaline	injection, 1 mg (as hydrochloride or hydrogen tartrate) in 1-ml ampoule	M	E	E
hydrocortisone	powder for injection, 100 mg (as sodium succinate) in vial	M		
prednisolone *	tablet, 5 mg * there is no evidence for complete clinical similarity between prednisolone and dexamethasone at high doses.	S		
promethazine *	injection, 25 mg (as hydrochloride)/ml in 2-ml ampoule	M		

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Essential Medicines List- Complete List E = Emergency Tray X* = this drug can be ordered on special request		Price Indicator	Level 1	Level 2
	*for premedication and treatment of anaphylactic reactions only			
promethazine *	tablet, 25 mg (as hydrochloride) *for premedication and treatment of anaphylactic reactions only	S		
Supplementary List				
methylprednisolone	powder for injection, 1 g (as sodium succinate) in vial	L		
4. ANTIDOTES AND OTHER SUBSTANCES USED IN POISONING				
4.1 Non-specific				
charcoal, activated	powder or tablet	S		
4.2 Specific				
atropine	injection, 1 mg (sulfate) in 1-ml ampoule	S		
calcium gluconate	injection, 100 mg/ml in 10-ml ampoule	M		
naloxone	injection, 400 micrograms (hydrochloride) in 1-ml ampoule	L		
5. ANTICONVULSANTS/ANTIEPILEPTICS				
carbamazepine	scored tablet, 200 mg	M		
diazepam	injection, 5 mg/ml in 2-ml ampoule (intravenous or rectal)	S	E	E
diazepam	scored tablet, 5 mg	S	E	E
magnesium sulfate*	injection, 500mg/ml in 10-ml ampoule * for use in eclampsia and severe pre-eclampsia and not for other convulsant disorders; available for trained midwives.	M		
phenobarbital	elixir, 15 mg/5ml	L		
phenobarbital	injection, 100 mg (sodium salt)/ml in 2 ml ampoule	M		
phenobarbital	tablet, 30 mg	S		
phenytoin	injection, 50 mg/ml in 5-ml vial (sodium salt)	M		
phenytoin	tablet, 100 mg (sodium salt)	S		
valproic acid	enteric coated tablet, 200 mg (sodium salt)	M		
valproic acid	enteric coated tablet, 500 mg (sodium salt)	L		
Supplementary List				
ethosuximide	capsules, 250 mg	M		
ethosuximide	syrup, 250 mg/5 ml	L		
6. ANTI-INFECTIVE MEDICINES				
6.1 Anthelminthics				
6.1.1 Intestinal anthelminthics				
albendazole	tablet, 400 mg	S	X	X
mebendazole	tablet, 100 mg	S		

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Essential Medicines List- Complete List E = Emergency Tray X* = this drug can be ordered on special request		Price Indicator	Level 1	Level 2
mebendazole	tablet, 500 mg	S	X	X
praziquantel	tablet, 600 mg	L		
pyrantel	tablet, 250 mg (as embonate)	M	X	X
pyrantel	oral suspension, 50 mg (as embonate)/ml	L	X	X
6.1.2 Antifilarials				
diethylcarbamazine	tablet, 50 mg (dihydrogen citrate)	S		
Supplementary List				
ivermectin	scored tablet, 3 mg	M		
6.1.3 Antischistosomals and antitrematode medicines				
praziquantel	tablet, 600 mg	L		
6.2 Antibacterials				
6.2.1 Beta Lactam medicines				
amoxicillin	capsule or tablet, 250 mg (anhydrous)	S	X	X
amoxicillin	capsule or tablet, 500 mg (anhydrous)	S		
amoxicillin	powder for oral suspension, 125 mg (anhydrous)/5 ml	L	X	X
ampicillin	powder for injection, 1 g (as sodium salt) in vial	M	E	E
benzathine benzylpenicillin	powder for injection, 1.44 g benzylpenicillin (=2.4 million IU) in 5-ml vial	M		
benzylpenicillin	powder for injection, 600 mg (= 1 million IU) (sodium or potassium salt) in vial	M		
benzylpenicillin	powder for injection,, 3 g (= 5 million IU) (sodium or potassium salt) in vial	M		
cloxacillin	capsule, 250 mg (as sodium salt), (for staphylococcal infections only)	M		
cloxacillin	injection, 500 mg (as sodium salt), (for staphylococcal infections only)	M		
cloxacillin	oral solution, 125 mg (as sodium salt)/5ml, (for staphylococcal infections only)	L		
procaine benzylpenicillin	powder for injection, 1 g (=1 million IU) in vial	S		
procaine benzylpenicillin	powder for injection, 3 g (=3 million IU) in vial	S	X	X
Restricted Indications				
amoxicillin + clavulanic acid	tablet, 500 mg + 125 mg	XL		
ceftriaxone	powder for injection, 1g (as sodium salt) in vial	L		
6.2.2 Other antibacterials				

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Essential Medicines List- Complete List E = Emergency Tray X* = this drug can be ordered on special request		Price Indicator	Level 1	Level 2
chloramphenicol	capsule, 250 mg	S		
chloramphenicol	oral suspension, 150 mg (as palmitate)/5 ml	L		
chloramphenicol	powder for injection, 1 g (sodium succinate) in vial	M	E	E
ciprofloxacin	tablet 250 mg (as hydrochloride)	L		
co-trimoxazol (sulfamethoxazole + trimethoprim)	oral suspension, 200 mg + 40 mg/5 ml	M	X	X
co-trimoxazol (sulfamethoxazole + trimethoprim)	tablet, 100 mg + 20 mg	S	X	X
co-trimoxazol (sulfamethoxazole + trimethoprim)	tablet, 400 mg + 80 mg	S	X	X
doxycycline	capsule or tablet, 100 mg (hydrochloride)	M		
erythromycin	capsule or tablet, 250 mg (as stearate or ethyl succinate)	M	X	X
erythromycin	powder for oral suspension, 125 mg (as stearate or ethyl succinate)/5 ml	L	X	X
gentamicin	injection, 40 mg (as sulfate)/ml in 2-ml vial	S	E	E
metronidazole	injection, 500 mg in 100-ml vial	M		
metronidazole	oral suspension, 125 mg (as benzoate)/5 ml	M		
metronidazole	scored tablet, 250 mg	S		
metronidazole	suppository, 500 mg	L		
nalidixic acid	oral suspension, 300 mg/5ml	L		
nalidixic acid	tablet, 500 mg	L		
Supplementary List				
clindamycin	capsule, 150 mg	L		
vancomycin	powder for injection, 250 mg (as hydrochloride) in vial	XL		
6.2.3 Antileprosy medicines				
Medicines used in the treatment of leprosy should never be used except in combination. Combination therapy is essential to prevent the emergence of drug resistance. Colour coded blister packs (MDT blister packs) containing standard two medicine (paucibacillary leprosy) or three medicine (multibacillary leprosy) combinations for adult and childhood leprosy should be used. MDT blister packs can be supplied free of charge through WHO.				
clofazimine	capsule, 50 mg, 100 mg	WHO		
dapsone	tablet, 25 mg, 50 mg, 100 mg	WHO		
rifampicin	capsule or tablet, 150 mg, 300 mg	WHO		
6.2.4 Antituberculosis medicines				
ethambutol	tablet, 400 mg (hydrochloride)	M		
isoniazid	tablet, 100 mg	S		

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isoniazid + ethambutol	tablet, 150 mg + 400 mg	M		
pyrazinamide	tablet, 400 mg	M		
rifampicin + isoniazid	tablet, 150 mg + 75 mg *(For intermittent use three times weekly);*	M		
rifampicin + isoniazid	tablet, 300 mg + 150 mg; *(For intermittent use three times weekly);*	M		
streptomycin	powder for injection, 1 g (as sulfate) in vial	M		
6.3 Antifungal medicines				
amphotericin B	powder for injection, 50 mg in vial	M		
fluconazole	capsule, 50 mg	L		
griseofulvin	capsule or tablet, 125 mg	S	X	X
griseofulvin	capsule or tablet, 500 mg	M		
nystatin	pessary, 100 000 IU	M	X	X
nystatin	suspension, 100 000 IU/ml	L	X	X
nystatin	tablet, 100 000 IU	S		
nystatin	tablet, 500 000 IU	M		
Supplementary List				
fluconazole	oral suspension 50 mg/5-ml	XL		
6.5 Antiprotozoal medicines				
6.5.1 Antiamoebic and antigiardiasis medicines				
diloxanide	tablet, 500 mg (furoate)	S		
metronidazole	oral suspension 125 mg (as benzoate)/5 ml	M		
metronidazole	scored tablet, 250 mg	S	X	X
6.5.3 Antimalarial medicines				
6.5.3.1 For curative treatment				
Medicines for the treatment of *P. falciparum* malaria cases should be used in combination.				
chloroquine	injection 40 mg (base = as hydrochloride, phosphate or sulfate)/ml in 5-ml ampoule	M		
chloroquine	syrup, 50 mg (base = as phosphate or sulfate)/5 ml	M	X	X
chloroquine	tablet, 150 mg (base = as phosphate or sulfate)	S	X	X
doxycycline	capsule or tablet, 100 mg (hydrochloride) *(for use only in combination with quinine)*	M	E	E
primaquine *	tablet, 15 mg (base = as diphosphate) *for hospitals and health posts with laboratory facilities	M		
quinine	injection, 300 mg (as dihydrochloride)/ml in 2-ml ampoule	M	E	E
quinine	tablet, 300 mg (as bisulfate or sulfate)	M	X	X

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Essential Medicines List- Complete List E = Emergency Tray X* = this drug can be ordered on special request		Price Indicator	Level 1	Level 2
sulfadoxine + pyrimethamine	tablet, 500 mg + 25 mg	M	X	X
Supplementary List				
mefloquine	tablet, 250 mg (as hydrochloride)	XXL		
Restricted Indications				
artemether	injection, 80 mg/ml in 1-ml ampoule	WHO		
artesunate	tablet, 50 mg	WHO		
6.5.3.2 For prophylaxis				
chloroquine	syrup, 50 mg (base = as phosphate or sulfate)/5 ml	M		
chloroquine	tablet, 150 mg (base = as phosphate or sulfate)	S	X	X
doxycycline	capsule or tablet, 100 mg (hydrochloride)	M		
Supplementary List				
mefloquine	tablet, 250 mg (as hydrochloride)	XXL		
proguanil	tablet, 100 mg (hydrochloride) *(for use only in combination with chloroquine)*	M		
7. ANTIMIGRAINE MEDICINES				
7.1 For treatment of acute attack		S		
acetylsalicylic acid	tablet, 300 mg	S		
ergotamine +caffeine	tablet, 1 mg (tartrate) + 100 mg	S		
paracetamol	tablet, 500 mg		X	X
8. ANTINEOPLASTIC, IMMUNOSUPPRESSIVES AND MEDICINES USED IN PALLIATIVE CARE				
8.2 Cytotoxic medicines				
Supplementary List				
methotrexate	powder for injection, 50 mg (as sodium salt) in vial	XL		
methotrexate	tablet, 2.5 mg (as sodium salt)	L		
methotrexate	tablet, 10 mg (as sodium salt)	XL		
8.4 Medicines used in palliative care				
The WHO Expert Committee on the Use of Essential Drugs recommended that all the drugs mentioned in the WHO publication Cancer Pain Relief: with a Guide to Opioid Availability, second edition, be considered essential. The drugs are included in the relevant sections of the Model List, according to their therapeutic use, e.g. analgesics.				
9. ANTIPARKINSONISM MEDICINES				
biperiden	tablet, 2 mg (hydrochloride)			
levodopa + carbidopa	tablet, 100 mg + 10 mg	XL		
levodopa + carbidopa	tablet, 250 mg + 25 mg	XL		
10. MEDICINES AFFECTING THE BLOOD				

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Essential Medicines List- Complete List E = Emergency Tray X* = this drug can be ordered on special request		Price Indicator	Level 1	Level 2
10.1 Antianaemia medicines				
ferrous salt	oral solution, equivalent to 25 mg iron (as sulfate or fumarate)/ml	L	X	X
ferrous salt	tablet, equivalent to 60 mg iron	S	X	X
ferrous salt + folic acid	tablet equivalent to 60 mg iron + 400 micrograms folic acid *(nutritional supplement for use during pregnancy.)*	S	X	X
folic acid	tablet, 1mg	S	X	X
folic acid	tablet , 5mg	S		
hydroxocobalamin (vitamin B12)	injection, 1 mg in 1-ml ampoule	M		
10.2 Medicines affecting coagulation				
heparin sodium	injection, 5000 IU/ml 1-ml ampoule	L		
Phytomenadione (vitamin K1)	injection, 1 mg/ml in 1-ml ampoule (paediatric)	M		
Phytomenadione (vitamin K1)	injection, 10 mg/ml in 1-ml ampoule (adult)	M		
tranexamic acid	injection, 100 mg/ml in 5-ml ampoule	L		
Supplementary List				
tranexamic acid	tablet, 500 mg	L		
warfarin	tablet, 1 mg (sodium salt)	S		
11. BLOOD PRODUCTS AND PLASMA SUBSTITUTES				
11.1 Plasma substitutes				
Polygeline	injectable solution, 3.5%	L		
12. CARDIOVASCULAR MEDICINES				
12.1 Antianginal medicines				
atenolol	tablet, 50 mg	S		
glyceryl trinitrate	tablet (sublingual), 500 micrograms	S		
isosorbide dinitrate	tablet (sublingual), 5 mg	S		
isosorbide dinitrate	tablet, sustained release, 20 mg	M		
12.2 Antiarrhythmic medicines				
atenolol	tablet, 50 mg	S		
digoxin	Injection, 250 micrograms/ml in 2-ml ampoule	M		
digoxin	oral solution, 50 micrograms/ml	L		
digoxin	tablet, 62.5 micrograms	L		
digoxin	tablet, 250 micrograms	S		
epinephrine / adrenaline	injection, 1 mg (as hydrochloride)/ml in ampoule	M		
lidocaine	injection, 20 mg (hydrochloride)/ml in 5-ml ampoule	M		
propranolol	tablet, 40 mg (hydrochloride)	S		

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Essential Medicines List- Complete List E = Emergency Tray X* = this drug can be ordered on special request		Price Indicator	Level 1	Level 2
Supplementary List				
amiodarone	tablet, 100 mg (hydrochloride)	L		
atenolol	injection, 500 micrograms/ml in 10-ml ampoule	L		
quinidine	tablet, 200 mg (sulfate)	M		
12.3 Antihypertensive medicines				
atenolol	tablet, 50 mg	S		
captopril	scored tablet, 25 mg	M		
hydralazine	powder for injection, 20 mg (hydrochloride)	L		
hydrochlorothiazide	scored tablet, 25 mg	S		
methyldopa	tablet, 250 mg	M		
nifedipine	sustained release formulations, tablet 20 mg	M		
nifedipine	tablet, 10 mg	S		
Supplementary List				
prazosin	tablet, 500 micrograms (as hydrochloride)	L		
12.4 Medicines used in heart failure				
captopril	scored tablet, 25 mg	M		
digoxin	injection, 250 micrograms/ml in 2-ml ampoule	M		
digoxin	oral solution, 50 micrograms/ml	L		
digoxin	tablet, 62.5 micrograms	S		
digoxin	tablet, 250 micrograms	S		
hydrochlorothiazide	scored tablet, 25 mg	S		
Supplementary List				
dopamine	injection, 40 mg (hydrochloride)/ml in 5-ml vial	M		
12.5 Antithrombotic medicines				
acetylsalicylic acid	tablet, 100 mg	S		
13. DERMATOLOGICAL MEDICINES (topical)				
13.1 Antifungal medicines				
benzoic acid + salicylic acid	ointment or cream, 6% + 3%, (Whitfield´s ointment)	M	X	X
miconazole	ointment or cream, 2% (nitrate)	M	X	X
nystatin	cream, 100 000 IU/g	M		
13.2 Anti-infective medicines				
gentian violet / methylrosanilinium chloride	powder for aqueous solution, 0.5%	S	X	X
neomycin sulfate + bacitracin	ointment, 5 mg neomycin sulfate + 500 IU bacitracin zinc/g	M	X	X

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silver nitrate	pencil	S		
silver sulfadiazine	cream, 1%, in 500-g container	M	X	X
13.3 Anti-inflammatory and antipruritic medicines				
betamethasone	ointment or cream, 0.1% (as valerate)	S		
calamine lotion	lotion	S	X	X
hydrocortisone	ointment or cream, 1% (acetate)	M	X	X
13.5 Medicines affecting skin differentiation and proliferation				
coal tar	solution, 5%	S		
dithranol	ointment, 1%	M		
13.6 Scabicides and pediculicides				
benzyl benzoate	lotion, 25%	S	X	X
permethrin	cream 5%	L		
permethrin	lotion 1%	M	X	X
14. DIAGNOSTIC AGENTS				
14.1 Ophthalmic medicines				
fluorescein	strips	S		
tropicamide	eye drops, 0.5%	L		
14.2 Radiocontrast media				
amidotrizoate	oral solution, 370 mg iodine (as sodium and meglumine salt)/ml in 100 ml (Gastrografin)	L		
barium sulfate	powder for aqueous suspension	S		
iopromide	injection, 300 mg iodine/ml in 20-ml ampoule (Ultravist 300)	L		
iopromide	injection, 370 mg iodine/ml in 50-ml ampoule (Ultravist 370)	L		
Supplementary List				
iohexol	Injection, 300 mg iodine/ml in 10-ml ampoule (Omnipaque)	XL		
15. DISINFECTANTS AND ANTISEPTICS				
15.1 Antiseptics				
chlorhexidine	solution, 5% (digluconate) for dilution	S	X	X
ethanol	solution, 70% (denatured, surgical spirit)	L	X	X
olyvidone iodine	solution, 10%	S	X	X
polyvidone iodine	surgical scrub, 7.5%	M		
15.2 Disinfectants				
chlorine base compound	powder (0.1% available chlorine) for solution or liquid for dilution	S	X	X
16. DIURETICS				

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furosemide	injection, 10 mg/ml in 2-ml ampoule	S		
furosemide	tablet, 40 mg	S		
hydrochlorothiazide	scored tablet, 25 mg	S		
spironolactone	tablet, 25 mg	L		
Supplementary List				
bumetanide	scored tablet, 1 mg	XL		
mannitol	injectable solution, 20%	L		
17. GASTROINTESTINAL MEDICINES				
17.1 Antacids and other antiulcer medicines				
aluminium hydroxide	tablet, 500 mg	S	X	X
ranitidine	injection, 25 mg/ml in 2-ml ampoule	L		
ranitidine	tablet, 150 mg (as hydrochloride)	M		
Supplementary List				
omeprazole	capsule, 20 mg	XL		
sodium citrate	powder for oral solution	XL		
17.2 Antiemetic medicines				
metoclopramide	injection, 5 mg (hydrochloride)/ml in 2-ml ampoule	S		
metoclopramide	tablet, 10 mg (hydrochloride)	S		
promethazine	elixir or syrup, 5 mg (hydrochloride)/5 ml	M		
promethazine	injection, 25 mg (hydrochloride)/ml in 2-ml ampoule	M	E	E
promethazine	tablet, 25 mg (hydrochloride)	S	E	E
17.3 Antihaemorrhoidal medicines				
local anaesthetic, astringent and anti-inflammatory medicine	Ointment	M		
17.4 Anti-inflammatory medicines				
Supplementary List				
sulfasalazine	tablet, 500 mg	L		
17.5 Antispasmodic medicines				
atropine	injection, 1 mg (sulfate) in 1-ml ampoule	S		
atropine	tablet, 1 mg (sulfate)	S		
hyoscine butylbromide	injection, 20 mg/ml in 1-ml ampoule	M		
hyoscine butylbromide	tablets, 10 mg	M		
17.6 Laxatives				
bisacodyl	suppository, 10 mg	M		

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bisacodyl	Tablet, 5 mg	S		
magnesium sulfate	powder	L		
Supplementary List				
lactulose	powder or solution	XL		
17.7 Medicines used in diarrhoea				
17.7.1 Oral rehydration				
oral rehydration salts (ORS) * (for glucose-electrolyte solution)	glucose: 75 mEq sodium: 75 mEq or mmol/l chloride: 65 mEq or mmol/l potassium: 20 mEq or mmol/l citrate: 10 mmol/l osmolarity: 245 mOsm/l glucose: 13.5 g/l sodium chloride: 2.6 g/l potassium chloride: 1.5 g/l trisodium citrate dihydrate+: 2.9 g/l + trisodium citrate dihydrate may be replaced by sodium hydrogen carbonate (sodium bicarbonate) 2.5 g/l. However, as the stability of this latter formulation is very poor under tropical conditions, it is only recommended when manufactured for immediate use. *in cases of cholera a higher concentration of sodium may be required. ORS with sodium 90 mmol/l are also distributed.	S	X	X
18. HORMONES, OTHER ENDOCRINE MEDICINES AND CONTRACEPTIVES				
18.1 Adrenal hormones and synthetic substitutes				
Addison's disease is a rare condition; adrenal hormones are already included in ***section 3***.				
18.3 Contraceptives				
18.3.1 Hormonal contraceptives				
ethinylestradiol + levonorgestrel	tablet, 30 micrograms + 150 micrograms	UNFPA	X	X
medroxyprogesterone acetate	depot injection, 150 mg/ml in 1-ml vial	UNFPA	X	X
18.3.2 Intrauterine devices				
copper-containing device		UNFPA		
18.3.3 Barrier methods				
condoms		UNFPA	X	X
18.4 Estrogens				
Supplementary List				
ethinylestradiol	tablet, 10 micrograms	M		

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Essential Medicines List- Complete List E = Emergency Tray X* = this drug can be ordered on special request		Price Indicator	Level 1	Level 2
estriol	intravaginal cream, 0.1%, (Ovestin)	XL		
18.5 Insulins and other antidiabetic agents				
glibenclamide *	tablet, 5 mg * sufficient supply up to the next visit can be given to the patient	S		
gliclazide*	tablet, scored, 80 mg * sufficient supply up to the next visit can be given to the patient	M		
short-acting insulin (human)	Injection, 100 IU/ml in 10-ml vial (soluble)	L		
intermediate-acting insulin (human)*	Injection, 100 IU/ml in 10 ml vial (as isophane insulin) * sufficient supply up to the next visit can be given to the patient	L		
metformin*	tablet, 500 mg (hydrochloride) * sufficient supply up to the next visit can be given to the patient	M		
18.6 Ovulation inducers				
Supplementary List				
clomifene	tablet, 50 mg (citrate)	L		
18.7 Progestogens				
Supplementaryy List				
medroxyprogesterone acetate	tablet, 5 mg	M		
18.8 Thyroid hormones and antithyroid medicines				
Supplementary List				
levothyroxine	tablet, 100 micrograms (sodium salt)	S		
propylthiouracil	tablet, 100 mg	M		
18.9 Other endocrine drugs				
bromocriptine	tablet, 2.5 mg	M	X	X
19. IMMUNOLOGICALS				
19.1 Diagnostic agents				
All tuberculins should comply with the WHO Requirements for Tuberculins (Revised 1985). WHO Expert Committee on Biological Standardization Thirty-sixth report, (WHO Technical Report Series, No. 745, 1987, Annex 1).				
tuberculin, purified protein derivative (PPD)	injection, Heaf test	M		
19.2 Sera and immunoglobulins				
All plasma fractions should comply with the WHO Requirements for the Collection, Processing and Quality Control of Blood, Blood Components and Plasma Derivatives (Revised 1992). WHO Expert Committee on Biological Standardization Forty-third report, (WHO Technical Report Series, No. 840, 1994, Annex 2).				
anti-D immunoglobulin (human)	injection, 250 micrograms in single-dose vial	XL		
antitetanus immunoglobulin (human)	injection, 1500 IU in vial	XL		

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Essential Medicines List- Complete List E = Emergency Tray X* = this drug can be ordered on special request		Price Indicator	Level 1	Level 2
antitetanus immunoglobulin (human)	injection, 4000 IU in vial	XXL		
antivenom serum (equine)	Injection, polyvalent serum; each ml can neutralize the poisons of Calloselasma (Agkistrodon) rhodostoma (ular tanah, samea rai) 10 - 15 LD_{50} , Bungarus fasciatus (ular welang, samea makerek) 25 - 50 LD_{50}, Naja sputatrix (ular cobra, samea cobra) 25 - 50 LD_{50} ; in 5-ml vial; Bio Farma, Bandung, Indonesia. Note: Trimeresurus albolabris (ular hijau, samodok) not included!	XXL		
diphtheria antitoxin (equine)	injection, 10 000 IU	XL		
All vaccines should comply with the WHO Requirements for Biological Substances.				
19.3.1 For universal immunization				
BCG vaccine		EPI	X	X
Diphtheria, tetanus vaccine (DT)		EPI	X	X
diphtheria, pertussis, tetanus (DPT)		EPI	X	X
measles vaccine		EPI	X	X
poliomyelitis vaccine		EPI	X	X
tetanus toxoid vaccine		EPI	X	X
19.3.2 For specific groups of individuals				
hepatitis B vaccine		L		
japaneses encephalitis vaccine		XXL		
rabies vaccine (inactivated: prepared in cell culture)		XL		
yellow fever vaccine		XL		
20. MUSCLE RELAXANTS (PERIPHERALLY ACTING) AND CHOLINESTERASE INHIBITORS				
neostigmine	injection, 2.5 mg (metilsulfate) in 1-ml ampoule	S		
suxamethonium	powder for injection, 50 mg (chloride)/ml, in 10-ml vial	M		
Supplementary List				
atracurium	Injection, 10 mg (besilate)/ml in 2,5-ml ampoule	XL		
neostigmine	tablet, 15 mg (bromide)	M		
vecuronium	powder for injection, 10 mg (bromide) in vial	S		
21. OPHTHALMOLOGICAL PREPARATIONS				
21.1 Anti-infective agents				
chloramphenicol	eye ointment, 1%	S		
chloramphenicol	solution (eye drops), 0.5%	M		
gentamicin	solution (eye drops), 0.3% (sulfate)	M		
idoxuridine	solution (eye drops), 0.1%	L		

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tetracycline	eye ointment, 1% (hydrochloride)	S	X	X
21.2 Anti-inflammatory agents				
prednisolone	solution (eye drops), 0.5% (sodium phosphate)	M		
21.3 Local anaesthetics				
tetracaine	solution (eye drops), 0.5% (hydrochloride)	L		
21.4 Miotics and antiglaucoma medicines				
pilocarpine	solution (eye drops), 2%	M		
timolol	solution (eye drops), 0.25% (as maleate)	S		
Supplementary List				
timolol	solution (eye drops), 0.5% (as maleate)	M		
21.5 Mydriatics				
atropine	solution (eye drops), 1% (sulfate)	M		
21. A. TOPICAL NASAL DECONGESTANTS				
Supplementary List				
xylometazoline	Solution (nose drops), 0.05% (hydrochloride)	M		
xylometazoline	Solution (nose drops), 0.1% (hydrochloride)	M		
22. OXYTOCICS AND ANTIOXYTOCICS				
22.1 Oxytocics				
ergometrine	injection, 200 micrograms (hydrogen maleate) in 1-ml ampoule	S	E	E
oxytocin	injection, 10 IU in 1-ml ampoule	S	X	X
Supplementary List				
ergometrine	tablet, 200 micrograms (hydrogen maleate)	M		
misoprostol	scored tablet, 200 micrograms (Cytotec)	XL		
22.2 Antioxytocics				
salbutamol	injection, 50 micrograms (as sulfate)/ml in 5-ml ampoule	M		
salbutamol	tablet, 4 mg (as sulfate)	S		
24. PSYCHOTHERAPEUTIC MEDICINES				
24.1 Medicines used in psychotic disorders				
chlorpromazine	scored tablet, 25 mg (hydrochloride) Avoid direct contact with chlorpromazine. Risk of contact sensitisation. Tablets should not be crushed und solutions should be handled with care	S		
chlorpromazine	scored tablet, 100 mg (hydrochloride) Avoid direct contact with chlorpromazine. Risk of contact sensitisation. Tablets should not be crushed und solutions should be handled with care	S		
haloperidol	injection, 5 mg in 1-ml ampoule	M		

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haloperidol	scored tablet, 5 mg	S		
Supplementary List				
fluphenazine	injection, 25 mg (decanoate or enantate) in 1-ml ampoule	XL		
24.2 Medicines used in mood disorders				
24.2.1 Medicines used in depressive disorders				
amitriptyline	tablet, 25 mg (hydrochloride)	S		
24.2.2 Medicines used in bipolar disorders				
carbamazepine	scored tablet, 200 mg	M		
lithium carbonate	capsule or tablet, 300 mg	L		
valproic acid	enteric coated tablet, 200 mg (sodium salt)	M		
24.3 Medicines used in generalized anxiety and sleep disorders				
diazepam	scored tablet, 2 mg	S		
diazepam	scored tablet, 5 mg	S		
24.4 Medicines used for obsessive compulsive disorders and panic attacks				
clomipramine	capsules, 10 mg (hydrochloride)	L		
25. MEDICINES ACTING ON THE RESPIRATORY TRACT				
25.1 Antiasthmatic and medicines for chronic obstructive pulmonary disease				
beclometasone	inhalation (aerosol), 50 micrograms (dipropionate) per dose	XL		
epinephrine / adrenaline	injection, 1 mg (as hydrochloride or hydrogen tartrate) in 1-ml ampoule	M		
salbutamol	inhalation (aerosol), 100 micrograms (as sulfate) per dose	L		
salbutamol	injection, 50 micrograms (as sulfate)/ml in 5-ml ampoule	S		
salbutamol	respirator solution for use in nebulizers, 5 mg (as sulfate)/ml	XL		
salbutamol	syrup, 2 mg/5 ml	L		
salbutamol	tablet, 4 mg (as sulfate)	S		
Theophylline	tablet, modified release, scored 200 mg	M		
Supplementary List				
aminophylline	injection, 25 mg/ml in 10 ml ampoule	M		
beclometasone	inhalation (aerosol), 250 micrograms (dipropionate) per dose	XL		
25.2 Expectorants	Not in WHO-List, because of lack of pharmacological activity.			
Potio alba	oral solution, ammonium chloride 300 mg, ol. menthae pip. 1.67 microliter/15 ml	M	X	X
Potio nigra	oral solution, ammonium chloride 300 mg, glycyrrh.succ. 500 mg/15 ml	M	X	X
26. SOLUTIONS CORRECTING WATER, ELECTROLYTE AND ACID-BASE DISTURBANCES				

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Essential Medicines List- Complete List E = Emergency Tray X* = this drug can be ordered on special request		Price Indicator	Level 1	Level 2
26.1 Oral				
oral rehydration salts (for glucose-electrolyte solution)	see ***section 17.7.1***	S		
potassium chloride	tablet, slow release, 600 mg (equivalent to K+ 8mmol, Cl- 8 mmol)	M		
26.2 Parenteral				
glucose	injectable solution, 5% in 1-liter bag	M		
glucose	injectable solution, 10% in 0.5-liter bag	L		
glucose	injectable solution, 50% hypertonic	M		
sodium chloride	injectable solution, 0.9% isotonic (equivalent to Na+ 154 mmol/l, Cl- 154 mmol/l in 100 ml vial	M		
sodium chloride	injectable solution, 0.9% isotonic (equivalent to Na+ 154 mmol/l, Cl- 154 mmol/l in 1-liter bag	M	E	E
sodium hydrogen carbonate / sodium bicarbonate	solution, 8.4% in 10-ml ampoule (equivalent to Na^+ 1000 mmol/l, HCO_3-1000 mmol/l)	M		
sodium lactate, compound solution	injectable solution, in 500-ml	M	E	E
sodium lactate, compound solution	injectable solution, 1-l bag	M		
Supplementary List				
potassium chloride	solution, 11.2% in 20-ml ampoule, (equivalent to K+ 1.5 mmol/ml, Cl- 1.5 mmol/ml)	M		
26.3 Miscellaneous				
water for injection	10-ml ampoules	S	X	X
27. VITAMINS AND MINERALS				
ascorbic acid (Vitamin C)	tablet, 50 mg	S		
iodine	capsule, 200 mg (iodized oil)	L		
pyridoxine (Vitamin B6)	tablet, 50 mg (hydrochloride)	S		
retinol (vitamin A)	capsule, 50 000 IU	M	X	X
retinol (vitamin A)	capsule, 200 000 IU	M	X	X
thiamine (vitamin B1)	tablet, 50 mg (hydrochloride)	S		
vitamin, multi	tablet, coated, ascorbic acid 15 mg, colecalciferol 300 IU, nicotinamide 7.5 mg, retinol 2500 IU, riboflavine 0.5 mg, thiamine 1 mg	S	X	X
Supplementary List				
*calcium**	tablet, 500 mg (as acetate or carbonate) *management of hyperphosphataemia	S		
calcium gluconate	injection, 100 mg/ml in 10-ml ampoule	M		

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vitamin B, compound	injection, nicotinamide 20 mg, pyridoxine 2 mg, riboflavine 2 mg, thiamine 5 mg/ml in 10-ml ampoule	M		

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