

Burmese Border Guidelines

YEAR 2003

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ABOUT THIS EDITION

The Burmese Border Guidelines are clinical guidelines designed to assist medics and health workers practising along the Thai-Burmese border. They are adapted from the medical literature and treatment guidelines of WHO and some NGOs to specifically address the pathologies and constraints of the Burmese Border context. Every effort has been made to incorporate the experiences of local medics and the medical providers who have been working in the refugee camps and communities on the border for the last 15 years.

This Edition:

- Effort has been made to keep English language simple. If medical terminology is used, it is often put in brackets after explanation in common words.
- **New sections** have been included responding mostly to requests of the medics: Shock, Haemolytic anaemias, Rapid Diagnostic Tests for Malaria, Sinusitis, Rheumatic Fever, Epilepsy, Diabetes, Leprosy, Joint Disorders, Cellulitis, Herpes Simplex and Zoster, Scrub Typhus, Dengue, Leptospirosis, Drug and Alcohol intoxication, Common Psychiatric Disorders, Gender Violence.
- Some sections have been **extensively reviewed** (like Hypertension, TB, HIV/AIDS) and some therapeutic **protocols have been changed** according to changing patterns of resistance or reviewed international guidelines (like therapy for Hypertensive crisis, Vitamin B1 deficiency, Typhoid Fever, Dysentery).
- **New Tables** have been introduced: Peak Flow normal values and Weight/Height Scores.
- **Drug dosage tables** have been reviewed and all drugs mentioned in the Guidelines have their doses, major side-effects and contraindications listed in alphabetical order.
- At the end a list of **References** has been added. It is not an inclusive list of all material consulted, but of the most important sources of information used.

CONTRIBUTORS

Agencies who have contributed to this edition include:

- Aide Medicale Internationale (AMI)
- American Refugee Committee (ARC)
- International Rescue Committee (IRC)
- Malteser Germany (MHD)
- Medecins Sans Frontieres – France (MSF)
- Mae Tao Clinic

Burmese Border Consortium (BBC) has contributed for the section on Malnutrition, Vitamin deficiency and Common Psychiatric Problems.

Shoklo Malaria Research Unit (SMRU) has contributed for the Malaria section.

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HOW TO USE THE GUIDELINES

These guidelines will help you to confirm the diagnosis of a patient's disease and will also help you to choose treatment according to the severity of the disease and the age of the patient. The guidelines have been adapted from medical reference books and simplified for use in the context of refugee camps and peripheral clinics on the Thai/Burma border. These guidelines may not be appropriate for use elsewhere.

- 1) Read the **TEXT** about the disease. It tells you which signs of severity to look for, which medicines to use, and what contra-indications to look out for with medicines.
- 2) Read the **TABLES** for the medicine that you have chosen to find the right dose according to the age or weight of the patient.
- 3) Considerable care has been taken to ensure that the information in these guidelines is accurate but the user is advised to **CHECK ALL DRUG DOSES CAREFULLY BEFORE USE** in other references, literature or textbooks.

Abbreviations used:

mg	=	milligram	PO	=	per os (oral)
g	=	gram	IM	=	intramuscular
kg	=	kilogram	IV	=	intravenous
ml	=	millilitre	PR	=	per rectum (or Pulse Rate)
			PV	=	per vagina
cc	=	cubic centimetre	SC	=	subcutaneous
d	=	day	stat	=	single dose
mn	=	minute	OD	=	one time a day
x	=	times	BID	=	2 times a day/ 12 hourly
/	=	per	TID	=	3 times a day/ 8 hourly
Tab	=	tablet	QID	=	4 times a day/ 6 hourly

Note: 1cc = 1ml

Example: “**2 tabs TID x 5d**” means “2 tablets taken 8 hourly over a period of 5 days”

AFB	=	Acid Fast Bacilli
AIDS	=	Acquired Immuno Deficiency Syndrome
ANC	=	Ante Natal Care
ARI	=	Acute Respiratory Infection
BP	=	Blood Pressure
CRP	=	Chronic Reactive Protein
D5S/D5W	=	Dextrose 5% and Saline/Dextrose 5% in Water
ESR	=	Erythrocyte Sedimentation Rate
GI	=	Gastro intestinal
Hb	=	Haemoglobin
Hct	=	Haematocrit
HIV	=	Human Immuno-deficiency Virus
IPD	=	In-Patient Department
LRTI	=	Lower Respiratory Tract Infection
MS	=	Malaria Smear
NSS	=	Normal Saline Solution
OPD	=	Out-Patient Department
ORS	=	Oral Rehydration Salts
PFG	=	Plasmodium Falciparum Gametocytes
PFT	=	Plasmodium Falciparum Trophozoites
PVG	=	Plasmodium Vivax Gametocytes
PVT	=	Plasmodium Vivax Trophozoites
RBC	=	Red Blood Cells
R/L	=	Ringers Lactate
RR	=	Respiratory Rate
SFP	=	Supplementary Feeding Program
TB	=	Tuberculosis
TFP	=	Therapeutic feeding Program
URTI	=	Upper Respiratory Tract Infection
UTI	=	Urinary Tract Infection

SHORT RECOMMENDATIONS

Treating the patient depends on proper diagnosis and a good choice of treatment.

In IPD you can supervise the treatment.

In OPD you cannot be sure that the patient will follow the full treatment unless there is organised supervision of treatment such as DOT for tuberculosis.

To ensure proper use of medicines by the patient, remember these rules:

1) Do not give more than 2-3 medicines (except when there is a special reason to do so):

- It could be **dangerous** (some medicines taken together may become toxic).
- It could be **ineffective** (some medicines taken at the same time stop working).
- It is very difficult for the patients to remember the dose, the time and the number of days they have to take each medicine.

2) For acute diseases/infections give the full course of medicines.

Instruct the patient to take the complete course and return if the condition doesn't improve.

3) For chronic diseases give a supply of medicines based on the frequency you see the patient.

For most chronic illnesses you should see the patient at least every three months. The patient, therefore, should not receive more than a 3-month supply of medicine and be advised to return before they run out.

4) Prepare the medicines:

- Cut tablets for children
- Write the name of the medicine and dosage on the pill bag.

5) Explain to the patient:

- How many times a day and when to take the medicines (6 hourly, 8 hourly, 12 hourly)
- How many tablets to take each time
- How many days to take the medicine
- How to use local treatments, ORS,...
- When to return to the clinic

APPROACHING A PATIENT

Good ways of behaving, listening and speaking with the patient are very important to successful treatment.

When you receive a patient in the consultation room do the following:

- 1) Greet the patient.
- 2) Make sure the patient is comfortable:
Get the patient seated,
If the patient is very sick, let the patient lie down on a bed.
- 3) Make sure nobody else can listen to or see the patient during examination:
No more than one patient at a time in the consultation room.
One medic per room to do consultation.
Do not allow other people to listen to the complaints of the patient.
Do not allow people to look through the window.
Take special care when doing gynaecological or genital examination.
- 4) Take sufficient history. This is often not done. It is essential to get the history and to ask about recent illnesses and treatments and to look at their record book.
- 5) Properly examine the patient.
- 6) Check that the weight and temperature are recorded on the chart (lemma).
- 7) Check which treatment the patient has had recently.
- 8) For children ask about vaccination and check when the child last took a dose of Vitamin A.
If the child has not had all the vaccinations available ask the mother to go to the next session and tell her when it will be.
If the child has not taken any Vitamin A in the last 4 months, give it.
If the child looks thin, check for malnutrition.
- 9) Write down briefly the complaints, examination and laboratory findings on the chart.
- 10) Write down clearly the diagnosis and the treatment on the chart.
- 11) Explain to the patient what is wrong with him/her, the treatment you are going to give and when to come back to the clinic.
- 12) If you do not know what the diagnosis is, be honest and tell the patient you do not know, then explain what can be done to find out.
- 13) Explain to the patient any special instructions.

COMMON SYMPTOMS

FEVER

Fever means an increase in body temperature.
Axillary temperature more than 37.5 is considered as fever.

Fever is a common symptom usually related to viral, bacterial or parasitic infection.

Record temperatures taken in the axilla on the chart without any change (e.g. 38°C). If a temperature is taken in another place such as the rectum or oral cavity, it should be marked (e.g. r38°C).

SYMPTOMS associated with fever:

- Chills: feeling of cold that happens in most fevers.
- Rigor: a severe chill with chattering of the teeth and severe shivering.

TREATMENT

Treat when fever is over 37.5 C in Children and over 38 C in Adults:

- Get the patient undressed (no extra clothes, no blanket,...).
- Wet the skin with tepid (cool, not cold) sponging (put water on the whole body).
- Give Paracetamol (never give ASA or aspirin to children under 12 years).
- Keep the patient well-hydrated (drinking plenty of fluids, continuing to breast feed).

Note:

For patients with fever who are comatose and cannot swallow, it is possible to give some Paracetamol by rectum or im.

**FEVER IS THE MOST COMMON CAUSE OF CONVULSIONS
IN CHILDREN UNDER 5 YEARS!**

TRY TO FIND AND TREAT THE CAUSE OF THE FEVER

SYMPTOMS	POSSIBLE DISEASE
Chills, headache, sweating, consciousness disorders Headache, neurological signs, neck stiffness Respiratory signs Urinary signs Diarrhoea with mucus and blood Abscess, infected skin lesions Shock, chills Painful big liver Prolonged high fever Prolonged fever with cough and weight loss Isolated fever, body pain, running nose Others	Malaria Meningitis ARI Cystitis, Pyelonephritis Bacterial Diarrhoea Skin Infection Septicaemia Liver Abscess Typhoid TB Viral Infections Cancer, HIV/AIDS

Note:

Do not forget to re-examine the patient after receiving the results of a blood smear, especially when it is Negative. Repeat the smear if the fever continues.

I. FEVER IN PREGNANT WOMEN

Fever is always serious in pregnant women. Fever may provoke an abortion or premature delivery.

The most common causes are:

- Malaria: Check malaria smear.
- Urinary and Pelvic Infections: do obstetric and gynaecological examination and check urine.
- Respiratory Infection: ask questions, check respiratory rate, test sputum.

If no cause can be found and if the examination is normal, then treat the fever with Paracetamol and see the patient again after 1 day.

II. FEVER IN CHILDREN less than 1 year old.

Newborns, Babies less than 2 months old.

Fever is always serious in newborns and children <2 months.

- Refer to IPD.
- Temperature should be checked rectally.
- In case of Malaria, treat with appropriate anti-malarials.
- When infection is present (Respiratory Infections, Meningitis,...), new-borns can develop septicaemia (infection of blood = infection of the whole body = neonatal sepsis) within a few hours. **Refer to IPD and start iv Ampicillin and Gentamicin.**

Children above 2 months

In OPD, when a child comes in with fever, always consider:

- Malaria: check MS
- Otitis: check ear drums.
- Respiratory Infection: fever, increased RR, cough. Check throat.
- Meningitis: fever, vomiting, sleepiness, convulsions, bulging fontanelle, sometimes neck stiffness.
- Urinary Infection: check urine and do microscopic examination (if possible).
- Skin Infections: get the child undressed and check the whole body.
- Joint or bone infections: move arms and legs, touch the joints. Look for swollen and warm joints.

III. HYPOTHERMIA

Low temperature less than 35.5 degrees.

Can happen in

- Sepsis
- Neonates, (especially preterm)
- Severely malnourished children
- Hypoglycaemia
- Diabetes
- Alcohol abuse

PAIN

Pain is usually a symptom of a disease. Try to find the disease (history, clinical examination) and **always** treat the pain.

TAKE THE HISTORY OF THE PAIN:

- Onset (sudden or slowly increasing)
- Duration (for how long)
- What kind of pain (colicky, burning, continuous)
- Which symptoms are associated (fever, cough, frequent urine)

EXAMINE THE PATIENT:

Check especially the area where the pain seems to be localised.

TREAT THE CAUSE IF YOU FIND IT

If you don't find a cause of the pain and it is severe and recurrent, admit to IPD. Give pain relief and review.

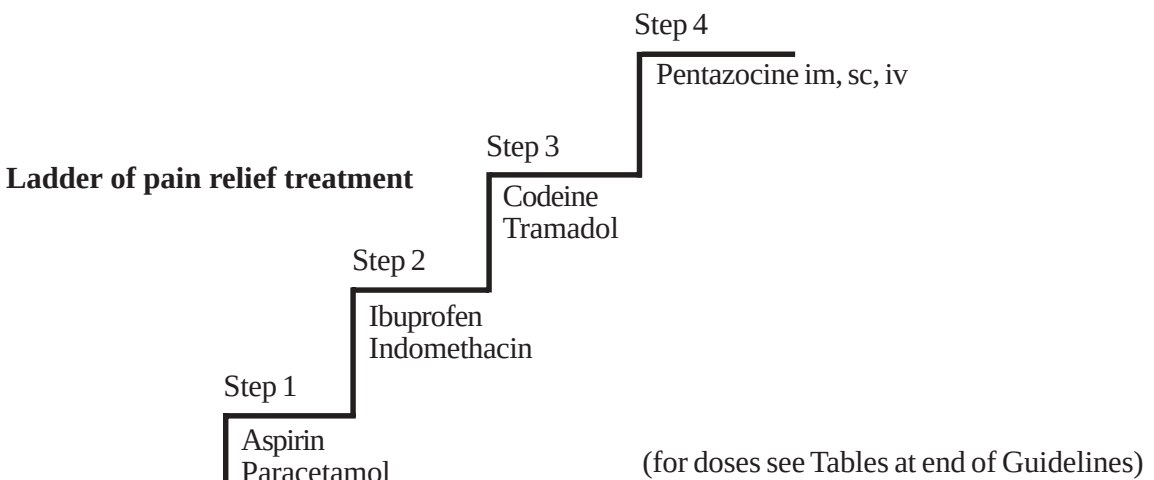
TREATMENT

- Moderate headache, muscle, joint, bone pain: **Paracetamol or ASA (aspirin)**
- If moderate muscle or joint pain does not improve with ASA, start anti-inflammatory medicine like **Ibuprofen or Indomethacin** if not contraindicated.
- **Do not give ASA** for epigastric pain (if suspicion of gastritis/peptic ulcer) (see p.12).
- For moderate to severe pain you can use **Codeine** or **Codeine-Paracetamol**.
- When Codeine is not enough, you can start **Tramadol**.
- When pain is very severe, give **Pentazocine**.
- Before transport to hospital you can give Diazepam IM if not contraindicated

**Never leave a patient with severe pain without a diagnosis of the underlying cause of the pain. Only relieving the pain is not enough.
Try to find and treat the cause of the pain.**

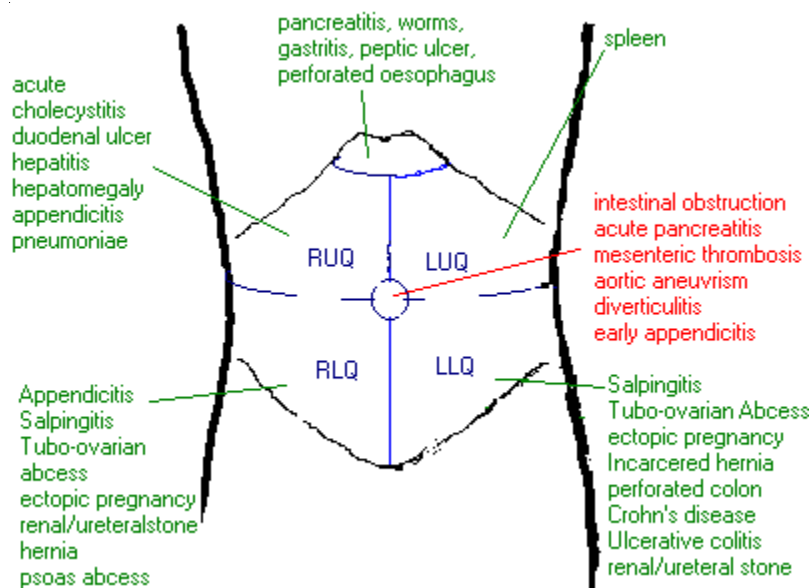
Note:

- ASA or Indomethacin can cause bleeding from gastrointestinal tract.
- Pentazocine can depress the respiratory system. *Take extreme care when prescribing for patients with existing respiratory problem.*
- Do not give more than the maximum recommended dose



ACUTE ABDOMINAL PAIN

COMMON CAUSES:



Check the patient carefully before giving any treatment. In young children, wait until they are calm and quiet.

Abdominal pain can be caused by SURGICAL and NON-SURGICAL problems.

Use the following as a guide:

A. Hard abdomen with moderate to severe pain:

This usually has a SURGICAL CAUSE like peritonitis, appendicitis, cholecystitis, intestinal perforation/obstruction, ectopic pregnancy rupture.

Renal stones, incarcerated hernia and cholangitis might also need operation.

TREATMENT:

- Refer the patient to a hospital.
- Give nothing to eat or drink.
- If you cannot find a car and you have to wait one night, start iv fluids and antibiotics:
 - 1st choice: iv Ampicillin + iv Gentamicin +iv/po Metronidazole
 - 2nd choice: iv Chloramphenicol + iv Gentamicin

B. Soft abdomen with moderate pain:

This usually has a NON-SURGICAL CAUSE like pyelonephritis, worms, painful menstruation, PID, endometritis, peptic ulcer (without perforation), gynaecological or obstetrical problems, hepatitis.

Treat the cause.

EPIGASTRIC PAIN

Epigastric pain is a very common complaint.
Possible causes are:

1. GASTRITIS

Gastritis is an inflammation of the stomach surface.

It can be due to high alcohol intake, heavy smoking, spicy food and can be made worse by some medicines (like ASA, Indomethacin, Ibuprofen, high dose Ferrous Sulphate)

SYMPTOMS AND SIGNS

- Burning pain in the epigastric area, often worse in the day and after eating.
- Nausea.
- Burning pain in the epigastric area moving to the mouth with acid taste is also a common symptom.

TREATMENT:

- Try to reduce or stop alcohol, smoking, spicy food, tea and coffee.
- Stop anti-inflammatory drugs (ASA, Indomethacin and Ibuprofen).
- Give Antacids: Aluminium Hydroxide 500 mg TID between meals and at bedtime as required.

Gastritis is rare in children!

2. PEPTIC ULCER DISEASE

In peptic ulcer, epigastric pain can be very severe.

Sometimes what you think is gastritis, is really peptic ulcer: if the patient does not get better on Aluminium Hydroxide and has had Mebendazole, start treatment for peptic ulcer.

COMPLICATIONS :

In some cases, **bleeding** can happen. The patient may vomit brown liquid (like coffee) or fresh blood and may have melaena (black sticky smelly stools). Remember that patients on iron tablets will have black stool.

TREATMENT:

- Cimetidine: 400mg po BID for 4-6 weeks.

In case of active bleeding:

- Start IV line with Ringer's Lactate or Normal Saline Solution.
- Monitor vital signs.
- If the patient is in shock, transfuse if possible.
- Put in a nasogastric tube.
- Start Cimetidine
- Keep the patient "nil by mouth".
- Refer the patient.

**Bleeding from a peptic ulcer is an emergency:
manage the patient as quickly as possible**

3. WORMS

Worms often give epigastric and abdominal pain in children and adults.

Treat all epigastric pain with a course of Mebendazole or Albendazole.

4. ANXIETY

An anxious person can complain of epigastric pain.

Try to take a good history and look especially at the social history.

5. CARCINOMA OF THE STOMACH

In a patient with epigastric pain and weight loss, especially if more than 60 years old, consider the possibility of cancer.

FATIGUE / TIREDNESS / NUMBNESS

These are very common complaints in the camps and amongst migrant workers. They can result from a boring and confined lifestyle in the camps, overwork and stress in the factories, family and social problems. Sometimes they can be symptoms of disease.

1. TAKE A HISTORY, EXAMINE THE PATIENT AND ASSESS THE PSYCHOLOGICAL STATE.

- Check if the patient is pregnant.
- Take a good history: cough, weight loss, headache, malaise, difficult breathing, fever, constipation, diarrhoea, vomiting, painful menstruation, muscular and joint pain, quantity of urine.
- Do a good examination : Check pulse, blood pressure, temperature, pallor, nodes, pulmonary auscultation, cardiac auscultation (murmur, irregular heart rate), thyroid examination, liver, spleen.
- Look for signs of Vit. B1 deficiency, especially in pregnant or lactating women.

2. LOOK FOR A CAUSE:

POSSIBLE CAUSES	SYMPTOMS
Infections (mononucleosis, Toxoplasmosis, HIV, TB...) Anaemia (Iron deficiency, Thalassaemia...) Hypothyroidism Pregnancy Kidney dysfunction / Diabetes Lung disease Heart problems (heart failure, valvular heart disease, pericardial disease, arrhythmias) Stomach and intestinal problems. Cancer Vitamin B1 deficiency (especially in pregnancy) Psychological problems	Fatigue, nodes, fever... Fatigue, pallor (check spleen) Fatigue, lethargy, constipation, stiffness Fatigue, tiredness Fatigue, passing urine very often Fatigue, difficulty in breathing Fatigue, difficulty in breathing, slow or fast pulse rate, oedema Fatigue, diarrhoea, vomiting, nausea... Fatigue, weight loss , nodes, pallor... Fatigue, numbness of limbs Fatigue, depression...

3. TREAT THE CAUSE IF YOU FIND IT.

4. IF THE PHYSICAL EXAMINATION IS NORMAL AND NO PSYCHOLOGICAL PROBLEMS ARE FOUND, REASSURE THE PATIENT AND REASSESS IN 2 WEEKS.

CONVULSIONS

Convulsions are sudden loss of consciousness with or without cyanosis and strong movements of the arms and legs (sometimes the patient also passes urine or bites the tongue) lasting for a few minutes. When the movements stop, the patient may sleep and breath deeply for a few hours.

In small babies arm or leg movements might be absent, but their eyes, angles of mouth, or finger tips move.

If the patient is still conscious during the crisis, it is not a convulsion.

EMERGENCY MEASURES

- 1) Put in coma position (lying on left side). Protect against injury. (see picture in Coma section).
- 2) Maintain clear upper airway (mouth open and clean secretions and vomit).
- 3) Stop the convulsions with Diazepam (Table below).
- 4) Give oxygen and suction if available.
- 5) Treat fever if present.
- 6) Check blood sugar.

Diazepam vial: 10 mg / 2 ml

Weight	DOSE IV / IM / PR	
	0.2-0.3 mg/kg	10 mg / 2ml
5 kg	1 mg	0.2 ml
10 kg	2 mg	0.4 ml
15 kg	3 mg	0.6 ml
20 kg	4 mg	0.8 ml
25 kg	5 mg	1 ml
50kg	10 mg	2 ml
	Maximum 3 mg/kg/day	

- To give Diazepam iv:

**Prepare dose as in table Inject slowly
(not more than 2mg / minute) over 2 - 10 min**

- If after 10 min the patient still has convulsions, repeat the dose.

If Convulsions continue:

- Give **Phenobarbitone** loading dose as an infusion over 30 minutes

**Dilute 1 ml in 10 ml of water for injection (Max. 1 g)
Child 15 mg/kg, Adult 10 mg/kg**

- After Phenobarbitone infusion, if the patient continues to have convulsions **refer to hospital.**

Do not leave Phenobarbitone in plastic syringes!

LOOK FOR A CAUSE AND TREAT IT

Convulsions with fever	Malaria, Meningitis, Hyperthermia, Encephalitis
Convulsions with or without fever	Hypoglycaemia, Severe dehydration, Head trauma, Amphetamines, Alcohol, Renal failure (uraemia)
Convulsions in pregnant women	Eclampsia (high BP + oedema + convulsions), Malaria, Hypoglycaemia
Repeated convulsions without fever	Brain tumour, Cysticercosis

If you cannot find a cause, think of Epilepsy (see page 63)

COMA

There are different degrees of reduced level of consciousness. Coma is the most severe.

1. Drowsiness: patient can be easily woken up.
2. Stupor: patient can be woken up with strong stimulation.
3. Coma: patient cannot be woken up.

Glasgow Coma Scale:

Eye-opening		Best verbal response		Best motor response	
Spontaneous	4	Oriented	5	Obedying	6
To speech	3	Confused	4	Localising	5
				withdrawing	4
To pain	2	Inappropriate	3	Flexing	3
None	1	Incomprehensible	2	Extending	2
		None	1	None	1

Total score 3-15.

Initial scores <5 suggest poor outcome depending on cause.

Scores >9 correlate with good outcome.

Glasgow score modified for children (Blantyre coma score)

Score

- a) **Best Motor response**
Localises painful stimulus.....2
Withdraws limb from pain.....1
Non-specific or absent response.....0
- b) **Verbal response**
Appropriate cry.....2
Moan or inappropriate cry.....1
None.....0
- c) **Eye movements**
Directed.....1
Not directed.....0

Total score 0-5.

<2 indicates coma

ON ADMISSION

1) Clear airway. The “chin lift” method is often enough. At all times be aware of the possibility of neck injury, so handle with care.



2) Coma Position. Put patient on one side. Legs bent at the knee and hand palm-side down under the cheek (this will help vomit to drain away).



3) Check vital signs, blood sugar, malaria smear and haemoglobin.

4) Ask questions to the family:

- Which symptoms were there before the coma (fever, headache, vomiting, convulsions)?
- Has any medicine been given?
- Has the patient had an accident? When?
- Has the patient taken any poison, medicine, alcohol?

5) Examine the patient completely and do not forget to check:

- Is the neck soft or stiff?
- Is there a wound or swelling or bruise on the head?
- Neurological exam: check the pupils; if they are different sizes, consider brain bleeding and refer.
- Breath: alcohol, smell of fruit (diabetic), smell of urine (kidney failure).
- Skin colour: cyanosis (blue), jaundice (yellow), pallor (pale or white).

LOOK FOR THE CAUSE AND TREAT IT

Coma with fever	Malaria, Meningitis, Encephalitis or other severe infections
Coma with or without fever	Hypoglycaemia (dextro<2.5mMol or 45 mg/100ml) Severe dehydration
Coma without fever	Cranial trauma (accident), Poisoning, Cerebral haemorrhage, Hyperglycaemia

Note:

- If you do not find a cause or you can not treat it, refer the patient to a hospital if possible.

MANAGEMENT DURING THE STUPOR/COMA

1. Position the patient on one side. Show the family how to change the position of the patient from one side to the other every 2 hours. **Do not let the patient lie on his back** because that may cause the tongue to block the airway or vomit may enter the airway and block it.
2. Put in a urine catheter.
3. Regularly reassess the patient.
4. Check the vital signs every 2 hours.
5. Check the coma score on admission and then twice a day.
6. Monitor fluid balance (measure input and output).
7. Wash the patient all over once a day.
8. Clean urine and stool as soon as they are passed. Wash the affected area and do not just wipe away with dry cloth or paper. Help the family to do this.
9. Clean the mouth and moisten the lips several times a day (at least 4 times). Vaseline applied on the lips prevents cracking.
10. Clean the eyes with NSS and cotton wool. Apply Terramycine ointment BID and close with gauze to avoid conjunctivitis, drying up of the cornea and injury. Drying up of the cornea can lead to blindness.
11. Do massages; perform passive limb movements every 4 hours to preserve muscle tone and prevent contraction.
12. In prolonged coma consider N/G (nasogastric tube through the nose into the stomach) feeding depending on the cause and prognosis (probable outcome).

SHOCK

DEFINITION In shock the blood flow is not enough to keep the person alive.

**SHOCK IS AN EMERGENCY!
DELAY IN TREATMENT CAUSES DEATH**

DIFFERENT KINDS OF SHOCK:

1. Shock caused by loss of blood or fluids (Hypovolaemic shock):

Causes:

- Severe bleeding anywhere in the body
- Severe fluid loss (example: severe vomiting and diarrhoea, burns, severe ascites)

2. Shock caused by widening of the blood vessels (Vasodilatory shock):

Most common causes:

- Bacterial infection (septic shock)
- Severe allergic reaction (anaphylactic shock)
- Severe brain injury or bleeding (neurogenic shock)
- Taking of certain drugs or poisons

3. Shock caused by weak pumping of heart = heart failure (Cardiogenic shock):

Most common causes:

- Chronic Severe Anaemia
- B1 Deficiency
- Damaged heart valve
- Abnormal rhythm of the heart: too fast (tachycardia) or too slow (bradycardia)
- Lung collapse (pneumothorax)
- Heart attack

SYMPTOMS AND SIGNS

Symptoms and signs can vary with the different kind of shock, but some are common in most patients:

- **Hypotension (low blood pressure)** – Systolic BP < 90 mmHg happens in most shock patients. In early stages a drop in systolic blood pressure of greater than 40 mmHg suggests that the patient is going into shock.
- **Cold, sweaty (“clammy”) skin** is found in most shock patients.
- An exception is the flushed skin in the early stages of vasodilatory shock (for example, in septic shock).
- **Low Urine Output (= Oliguria)**
- **Fast and weak pulse**
- **Fast, shallow breathing.**
- **Change in mental status** – the patient is initially agitated, then confused, then drowsy and then in coma.

IN SEPTIC SHOCK YOU ALSO FIND:

- High or low temperature
- History of chills before fever started
- Warm skin

IN ANAPHYLACTIC SHOCK YOU ALSO FIND:

- Sometimes history of taking of some medicines (especially Penicillins and Anti - Inflammatories), of insect bite, of ingestion of some food (especially seafood and nuts). A symptom of anaphylaxis can start from 5 minutes to several hours after.
- Oedema (swelling) of lips and throat which makes breathing difficult
- Wheezing
- High BP before it drops to low levels
- Sometimes an itchy rash quickly spreading over all the body
- Sometimes vomiting and diarrhoea

TREATMENT

1. GENERAL TREATMENT – IN ALL PATIENTS:

1. **A** =AIRWAY

- Keep clear the airway (mouth, throat, trachea)

2. **B** =BREATHING

- Give high flow **Oxygen**

3. **C** =CIRCULATION

- Put in 2 iv cannulas (biggest possible)
- Start Normal Saline

OTHER TREATMENT DEPENDS ON THE CAUSE. MOST COMMON CAUSES ARE:

2. BLOOD/FLUID LOSS

- Stop bleeding
- Replace loss: give Normal Saline, **1-2 litres in a hour or 20cc/kg stat**, monitoring BP every 10 minutes and repeating until systolic BP > 90 mm Hg.

There is no advantage in using Ringer or Haemaccel and they are much more expensive
The important thing is to give fluids quickly and in big amounts.

- In case of bleeding, give blood (run the iv fast, several units as necessary)
- If you cannot stop the bleeding ==> refer to hospital

3. SEPTIC SHOCK

- Give **IV fluids** as for blood/fluid loss
- Give high doses **IV Ampicillin and IM/IV Gentamicin** (see Treatment Tables)
- Try to find the source of infection
- Treat the fever

4. ANAPHYLACTIC SHOCK

- **Adrenaline (IM)** 1:1 000. 1 vial=1cc=1mg

CHILD < 6 months	im	0.05 cc
6 months – 6 years	im	0.12 cc
6 –12 years	im	0.25 cc
CHILD > 12 years and ADULT	im	0.5 cc

- **IV fluids** as per blood/fluid loss
- **Dexamethasone (IV)** – 1 vial = 1cc = 4 mg

CHILD < 8 kg	iv / im	0.25 cc
8-15 kg	iv / im	0.5 cc
> 15 kg	iv / im	1 cc
ADULT	iv / im	1-2 cc

- **Chlorpheniramine (IV)** - 1 vial = 10 mg

CHILD	not recommended
ADULT	1-2 vials iv (over 1 minute) or give orally (see Drug Tables)

5. IN ALL PATIENTS, CAREFUL MONITORING:

1. Vital signs (pulse rate, blood pressure, breathing rate)
2. Urine output (put in a urinary catheter)
3. IV fluids input
4. Listen to chest to make sure you are not giving too much fluids

LOSS OF BLOOD OR FLUIDS (HYPOVOLAEMIA) IS THE MOST COMMON
CAUSE OF SHOCK
==> IF YOU ARE NOT SURE OF THE CAUSE, TREAT FOR
HYPOVOLAEMIA

ANAEMIA

ANAEMIA = HAEMOGLOBIN (Hb) IN PERIPHERAL BLOOD IS LOWER THAN NORMAL FOR AGE, SEX AND PREGNANCY STATE

	Hb (g/dl)	Hct
Newborn infants	< 14	< 42
6 months - 6 years	< 11	< 33
6-14 years	< 12	< 36
Adult males	< 13	< 39
Adult females (non-pregnant)	< 12	< 36
Adult females (pregnant)	< 11	< 33

Anaemia is the most common health problem in the Tropics.

You, as a health worker, can help people a lot by:

1. Giving nutritional advice
2. Distributing iron and folate tablets
3. Deworming everybody at regular intervals.

COMMON CAUSES:

(The most common in this area are highlighted in **bold**)

ACUTE

- **Malaria** (acute destruction of RBCs)
- Acute bleeding (GI tract, genital tract, artery damage in accident)

CHRONIC

- **Nutritional deficiencies** (lack of **ferrous** and **folate** in diet)
- **Hookworm infestation**
- **Repeated pregnancies and prolonged breastfeeding**
- Peptic ulcer
- Thalassaemia
- Chronic bleeding
- Cancers
- Chronic infections

- Liver and kidney diseases
- Tropical splenomegaly
- Aplastic anaemia
- G6PD deficiency

Very often one person is anaemic from **more than one cause**. Supplementing with Ferrous Sulphate (FS) and Folic Acid (FA), you can help many people to feel better and have a better life.

SYMPTOMS AND SIGNS

Symptoms and signs depend on the severity of anaemia and if anaemia is acute (short and fast) or chronic (long and slow).

1. MODERATE CHRONIC ANAEMIA

SYMPTOMS:

- Tiredness
- Not able to work well (a lower income, poorer care for children)
- In children: reduced growth
 delayed development
 not able to do well at school
- Difficulty breathing and palpitations when doing something (**not** at rest). For example when working or walking

SIGNS

- Pallor (conjunctivae, palm of hands, nail beds)

Normal heart rate and respiratory rate at rest

2. SEVERE CHRONIC ANAEMIA

Sometimes people can have severe anaemia (Hb < 6) with normal pulse and respiratory rate at rest. This is because the anaemia has been very slow to develop (chronic hookworm infection, repeated malaria attacks) or they have had a low haemoglobin since birth (Thalassaemia).

SYMPTOMS:

- Extreme tiredness and weakness
- Difficulty breathing and palpitations on minimal effort

SIGNS

- Very pale
- Often heart murmur

Normal heart rate and respiratory rate at rest

3. SEVERE ACUTE SYMPTOMATIC ANAEMIA – RAPID FALL IN HB (an example is acute bleeding, severe malaria)

SYMPTOMS:

- Fatigue, tiredness
- Difficulty breathing **at rest**
- Palpitations **at rest**

SIGNS:

- Pallor (conjunctivae, palm of hands, nail beds)
- **Fast heart rate at rest** (adult >120/m)
- **Fast respiratory rate at rest** (adult >40/m)
- Often you can hear a new heart murmur

4. ANAEMIC HEART FAILURE

SYMPTOMS:

- **Severe difficulty breathing at rest**
- **Extreme weakness**
- Sometimes chest pain

SIGNS:

- **Very pale**
- ACUTE PULMONARY OEDEMA
- Enlarged liver (hepatomegaly)
- Full jugular veins
- Peripheral oedema and sometimes ascites

TREATMENT

A. TREAT THE ANAEMIA

MODERATE CHRONIC ANAEMIA	1. FERROUS SULPHATE +FOLIC ACID FOR 3 MONTHS * 2. DEWORM adults & children *
SEVERE CHRONIC ANAEMIA	1. FERROUS SULPHATE +FOLIC ACID FOR 6 MONTHS * 2. IF Hb < 6 / HCT < 18, DISCUSS WITH DOCTOR ABOUT TRANSFUSION 3. DEWORM adults & children *
SEVERE ACUTE SYMPTOMATIC ANAEMIA	1. TRANSFUSE URGENTLY 2. FERROUS SULPHATE +FOLIC ACID FOR 3 MONTHS * 3. DEWORM adults & children *
ANAEMIC HEART FAILURE	1. AS ACUTE ANAEMIA 2. TREAT THE PULMONAY OEDEMA : SEE PAGE***

* see Drug Tables

Anaemic heart failure is very difficult to treat successfully and, if possible, should be prevented by treating people before they reach this stage.

B. TREAT THE CAUSE

1) MALARIA

- Give appropriate anti-malaria drugs according to protocol.
- Give FS and FA when fever down or when malaria smear is negative (See Drug Tables).
- Refer to IPD if signs of acute anaemia/anaemic heart failure.
- Refer to IPD if severe or hyper PF malaria.

Development of severe anaemia is very rapid with malaria, especially in children.
It is the first cause of death in young children with malaria

- If patient has severe or hyperparasitaemic malaria, transfuse if Hb < 7 – Hct < 21 (the malaria parasite will still destroy more RBC)

2) SEVERE BLEEDING with SIGNS OF SHOCK

- Try to stop the bleeding (compression of artery, transfer to maternity facilities if miscarriage/abortion)
- Transfer to hospital if possible (if big GI bleeding)
- Insert two big cannulas in two big veins
- Give fast Ringer or Normal Saline until systolic BP > 90 mmHg
- Urgent cross match if available and transfusion

3) HOOKWORM IN STOOL or ANAEMIA OF UNKNOWN CAUSE

- Deworm
- Give Ferrous Sulphate and Folic Acid for 3 months

4) POOR NUTRITION, PREGNANCY and BREASTFEEDING

- Give nutrition advice
- Give Ferrous Sulphate and Folic Acid for 3 months or for the duration of the pregnancy

5) OTHER CAUSES

- See relevant chapters

- **About half of all maternal deaths in the tropics are due to anaemia**
- **Many people in rural areas or factory workers along the border are anaemic because of poor nutrition, repeated malaria attacks, many pregnancies, continuous breast-feeding and hookworm infections.**
- **The most common causes of anaemia in this area are very easy and cheap to treat**

HAEMOLYTIC ANAEMIAS

Haemolytic anaemias are anaemias caused by haemolysis = destruction or breaking of red blood cells.

Two genetic causes of haemolysis found in this area are Thalassaemia and G6PD deficiency.

THALASSAEMIAS

Thalassaemias are genetic diseases which cause the production of abnormal haemoglobin.

The most common in this area is the **BETA THALASSAEMIA**: (decreased or no production of the beta chain).

1) BETA THALASSAEMIA MINOR : only a small part of the total Hb is not good.

SYMPTOMS: Mild, well-tolerated anaemia

INVESTIGATIONS: CBC, Thalassaemia test

TREATMENT: No treatment necessary

2) BETA THALASSAEMIA INTER-MEDIA : part of the Hb is not good.

SYMPTOMS: Well-tolerated anaemia that gets worse with age. Splenomegaly

INVESTIGATIONS: CBC, Thalassaemia test

TREATMENT:

- Check Hb regularly
- Might need regular transfusions if anaemia get worse
- Splenectomy can sometimes help

Beta Thalassaemia minor and intermedia should be suspected in patients with mild anaemia that do not improve with iron or folate.

3) BETA THALASSAEMIA MAJOR: most of the Hb is not good.

SYMPTOMS: Severe anaemia, starting in the first year of life.
Child does not grow and develop well.
Abnormal bone growth, especially in the face

Without transfusion Death usually happens within 1 year

With adequate transfusion

- Child growth and development are usually good, attendance at school is improved, infections are reduced, overall health is improved, bone deformities improve.
- Symptoms of iron overload appear after about 10 years with liver disease and cardiac toxicity.
- Death usually due to cardiac iron overload.

With not enough transfusion:

- Anaemia with reduced growth, slow development and bone deformity
- Enlarge spleen (splenomegaly)
- Fever on and off
- Bleeding
- Death usually occurs between 20-30 years of age from cardiac iron overload

INVESTIGATIONS: CBC, film (target cells), Thalassaemia test

TREATMENT:

- Regular transfusions to keep Hb > 8 and Hct > 24 Patients receiving multiple transfusions should be transfused in the hospital. Transfusion is the only treatment but over time this causes iron overload and damages some organs causing death. (desferioxamine can help reduce iron overload).
- Folic acid
- If splenomegaly is present, discuss the possibility of splenectomy with the doctor. (the benefit is only temporary)

G6PD DEFICIENCY (= GLUCOSE - 6 - PHOSPHATE DEHYDROGENASE DEFICIENCY)

This disease is caused by lack of a special protein in the red blood cells, called G6PD. It is a disease that comes from the parents and is present from birth and more common in men.

People with this disease usually have no symptoms. Some have chronic anaemia and some present with an acute haemolytic anaemia (destruction of red blood cells) if they:

1. have infections
2. take certain drugs

There is a lot of variety in this deficiency. Some patients might not have any crisis if taking one drug and other patients will have a crisis with the same drug at the same dose.

SYMPTOMS AND SIGNS

- Most patients have no symptoms
- Acute haemolysis after taking certain drugs or having infections and acute illness: jaundice, pallor, dark urine, sometimes abdominal and back pain.
- Chronic anaemia
- Neonatal jaundice with or without anaemia

INVESTIGATIONS

There is a blood test that will tell you if a patient has this deficiency, but there is no test which will tell you if that patient will be at risk of having haemolytic crisis when taking a certain drug.

TREATMENT

- Stop any drug suspected to have caused the anaemia
- Treat infections
- Usually, the haemolysis is self-limiting and there is no need to treat
- Blood transfusion can save the life of the patient in severe cases

If a patient has chronic anaemia or develops pallor, jaundice, dark urine, after taking any of these drugs, you should suspect G6PD deficiency.

THE FOLLOWING DRUGS SOMETIMES CAN CAUSE HAEMOLYSIS IN G6PD DEFICIENT PEOPLE:

Ciprofloxacin, Norfloxacin, Ofloxacin
Cotrimoxazole
Dapsone
Nitrofurantoin
Primaquine

Aspirin
Chloramphenicol
Chloroquine
Quinine

- If you need to give these drugs for treatment, tell the patient that, if they become jaundiced or they see their urine becoming dark, they should stop the tablets and come to OPD/IPD immediately.

TRANSFUSION

INDICATIONS FOR TRANSFUSION

Policy regarding transfusion differs among NGOs working along the border.

Here are some guidelines that each doctor/organisation might want to modify according to their policies.

Transfusion is possible only when the blood can be tested for group and screened for Malaria, Hepatitis B and HIV. Testing for Hepatitis C and Syphilis is also strongly advised.

WHEN YOU HAVE TO DECIDE FOR TRANSFUSION:

- Put in balance the benefit of the transfusion with the risk of transmitting Hepatitis B or C, HIV or other diseases
- Transfuse only if necessary
- **The clinical state of the patient has priority**

TRANSFUSION URGENT (= AS SOON AS POSSIBLE)	NO TRANSFUSION
<ol style="list-style-type: none"> 1. Signs of severe acute symptomatic anaemia or anaemic heart failure <i>and / or</i> 2. Acute severe bleeding <i>and / or</i> 3. Severe or hyperparasitaemic malaria and Hb<7-Hct<21 	<ol style="list-style-type: none"> 1. Signs of moderate chronic anaemia

TRANSFUSION NOT URGENT / NO TRANSFUSION
<ol style="list-style-type: none"> 1. Signs of severe chronic anaemia with Hb< 6-Hct<18 <ul style="list-style-type: none"> • discuss the case with the doctor *

**There is no international consensus about the level of Hb at which to give a transfusion to a patient with severe anaemia but with no signs of decompensation. Some doctors will transfuse a patient with Hb higher than 6 g/dl, other doctors will not transfuse a patient even if Hb is 4. This decision has to be taken with the doctor and it will depend on the patient's age, general health condition, social situation and what is the cause of the anaemia.*

After transfusion, all patients should be treated with Ferrous Sulphate and Folic Acid for 3 months and dewormed For patients with Thalassaemia, give only Folic Acid and deworm

- To decide if you need to give transfusion **urgently**, do not look only at the lab result: **look at the patient!** Look for pallor, weakness, check the pulse, RR and BP.
- **The clinical status of the patient is more important for the decision than the Hb result.**

URGENT = NOW !
 Insert the largest i.v. cannula
 Find a donor quickly
IF YOU WAIT, THE PATIENT CAN DIE

STEPS TO FOLLOW TO GIVE A TRANSFUSION:

A. WITH THE PATIENT:

1. CHECK THE PATIENT'S BLOOD GROUP AND RHESUS GROUP (+ OR -).
2. INSERT THE LARGEST CANNULA POSSIBLE IN A LARGE VEIN.
 * The smaller the cannula, the slower the blood flow.
3. PUT AN INFUSION OF NORMAL SALINE TO KEEP THE VEIN OPEN .
4. LOOK FOR A DONOR WITH THE SAME BLOOD GROUP AS THE PATIENT.
5. IN AN EMERGENCY, if you cannot find a donor of the same group, FOLLOW THE RULES OF BLOOD GROUP COMPATIBILITY.

PATIENT	CAN RECEIVE BLOOD FROM
O	O
A	A, O
B	B, O
AB	AB, A, B, O

B. WITH THE DONOR:

1. CHECK THE GENERAL CONDITION OF THE DONOR:
 - No pregnant women, people under 17 or over 65 years
 - No fever
 - No jaundice in previous 6 months
 - No donation of blood in previous 3 months
 - BP normal
 - No clinical anaemia
 - Use donor questionnaire to assess risk factors

2. TAKE BLOOD FROM THE DONOR IF:

- Malaria smear negative
- Hb > 11 g/dl *
- Hepatitis B and HIV negative (if tested, Hepatitis C and VDRL negative)
- No risk factors for Sexually Transmitted Infections

3. AFTER TAKING BLOOD FROM THE DONOR

- Tell the donor to lie down for about 10 minutes after the procedure is completed and give him a drink
- Give him Ferrous Sulphate and Folic Acid for 2 weeks

*Sometimes it is very difficult to find a donor. Relatives of the patients might be willing to donate blood. If their Hb is < 11 g/dl but >9 g/dl and the patient's life is in danger because of anaemia, you can decide to take blood from the relative even if the level of Hb is not ideal (giving a course of FS+FA).

C. GIVE THE BLOOD TRANSFUSION TO THE PATIENT:

1. CALCULATE THE AMOUNT OF BLOOD TO GIVE (1 BAG = 350-450 cc)

CHILD < 1 YEAR	15 cc / kg
CHILD > 1 YEAR	20 cc / kg
SEVERELY MALNOURISHED CHILD	10 cc / kg
ADULT	1-2 bags

This amount can be repeated depending on the severity of the anaemia.

2. MAKE SURE YOU ARE GIVING THE BLOOD TO THE RIGHT PATIENT

3. RATE OF TRANSFUSION:

- Usually, transfusion should last about **3 hours but never more than 4**
- Give it **over 4 hours** to patients **more at risk of cardiac failure** (and give Furosemide po/iv half way: Child 1mg/kg; Adult 20 mg):
 - Severely malnourished children
 - Old people
 - People with known heart / kidney problems
 - Patients with chronic anaemia
- Give it **over about 10 minutes** for patients with **low BP and acute bleeding** (until systolic is >90mm Hg).

4. CHECK VITAL SIGNS:

- Before starting
- After 5 and 15 minutes
- Then after every hour until 1 hour post transfusion

5. NEVER MIX BLOOD with D5W (can cause haemolysis) or RINGER (can cause clotting)

6. YOU CAN MIX BLOOD WITH NORMAL SALINE

7. NEVER ADD MEDICATIONS TO THE BLOOD

8. DO NOT SHAKE the BLOOD and STOP the TRANSFUSION WHEN THE CELLS (red part) HAVE BEEN GIVEN

- Patients need the red blood cells to increase the Hb
- The plasma (clear part) is less useful for the patient and increase the risk of pulmonary oedema
- **IN CASE OF ACUTE BLEEDING, GIVE ALSO THE PLASMA PART**

ACCIDENTS AND RISKS DURING BLOOD TRANSFUSION

Observe carefully the patient during the blood transfusion.

It is important to recognise early the symptoms of reaction to blood transfusion, so you can stop the transfusion and prevent serious complications.

FOR ALL SUSPECTED TRANSFUSION REACTIONS

1. STOP THE TRANSFUSION AND DISCONNECT THE SET FROM THE NEEDLE / CANNULA
2. USING NEW INFUSION SET, KEEP THE LINE OPEN WITH FLUIDS
3. CHECK IF PATIENT RECEIVED THE CORRECT BLOOD / RECHECK PATIENT'S BLOOD GROUP
4. RECONSIDER INDICATION FOR TRANSFUSION
5. IF THE PATIENT'S CONDITION IS STILL SEVERE, FIND ANOTHER DONOR

MOST COMMON CAUSES OF REACTIONS:

1. HAEMOLYSIS

Symptoms: FEVER, CHILLS, LUMBAR BACK PAIN, ANXIETY, FAST PULSE, LOW BP, DARK URINE, BURNING SENSATION AT IV SITE

What to do:

- GIVE RINGER / NORMAL SALINE IMMEDIATELY IF PATIENT IS GOING INTO SHOCK

2. PULMONARY OEDEMA

Patients at risk:

Children < 1 year

Severely malnourished children

Old people

People with known heart / kidney problems

Patients with chronic anaemia

Symptoms:

INCREASED RESPIRATORY RATE, DIFFICULT BREATHING, COUGH, HEADACHE, CREPS/CRACKLES IN BOTH LUNG BASES

What to do:

- PUT THE PATIENT IN SITTING POSITION
- GIVE OXYGEN IF AVAILABLE
- GIVE FUROSEMIDE I.V.

children	1 mg/kg
adults	40 mg = 4cc

Repeat the dose every half hour if no improvement

3. ALLERGIC REACTIONS

A. SKIN REACTIONS

Symptoms:

URTICARIA, BIG RED ITCHING LESIONS

What to do:

- GIVE CHLORPHENIRAMINE 4-12 MG P.O.
- IF NO OTHER SYMPTOMS AND THE SKIN RASH GOES AWAY IN HALF AN HOUR, ASK THE DOCTOR IF YOU CAN START THE TRANSFUSION AGAIN, BUT OBSERVE CAREFULLY

B. MORE SEVERE ALLERGIC REACTIONS (ANAPHYLAXIS)

Symptoms:

OEDEMA, DIFFICULT BREATHING, WHEEZING, HIGH BP, THEN LOW BP, SOMETIMES DIARRHOEA AND VOMITING

What to do:

- GIVE ADRENALINE 1:1000 I.M. (see Anaphylactic shock, p.21)
- GIVE NORMAL SALINE / RINGER FAST
- GIVE DEXAMETHASONE I.M./I.V (see Anaphylactic shock, p.21)
- GIVE OXYGEN IF AVAILABLE

M A L A R I A

See the SMRU Handout for more details

Always think of malaria in patients with fever

SYMPTOMS AND SIGNS

- Fever with one or more of the following signs: headache, chills, rigor, sweating, muscle or joint pain, anorexia (poor appetite), nausea, vomiting, abdominal pain, diarrhoea.
- Sometimes, the patient arrives unconscious or with convulsions.
- Sometimes, the patient has no fever at the time of consultation.
- Anaemia and enlarged spleen are common.

DIAGNOSIS

Four plasmodia species are found on the Thai-Burmese border:

P. Falciparum (PF)

P. Vivax (PV)

P. Malariae (PM)

P. Ovale (PO) – this is rare

Confirm the diagnosis with a positive blood test (Malaria Smear-MS) or sometimes with a rapid test.

- The malaria smear is positive if there are Trophozoites (T)
- Results may be mixed (PF + PV).
- With Gametocytes only (G), the patient carries the parasite, but is not sick and does not need treatment. **Treat with MAS3 patients who carry only gametocytes if they have clinical signs of malaria and have not received a full course of a good treatment (MAS3, AS7D7, Q7D7).**

Note:

- Always take a blood smear before starting any malaria treatment, even if it is not possible to read it (for example, at night or in emergency). It will be read later to confirm or exclude the diagnosis. **DO NOT DELAY** treatment waiting for a slide to be read the next day.
- If the smear is negative and fever persists, repeat the smear.

DIAGNOSIS OF SEVERITY: IS THE MALARIA SEVERE?

Once you have diagnosed malaria with a positive blood test, decide if the malaria is severe before starting treatment. Check women of reproductive age (15-50) women for pregnancy.

Remember: the diagnosis of malaria is by BLOOD TEST, but the diagnosis of severity is CLINICAL:

- Look at the smear result to decide: malaria or not
- Look at the patient to decide: severe or not

Defining criteria of severe malaria:

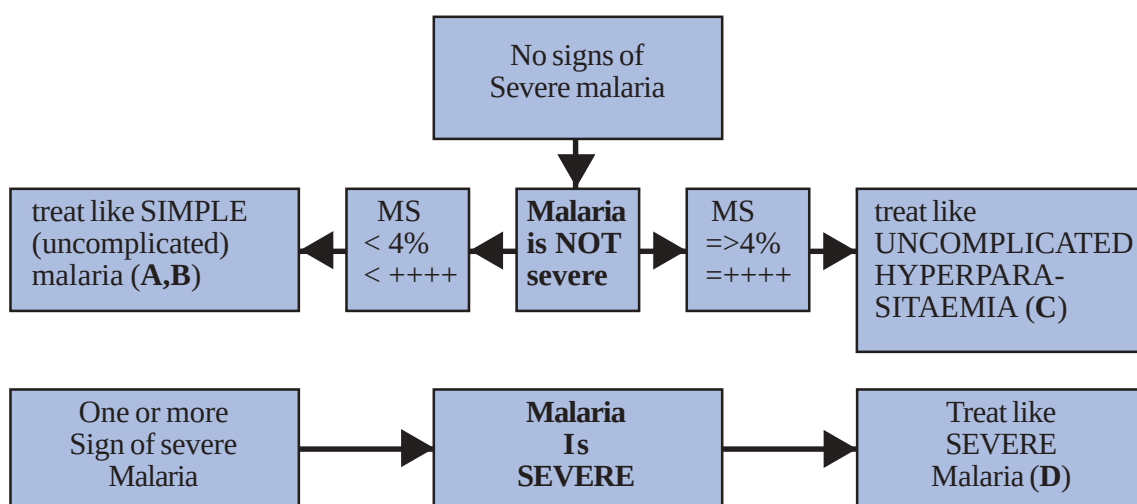
- **Cerebral malaria** - The patient is unconscious.
- **Neurological signs** - The patient is drowsy and had/has convulsions, irritable and agitated.
- **Severe anaemia** - Hb $\leq$ 6g/dl or signs of severe anaemia.
- **Hypoglycaemia** - Pale, sweating, falling unconscious, Dextro < 2.5 mMol/L (< 45 mg/dL).
- **Shock** - Pulse > 130 and BP $< 80/50$ with cold hands and feet.
- **Pulmonary oedema** - Rapid breathing with crackles at both lung bases.
- **Renal failure** - Little or no urine (< 400 cc/day).
- **Spontaneous bleeding** - Bleeding from gums or in urine, vomiting blood, petechial rash with small very dark spots.
- **Haemoglobinuria** - Passage of dark red to black urine.
- **Acidosis.**

Note:

Only one sign = severe malaria, but many patients have 2 or 3 at the same time. Check each sign carefully.

Other manifestations of severe malaria:

- Extreme weakness and inability to eat and drink.
- Hyperparasitaemia ($\geq 4\%$ RBC infected or +++)
- Hyperthermia - Temperature $> 40.5^\circ\text{C}$
- Jaundice
- Severe vomiting



TREATMENT

A. SIMPLE PV, PO or PM MALARIA

Malaria smear: PVT, PMT, POT, PVGT, PMGT or POGT (No PF)

- Treat the fever with Paracetamol.
- Treat the malaria. See **Treatment Table - Line 1** page 41.
- Carefully check patients who may be at risk (pregnant women and children <2 years) and decide if admission to IPD is necessary.

More than half of all patients with PV or PO will relapse after treatment with Chloroquine alone. Relapse is due to the presence of resting stage (hypnozoites) in the liver. The only drug that can kill the liver stages and prevent relapses is Primaquine. Primaquine can cause haemolysis in G6PD-deficient patients. Patients tested with normal G6PD can be safely treated with primaquine 15mg od for 14 days. When G6PD is deficient Primaquine given weekly for 6 or 8 weeks is effective and safe. When G6PD testing is not available patients with PV or PO can be safely treated with once weekly Primaquine.

- Primaquine dose:
Adult: 15mg (base) PO OD x 14 days. (contraindicated in pregnancy)
Child: 0.25mg/kg po OD x 14 days.
or (safe in G6PD-deficiency)
Adult: 45 mg once weekly x 6 weeks / 30 mg once weekly x 8 weeks
Child: 0.9 mg/kg once weekly x 8 weeks

SMRU advise to treat only frequent relapses and daily supervision of treatment due to possible side-effects.

Thai Clinics treat all PV cases with a 14 days course of Primaquine.

Note:

- When a patient has signs of severity with PV, repeat the smear and treat him as having severe malaria (like PF severe).

PF or MIXED (PF+PV) MALARIA in NON PREGNANT PATIENTS

Malaria smear: PFT, PFGT, PVT+PFT

For any MS mixed result PFT is the most dangerous, so treat as PF malaria.

The best choice of treatment is Artesunate plus Mefloquine, but both these drugs have contraindications (see below). Before treating and during treatment, check :

- a) Is the malaria severe?
- b) Is the woman pregnant? If there is any doubt, do a pregnancy test.
- c) Has the person received Mefloquine (MFQ) in the last 2 months?
- d) What is the age and weight of the person?
- e) Check the parasitaemia (hyper: > 4% or +++++, non hyper: < 4% or < +++++).
- f) Make sure the patient eats and drinks during treatment.

Do not forget to treat the fever, hypoglycaemia, vomiting, dehydration or other symptoms.

B. SIMPLE (UNCOMPLICATED) PF MALARIA:

- **no signs of severity**
- **MS = PFT < 4% or < ++++**
- **patient not pregnant**
- **OPD supervised treatment** – see **Treatment Table - lines 2,3,4 page 41.**
- If possible **admit to IPD CHILDREN < 2 YEARS OLD.** They can develop severe malaria very rapidly.
If not possible, ask the family to watch them closely in the first 24 hours.

C. UNCOMPLICATED PF HYPER-PARASITAEMIA:

- **no signs of severity**
- **MS = PFT $\geq$ 4% or ++++**
- **patient not pregnant**
- **Admit in IPD**, close monitoring, ensure eating and drinking.
- Treat the malaria: see **Treatment Table - lines 5 and 6 page 41.**
- If patient deteriorates treat as severe malaria.

D. SEVERE AND CEREBRAL MALARIA

- **Admit in IPD.**
- Treat the malaria: see **Treatment Table - line 7 page 41.**
- **Monitor the patient closely and check:**
 - **Temperature, RR, pulse, BP and consciousness** (coma score) every hour during the loading dose and then every 2 to 4 hours afterwards.
 - **Glucose Level** with Dextrostick before and at the end of the loading dose for Quinine, and if patients gets worse. Pregnant women and children should have dextrostick QID while on IV Quinine.
 - **Hb** when admitted and every day if Hb is <7.3 (Hct <22) or if severe signs of anaemia appear.
 - Quantity of **urine** if the patient says there is little or if unconscious (catheterise and monitor the urine output).

- **Treat the complications: see table below.**

Common Complications:

- **Fever:** Treat with Paracetamol or ASA and sponging. (ASA contraindicated in children and patients with low platelets).
- **Coma:** Manage in case of cerebral malaria (see coma section on page 15).
- **Convulsions:** Prevent and treat in case of cerebral malaria or severe malaria with neurological signs.
Prevention: give Phenobarbital IM to adults but not children
Treatment: give Diazepam IV/IM/PR if convulsions start
- **Severe Anaemia:** Give transfusion if needed (see anaemia and transfusion sections page 22 and page 29).
- **Hypoglycaemia:** Treat when glucose is $< 2.5 \text{ mMol/L}$ ($< 45 \text{ mg/dL}$) with D50 IV 1 ml/kg and put up a D10W bag for prevention of relapses.
- **Pulmonary Oedema:** Put the patient in sitting position, decrease the infusion, and give Furosemide (see page 158).
- **No Urine:** If the patient is dehydrated, give Ringers/NSS. If unconscious, put in a urinary catheter to check if it is in retention.
- **Infection:** A patient with severe malaria can develop severe infections, especially Gram negative sepsis. If there is any doubt over prolonged fever and coma, give IV Ampicillin and Gentamicin.
- **Shock:** Give NSS/RL quickly until the systolic BP is > 90 . Give iv Ampicillin and Gentamicin to cover for septic shock.

- **Stop IV / IM treatment and start oral treatment as soon as they can be tolerated: see Treatment table - line 7 page 41.**

E. PRESUMPTIVE MALARIA

When clear clinical signs of malaria are present, but the smear is not available (no lab) or negative after the patient has taken some malaria medicines at home, it is presumptive malaria.

- Repeat the smear if strong suspicion, but negative.
- Check for signs of severity and treat as:

Simple presumptive malaria. See **Treatment Table - line 8 page 41.**

Severe presumptive malaria.

Admit to IPD

Treat like severe malaria: see **Treatment Table - line 7 page 41.**

F. MALARIA IN PREGNANCY

- If possible, **admit to IPD all pregnant women**, because they can develop severe malaria very rapidly.
- For treatment see **Treatment Table - lines 9, 10,11,12,13 page 41.**

SOME NOTES ON TREATMENT

- I. Malaria on this border is resistant to most anti-malarial drugs. If the remaining drugs are not used carefully, soon there will be no drug to treat malaria.
- II. Good or adequate treatment means making sure that every patient gets the correct dose and takes the full treatment.
- III. All patients should have a MS on Day 7 to check if cured.
- IV. Sometimes treatment can be difficult to give due to **vomiting** (especially MFQ).
 - Reduce fever by sponging and give Para or ASA before giving anti-malaria tablets.
 - If the patient vomits **less than 30 minutes after tablets**, give Metoclopramide IM and after 10 minutes **repeat full dose**.
 - If the patient vomits **between 30 minutes and 1 hour** after tablets, give Metoclopramide IM and after 10 minutes **repeat half dose**.
 - If the patient **vomits again**, less than 1 hour after the second dose, even if he has no more fever and after Metoclopramide, **treat like severe malaria**.
 - If the patient vomits more than 1 hour after taking MFQ do not repeat the dose.
 - If the patient vomits so much that he cannot take oral treatment even after Metoclopramide: admit to IPD and use iv/im Quinine/Artemether until the patients stops vomiting.
- V. **Signs of severity after starting oral treatment**
 - Change treatment to that for severe malaria (Quinine or Artemisinin inj.).
 - If the patient had more than 2 doses of Quinine in the last 24 hours, do not give loading dose.

Note:

- **Patients who are hyposplenic(spleen not working properly) or without a spleen (splenectomised)** clear the parasite more slowly, so they may have a positive smear for much longer even after successful treatment.

SPECIAL SITUATIONS

A) Allergy to Quinine:

- Use Artemisinin derivative if available. Otherwise, give Dexamethasone, wait 10 minutes then give Quinine and watch carefully. If allergic symptoms appear (Urticaria raised itching rash, sudden oedema of the face, difficulties breathing), give more Dexamethasone, control blood pressure and oxygenation (refer to section on anaphylactic shock).

B) Allergy to Artesunate:

- Use Quinine.

C) Very small babies

- If it is difficult to put in an IV line or to give small quantities of infusion at precise times, you can give IM Quinine or Artemether. See table at back for preparation of IM Quinine.

D) Allergy to Chloroquine: judge severity. If mild/moderate give Chloroquine with Chlorpheniramine +/- Dexamethasone. If moderate/severe treat with MAS3, AS7D7 or AS7.

CONTRAINDICATIONS TO MALARIA TREATMENTS

CANNOT GIVE MEFLOQUINE: Pregnancy / Less than 5 kg / Had Mefloquine in the past 63 days / History of epilepsy / other neuropsychiatric history / Fitting, drowsy, unconscious / Deep jaundice

CANNOT GIVE DOXYCYCLINE: Pregnancy / Children less than 8 years old

CANNOT GIVE ARTESUNATE: Allergy.

CANNOT GIVE PRIMAQUINE: pregnancy.

CANNOT GIVE DAILY PRIMA-QUINE: G6PD-deficiency (Can give weekly Primaquine)

RAPID DIAGNOSTIC TESTS FOR MALARIA

Because malaria symptoms are very non-specific and overlap with those of other febrile illnesses, a laboratory diagnosis is a necessity especially in Multi-drug resistance areas like Southeast Asia.

Microscopy is the most widely used tool to diagnose malaria. However, good quality microscopy is difficult to put in place and maintain. The development in the past 5 years of rapid diagnostic tests (RDT) has open new possibilities in the diagnosis of malaria. These RDT require little or no additional material, they are easy and quick to perform (results obtained after 15 to 20 minutes) and they do not require extensive training.

However, interpretation of the results is not always simple.

PRINCIPLE

These tests are based on the detection of specific proteins (antigens) present on the surface of the malaria parasites. When the rapid test become positive (coloured), it means that the specific antigen has been found in the blood of the patient.

There are two antigens detected by currently available tests:

1. HRP-2 (Histidine-rich protein 2): only *P. falciparum* has this antigen.
2. pLDH (parasite Lactate Dehydrogenase): all the 4 malaria parasites have this antigen.

AVAILABLE TESTS

1. TESTS DETECTING HRP-2:

Mainly used on the border is the **Paracheck-Pf test** (Orchid Biomedical Systems, India).

Only *P.falciparum* releases HRP-2:

- This test will be POSITIVE if patient has PF.
- This test will be NEGATIVE if patient has PV, PM or PO.

Important notes:

- (a) False negative results (= test is negative, but the patient has Falciparum malaria) have been reported in patients with severe conditions and very high parasitaemia (> 20 % of RBC parasitised). This event is rare but **severe malaria should not be excluded on the sole basis of a negative test: decide also with the clinical signs!**
- (b) The test can still be positive up to 1 month after a malaria attack. So, a false positive result (test positive but no PF infection) can be seen in a patient with a recent infection successfully treated in the last 1 month.

MALARIA TREATMENT TABLE

LINE		ADULT (NON PREGNANT)	CHILDREN < 8 YEARS
A. SIMPLE PV,PM,PO			
1		CQ3 Follow your organisation's guidelines for Primaquine for PV and PO	
B. SIMPLE (uncomplicated) PF or MIXED: No Hyperparasitaemia, No severity			
2	No MFQ last 2 months	MAS 3	MAS3
3	MFQ or MAS3 <2 months	AS7D7	AS7
4	AS7D7 or AS7 <42 days	AS7D7	AS7
C. UNCOMPLICATED HYPERPARASITAEMIA (MS ++++ or ≥4%)			
5	No MFQ in last 2 months	MAS7	MAS7
6	MFQ or MAS3 in <63d	Hyper AS7D7	Hyper AS7
D. SEVERE PF OR PV AND SEVERE PRESUMPTIVE			
7	Unconscious - Drowsy/confused Convulsions Renal failure Severe anaemia Hb < 6 Shock Hypoglycaemia Pulmonary oedema Bleeding Haematuria Acidosis	QIV followed by Q and D7 or AM followed by AS and D7	QIV followed by Q or AM followed by AS
E. PRESUMPTIVE			
8	Simple Presumptive	Q7D7	Q7
F. PREGNANT WOMEN			
9	SIMPLE PV, PO,PM	CQ3	
10	SIMPLE PF or MIXED	1 ST ATTACK: Q7 supervised 2 ND ATTACK: AS7 3 RD ATTACK: AS7	
11	UNCOMPLICATED HYPERPARASITAE- MIA	Hyper AS7	
12	SEVERE PF OF PV and SEVERE PRESUMP- TIVE	QIV followed by Q or AM followed by AS	
13	SIMPLE PRESUMP- TIVE	Q7	

Key to table

CQ3	Chloroquine PO	Day 1-2 Day 3	10 mg/kg OD 5 mg/kg OD
MAS7	Artesunate PO Mefloquine PO or	Day 1 Day 2-7 Day 2 Day 3 Day 1	4 mg/kg OD 2 mg/kg OD 15 mg/kg OD 10 mg/kg OD 25 mg/kg stat
MAS3	Artesunate PO Mefloquine PO or	Day 1-3 Day 2 Day 3 Day 1	4 mg/kg OD 15 mg/kg OD 10 mg/kg OD 25 mg/kg stat
Hyper AS7D7	Artesunate PO Doxycycline PO	Day 1 Day 2-7 7 days	4 mg/kg OD 2 mg/kg OD 4 mg/kg OD
AS7D7	Artesunate PO Doxycycline PO	7 days 7 days	2 mg/kg OD 4 mg/kg OD
Hyper AS7	Artesunate PO	Day 1 Day 2-7	4 mg/kg OD 2 mg/kg OD
AS7	Artesunate PO	7 days	2 mg/kg OD
Q7D7	Quinine PO Doxycycline PO	7 days 7 days	10 mg/kg TID 4 mg/kg OD
Q7	Quinine PO	7 days	10 mg/kg OD
QIV followed by Q and D7			
QIV	Quinine IV*	first dose after 8 hours	20 mg/kg 10 mg/kg TID
Followed by, when patient can take oral tablets:			
Q	Quinine PO	iv+oral=7 days	10 mg/kg TID
D7	Doxycycline PO	7 days	4 mg/kg OD
AM followed by AS and D7			
AM	Artemether IM	first day after day 1	3.2 mg/kg stat 1.6 mg/kg OD
followed by, when patient can take oral tablets:			
AS	Artesunate PO	im+oral=7 days	2 mg/kg OD
D7	Doxycycline PO	7 days	4 mg/kg OD

Do not give Doxycycline in Children < 8 years old and Pregnant Women

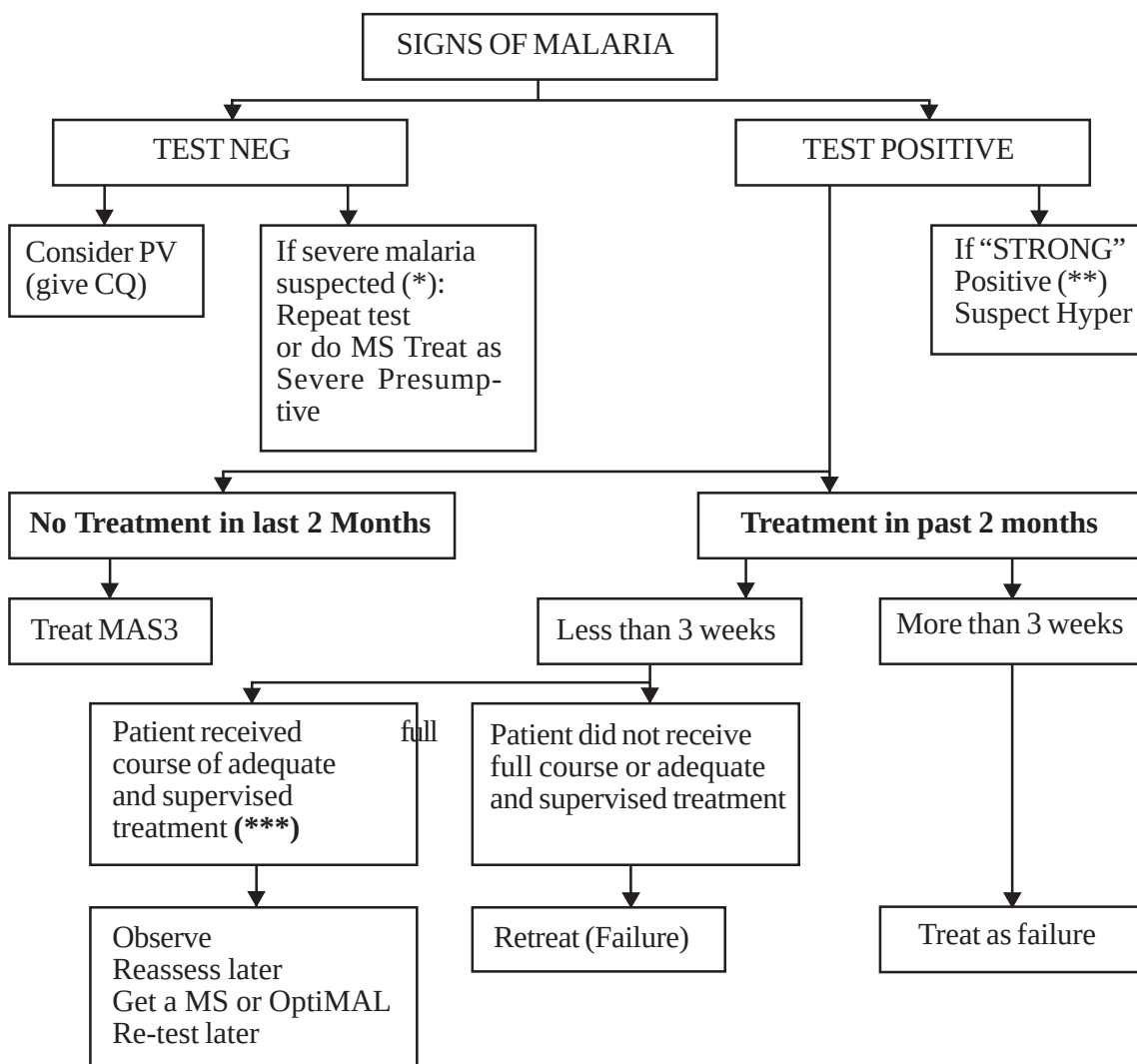
* Always give Quinine IV as an infusion. Dilute in D5W, D5S, D10W or NSS (see Table at p. 147)

2. TESTS DETECTING PLDH:

OptiMAL (Diamed, Switzerland)

This rapid test can detect *P.falciparum* and non-*P.falciparum* (*P.vivax*, *P.malariae* and *P.ovale*) but cannot detect mixed infections or distinguish between *P.vivax*, *P.ovale* and *P.malariae*.

How to Interpret Paracheck-Pf tests results:



NOTES:

(*): Do not forget that you cannot exclude severe malaria on the sole basis of a NEG test.

(**): A strong positive test is a test that turns positive as soon as the lysed blood reaches the reactive band and give an intense broad red line.

(***): Adequate treatments in this area are: MAS3 or AS7T7(D7) or Q7T7(D7) **supervised** (refer to SMRU malaria handout).

RESPIRATORY DISEASES

DEFINITIONS OF RESPIRATORY DISEASES

ACUTE RESPIRATORY INFECTIONS (ARI) = All kinds of viral or bacterial infections of the respiratory system.

They can be:

In the upper airways (**Upper Respiratory Tract Infections - URTI**):

Nose	(Rhinitis)
Tonsil	(Tonsillitis)
Pharynx	(Pharyngitis)
Larynx	(Laryngitis)
Sinuses	(Sinusitis)

Or in the lower airways (**Lower Respiratory Tract Infections - LRTI**):

Bronchi	(Bronchitis)
Bronchioles	(Bronchiolitis)
Lungs	(Pneumonia)

UPPER RESPIRATORY TRACT INFECTIONS (URTI)

COMMON COLD

Common cold is a mild URTI caused by a virus. It is very common, not dangerous and there is no specific treatment. In any community a lot of people can have the problem at the same time.

SYMPTOMS AND SIGNS

- Runny nose, slight fever, sore throat, slight cough, headache.
- No sputum, no dyspnoea, lungs clear.

TREATMENT

- Treat the fever
- Advise to drink a lot, eat normally. Continue with breast milk.
- Do not give antibiotics.
- Advise the patient to come back if there are difficulties breathing or more coughing.

TONSILLITIS

Tonsillitis is an infection of the tonsils. It can be caused by a virus or a bacteria.

Remember, some cases are severe. The patient may not be able to eat or drink; may be tired and may have big tonsils with white membranes. Admit these patients to IPD.

SYMPTOMS AND SIGNS

- Fever
- Throat pain
- Tonsils enlarged, red, sometimes with white spots with difficulty to swallow
- Lymph nodes in the neck are enlarged and painful

TREATMENT

a) If no pus on tonsils - it is probably caused by a virus:

- Treat the fever and advise to drink a lot of fluids.
- Advise to gargle with warm water mixed with a pinch of salt

b) If pus on tonsils - it is probably caused by a bacteria: the most important reason for treating with antibiotics is to prevent Rheumatic Fever.

If MILD:

- Treat the fever and advise to drink a lot of fluids.
- Continue breast milk.
- Give warm liquid food like milk, rice water, soup.
- Give **Penicillin V for 10 days**, or **Benzathine Penicillin IM stat dose** if available.
- Give Erythromycin if allergic to Penicillin.

If SEVERE:

- Admit to IPD.
- Give iv fluids if can not drink.
- Treat the fever.
- Give **Ampicillin iv or im** or **Benzylpenicillin iv** if available.
- Change to **oral Amoxicillin** when the patient can swallow.
- Treat for a total of 10 days.

**The treatment with Antibiotics has to be for 10 days.
Shorter courses are not effective in preventing Rheumatic Fever!**

Note:

- In case of severe tonsillitis with white membrane on tonsils, think about DIPHTHERIA. Check DPT vaccination status and consult with a doctor. If suspicion remains, isolate the patients and start treatment with Erythromycin and Diphtheria anti-toxins. Special care is needed. If possible, patients should be referred to hospital. Give prophylactic treatment to all the contacts (Erythromycin for 10 days).

SINUSITIS

Acute sinusitis is an infection of one or more of the sinuses near the nose. It commonly happens in patients with cold or influenza-like illness. It is usually caused by viruses. A viral sinusitis can be complicated by a bacterial infection. Bacterial infection can also complicate allergy or bad sinus drainage (as in swimming). Sometimes bacterial infection is spread to a sinus from an infection of the root of a tooth.

SYMPTOMS AND SIGNS

- Tender area over affected sinus
- Frontal headache
- Pain behind and between the eyes
- Nasal discharge
- Sometimes fever with bacterial infection

Symptoms and signs are the same in case of viral or bacterial sinusitis.

DIAGNOSIS

From history and examination.

X-Rays are usually not indicated.

TREATMENT

- Steam inhalation
- Nasal washes with water and salt
- Ibuprofen to reduce inflammation

If symptoms do not get better after 7-10 days of treatment, suspect bacterial infection and give:

- First choice: Penicillin V x 10 days
- Second choice: Erythromycin x 10 days

If a patient has chronic symptoms, give:

- Amoxicillin x 4-6 weeks

LOWER RESPIRATORY TRACT INFECTIONS (LRTI)

On chest auscultation (listening to the chest with a stethoscope) you can hear the following added sounds:

- 1. WHEEZES (= rhonchi)** Elongated sounds caused by air passing through narrowed airways, as in asthma.
Wheezes are heard over both lungs when breathing out in asthma, in many cases of Chronic Obstructive Pulmonary Disease and some cases of pulmonary oedema.
A localised wheeze may be heard over a partially obstructed large bronchus and if it does not disappear after coughing, it may be caused by a tumour or a foreign body.
- 2. CRACKLES (= crepitations)** Short sounds heard mostly during inspiration and caused by reopening of blocked small airways, as in Pulmonary Oedema. These crackles do not change after coughing.
If they are caused by air bubbling through secretions (as in Bronchiectasis, Bronchopneumonia, TB), they may decrease in number temporarily after coughing. If they disappear completely after coughing, they are probably not significant.
- 3. PLEURAL RUB** Creaking sounds caused by movement of the two pleural surfaces over each other when the surfaces are rough (as in pleurisy caused by pneumonia).

4. BRONCHIAL BREATHING .

Sounds from the large airways (listen over the trachea to know what the sounds are like) not normally heard in the lungs but heard over areas of consolidation and sometimes over localised fibrosis and above a pleural effusion.

ACUTE BRONCHITIS

Infection of the inner bronchial surface. It often appears after URTI, like common cold. Most of the time it is caused by a viral infection. Sometimes it can be caused by a bacterial infection.

SYMPTOMS AND SIGNS

- Cough with no or little sputum with or without fever
- Central chest pain on breathing
- Wheezes or abnormal chest sounds

Remember: in Asthma: no fever / no pain / no sputum!

TREATMENT

A. Supportive care:

- Increase fluid intake (continue breast feeding)
- Breath steam air (with hot water), if possible
- Give preventive dose of Vitamin A to children under 12 years if not received in previous 6 months

B. Antibiotics: most of the time NOT useful (viral infection)

Use ONLY if:

1. Patient has one of the these factors:
 - Malnutrition
 - Measles
 - Chronic diseases like Heart Disease and Diabetes
 - Children <1 year
 - Old people >60 years
2. No improvement with supportive care for 5 days

In these cases, give: Cotrimoxazole for 7 days.

If no improvement after 3 days, stop Cotrimoxazole and give Amoxicillin.

CHRONIC BRONCHITIS

Chronic inflammation of the bronchial mucosa (inside surface of bronchus) with productive cough. Most commonly due to irritation (tobacco).

SYMPTOMS AND SIGNS

- Morning cough with a lot of sputum.
- No fever.
- Wheezes or abnormal chest sounds on both sides.
- In case of secondary infection, the patient will have fever and yellow sputum.

Chronic cough - do not forget to think about TB (if you suspect TB, do a sputum test).

TREATMENT

- Stop smoking
- Drink a lot of fluids
- If no fever: no antibiotic
- If fever: treat as acute bronchitis

PNEUMONIA

Acute infection of lungs; can be viral, bacterial, parasitic or fungal.

SYMPTOMS AND SIGNS

- Cough with yellow or green sputum, sometimes with blood.
- Fever $>38.5^{\circ}\text{C}$.
- Rapid breathing (Tachypnoea) and discomfort breathing (Dyspnoea).
- Chest pain; pain often increases with cough and during deep breathing (pleuritic).

ON EXAMINATION YOU CAN FIND

- On inspection: reduced chest expansion.
- On percussion: dullness (due to solid lungs or pleural effusion).
- On auscultation: reduced breath sounds and / or crackles and / or bronchial breathing.

SIGNS OF SEVERITY

- 1) Rapid breathing:

RR $> 60/\text{min}$	in infants less than	2 months
RR $> 50/\text{min}$	in infants between	2-11 months
RR $> 40/\text{min}$	in children between	1-5 years
RR $> 30/\text{min}$	in children more than	5 years and adults
- 2) Severe Difficulty in Breathing: chest indrawing and flaring of the nose, especially in children
- 3) Cyanosis: blue colour of lips and nails
- 4) Child cannot suck or drink
- 5) Irregular breathing, stops breathing
- 6) Reduced consciousness

If you have **ONE or more SIGNS OF SEVERITY**, treat the patient as **SEVERE** pneumonia.

PATIENTS AT RISK

- 1) Babies under 2 months
- 2) Old people (more than 60 years)
- 3) Patients with Malnutrition
- 4) Patients with severe anaemia
- 5) Patients with heart disease
- 6) Patients with measles

IF PATIENTS ARE AT RISK, TREAT THE PATIENTS AS SEVERE PNEUMONIA.

Note:

- Check RR when the patient is quiet (especially babies).
- Auscultation is difficult, especially in babies. Respiratory rate is more important than noise coming from the nose or chest.

TREATMENT

Treatment is different depending on clinical signs, age and other factors of your patient.

**No sign of severity and patients not at risk - treat in OPD (NOT SEVERE).
Signs of severity and/or patients at risk - treat in IPD (SEVERE).**

TREATMENT OF NOT SEVERE PNEUMONIA

- Increase fluid intake
- Treat the fever
- Give preventive dose of Vitamin A to all children < 12 years
- Antibiotic:
 - Cotrimoxazole po for 3 days,
If better after 3 days, continue up to 7 days.
If not better after 3 days, stop and start Amoxycillin for 7 days
- *In case of repeated attacks of pneumonia or persistent pneumonia (after supervised treatment), consult with doctor and decide together to try Erythromycin or Doxycycline for 10 days (atypical pneumonia).*

If you suspect TB, do a sputum test.

TREATMENT OF SEVERE PNEUMONIA

- Admit to IPD
- Treat the fever
- Keep the patient in half sitting position
- Give IV Fluids
- Oxygen, if available
- Vitamin A treatment dose to all children < 12 years
- Antibiotic:
 - Ampicillin IV/IM followed by Amoxicillin / Ampicillin oral (total 7-10 days) + Gentamicin IM/IV for 5 days
If not better after 3 days, stop Amp+Genta and give Chloramphenicol IV or IM, followed by oral (total 7-10 days)

Note:

- If you cannot put in a cannula, use Ampicillin IM in the same dose.
- Check temperature, pulse rate and respiratory rate regularly to see if the patient is getting better or worse.
- Cotrimoxazole and Chloramphenicol are contra-indicated (advised not to use) during **pregnancy**. Use Amoxicillin, Ampicillin or Erythromycin.

Think about Beriberi (from vitamin B1 deficiency) in babies < 1 year with sudden fast breathing and no fever

TUBERCULOSIS

Tuberculosis (TB) is caused by bacteria (*Mycobacterium Tuberculosis*), sometimes called “acid-fast bacilli” (AFB) because of the special way it stains in the laboratory.

TB bacteria are spread in the air from the lungs of a person with positive sputum when he/she coughs. Other people are infected when they breathe the bacteria into their lungs.

PREVENTION OF TB SPREAD AND INFECTION.

- **Covering the mouth** with the hand when coughing.
- Spitting into a **covered** pot or bucket.
- **Chlorine** in the pot will kill the bacteria.
- Starting treatment **immediately** after diagnosis helps to prevent the spread to staff and others.
- **Sunlight** kills TB bacteria.
- Collecting sputum in direct sunlight helps to prevent infection of staff.

PREVENTION OF TB ILLNESS IN INFECTED PEOPLE.

It is estimated that **for every ten people infected** with TB, **only one will ever become ill** with TB. The other 9 are strong enough to stop the infection from becoming an illness.

- **BCG** reduces the severity of TB illness in small children when given shortly after birth. BCG vaccination is probably not very effective in protecting adults from TB.
- Good food, not overworking, not too much alcohol, control of diabetes, avoidance of HIV infection, prevent people infected with TB bacteria from becoming ill with TB.

SYMPTOMS AND SIGNS

Cough with sputum is the most important symptom to listen for.

TB of the lung is more likely when there is:

- Cough for more than 3 weeks
- Weight loss
- Slight fever
- Blood in the sputum (haemoptysis)

It is important to know that a person with infectious lung TB **may look well** and have **only cough with sputum and no other symptoms**, especially early in the illness

**==> CHECK SPUTUM FOR TB IN EVERY PATIENT
WHO COUGHS WITH SPUTUM!**

TB can affect any part of the body.

Think of TB if you have patients with:

- Enlargement of lymph node with pus discharge (**lymph node TB**)
- Collapse of vertebrae giving “hunched back” (**spine TB**)
- Chronic osteomyelitis or bone infection (**bone TB**)
- Meningitis (**TB of meninges**)
- Pleural effusion (**TB of pleura**)
- Ascites (**TB of peritoneum**)

DIAGNOSIS

Diagnosis is by history, examination and investigations.

Definite diagnosis is by

- SPUTUM TEST
- Biopsy (for example “caseating granuloma” on lymph node biopsy).

Other tests that may help include:

- Skin tests (Mantoux, Heaf)
- Lumbar puncture (in case of meningitis)

In a few patients, especially children, it is difficult to collect sputum and treatment may be started in suspected cases, but only after careful thought and exclusion of other diagnoses.

It is not necessary to wait until other antibiotics have failed before thinking of TB and testing sputum

TREATMENT

TB can be effectively treated with **special antibiotics**, which are kept only for the treatment of TB and are **always used in combination**. Combination treatment prevents new resistance appearing and still kills bacteria which are already resistant to some of the drugs.

- Never use only one drug alone to treat TB.
- Use at least 2 drugs together.
- More common is the use of 3 or 4 antibiotics at the same time.

Most TB bacteria are killed by the first dose of treatment and this quickly stops the spread of TB to other people including health workers.

For this reason it is very important to start the treatment as soon as you are sure that the patient has TB. **Do not wait.**

A few bacteria survive longer. If treatment is too short, these bacteria survive and cause the illness to come back (relapse). The length of treatment to prevent relapse depends on which drugs are used in the combination.

Six months, including the most effective drugs (HRZ), is the shortest treatment possible that will prevent relapse.

DRUGS USED FOR TREATING TB

DRUG	ADULT	CHILD
Isoniazid (H)	300 mg OD	5-10 mg/kg OD
Rifampicin (R)	50 kg or more...600 mg OD less than 50 kg...450 mg OD	10 mg/kg OD
Pyrazinamide (Z)	50 kg or more...2000 mg OD less than 50 kg...1500 mg OD	35 mg/kg OD
Ethambutol (E)	15-20 mg/kg OD	15-20 mg/kg OD NOT in less than 8 years old
Streptomycin (S)	Less than 45 years (i). 50 kg or more...1g OD (ii). less than 50 kg...750 mg OD 45-60 years: (i). 37 kg or more...750 mg OD (ii). less than 37 kg...500 mg OD More than 60 year...500mg OD (all weights)	15 mg/kg OD

REGIMES (combination and length):

The two most commonly used **6 month treatments** are;

- 1. 2EHRZ / 4HR =** 2 months of Ethambutol, Isoniazid, Rifampicin and Pyrazinamide followed by 4 months of Isoniazid and Rifampicin.
- 2. 2SHRZ / 4HR =** 2 months of Streptomycin, Isoniazid, Rifampicin and Pyrazinamide followed by 4 months of Isoniazid and Rifampicin

Consider age, weight, eyesight, hearing, liver, kidneys, pregnancy and previous TB treatment before choosing regime and dosage.

SIDE EFFECTS

E and H can affect the eyes

Z, R and H the liver

Z and E the joints

H and E the nerves

S the kidneys and ears including those of a child in the uterus of a pregnant woman

ALL can affect the skin

Rifampicin gives an orange colour to body fluid. Tell the patient not to worry if his urine, sweat and tears are orange!

SUPERVISION

It is best if the patient can be **seen swallowing each dose of medicine** under the supervision of a reliable person, especially when the treatment includes Rifampicin and Pyrazinamide (**Directly Observed Therapy Short course = DOTS**).

TB can be cured!

The main cause of treatment failure is not taking all the medicine necessary for cure.

PARAGONIMIASIS

Paragonimus is a “fluke”(short flat worm) that mainly involves the lung when infected, undercooked, fresh water crabs and crayfish are eaten.

SYMPTOMS AND SIGNS are very like lung TB and include:

- Cough with sputum
- Fever
- Blood in sputum (haemoptysis)
- Chest pain
- Pleural effusion

DIAGNOSIS

Definite diagnosis is by finding the EGGS on microscopy of UNSTAINED SPUTUM (you can find eggs also in stool, if the patient coughs up and swallows the eggs).

Concentration of sputum improves the results.

TREATMENT

PRAZQUANTEL 25mg / kg three times a day (TID) for 3 days.

- Weigh the patient, choose the nearest weight in the table and give the dose 3 times each day for 3 days

WEIGHT	DOSE (25mg/kg TID)	Number of tablets
6kg	150mg	$\frac{1}{4}$ TID
12kg	300mg	$\frac{1}{2}$ TID
18kg	450mg	$\frac{3}{4}$ TID
24kg	600mg	1 TID
30kg	750mg	$1\frac{1}{4}$ TID
36kg	900mg	$1\frac{1}{2}$ TID
42kg	1050mg	$1\frac{3}{4}$ TID
48kg	1200mg	2 TID
54kg	1350mg	$2\frac{1}{4}$ TID
60kg	1500mg	$2\frac{1}{2}$ TID
66kg	1650mg	$2\frac{3}{4}$ TID
72kg	1800mg	3 TID

1 tablet = 600 mg.

ACUTE ASTHMA

Inflammation of the airways is the basic problem in asthma. By definition the inflammation gets better with treatment with steroids (see below). Salbutamol will cause a short improvement in breathing but will NOT improve the inflammation.

Asthma is most common in children and young adults.

Asthma can kill people and cause failure to grow in children

SYMPTOMS AND SIGNS

- Cough.
- Difficulty breathing.
- Wheeze on breathing out that comes and goes and is often worst at night or in the early morning.

If a person has ONLY asthma, he/she does NOT have fever, does NOT cough up blood, and sputum is NOT green.

Signs of asthma depend on the severity.

You have to decide the SEVERITY of the attack.
Does the patient have a MILD, MODERATE, SEVERE or LIFE-THREATENING attack?
This is very important because the treatment is different.

To decide the SEVERITY, you have to check (see the chart below):

- PULSE RATE
- RESPIRATORY RATE
- DEGREE OF DIFFICULTY BREATHING
- HOW MANY WORDS THE PERSON CAN SAY IN ONE BREATH
- PRESENCE OR ABSENCE OF WHEEZE
- PRESENCE OR ABSENCE of MUSCLE RETRACTION (INDRAWING)
- PEAK FLOW VALUE (see below)

*If at all possible a cheap and simple device, a **PEAK FLOW METER** should be available (ask your supervisor to get one).*

You should record peak flow measurement together with the signs above:

- *Before and after treatment with Salbutamol or Prednisolone*
- *Before, during and after an asthma attack*

In this way you can decide more accurately if the patient is getting better with treatment (see chart below). If patient's peak flow measurements do not get better after appropriate treatment, then it is not asthma

To know the normal peak flow measurements you need a special chart, which gives you the normal measurements for a patient of that height, age and sex, so that you can check the value of your patient: see Table at page 165 and page 166.

Remember that people with asthma can have other illness such as bronchitis, pneumonia, TB, heart failure or pneumothorax.

In a patient with asthma, be careful: **look for and treat any other illness present at the same time.**

DIAGNOSIS of asthma is by history, examination and investigation.

TREATMENT

Treatment of ACUTE asthma has three parts (all are important)

1. Supportive: Hydration, **Oxygen**
2. Short term: **Salbutamol**
3. Treatment of inflammation: Steroid (**Prednisolone**).

- **Salbutamol and Steroids** are the two types of medicine usually used for treating asthma. How these medicines are given depends on the severity of the asthma and the availability of different preparations (tablets, inhalers, injection, nebulisers).
- Two other medicines are sometimes used in difficult or very severe cases (Aminophylline iv and Adrenaline im).

HOW TO DECIDE THE SEVERITY AND TREAT ACUTE ASTHMA IN ADULTS

All symptoms/signs may not be present. The presence of **any one** feature makes the higher severity likely

- **Review the patient's conditions often to adjust the treatment**

	Mild attack	Moderate attack	Severe attack	Life threatening attack
Difficulty breathing	When walking	When talking	On lying down	Always
Speaking	Normal	Few words	Single words Child cannot feed	Cannot speak Child cannot feed
Consciousness	May be anxious	Usually agitated	Always agitated	Sleepy or confused
Wheezing	At the end of breathing out	Loud	Loud	Not heard
Use of accessory muscles (indrawing)	No	Usually yes	Usually yes	Unusual movement
Respiratory rate / minute	Increased	Increased	Adult ; >30/min Child >5yrs; >40/min <5yrs; >50/min	(Fast or slow)
Pulse rate / Minute	Less than 100	100-120	Adult ; >120/min Child >5yrs; >120/min <5yrs; >140/min	Slow
Peak flow after treatment	Value is greater than 70% of normal	Value is 70 – 50% of normal	Value is less than 50% of normal	Value is less than 33% of normal

AFTER YOU HAVE DECIDED THE SEVERITY (MILD, MODERATE, SEVERE, LIFE-THREATENING) TREAT THE PATIENT:				
	Mild attack	Moderate attack	Severe attack	Life threatening attack
Admit	No	After treatment if PF<70% of normal	Always	Always
Salbutamol inhaler with spacer**	Yes 4-8 puffs every 15 min in the first hour after, 4 hourly as needed until full response*	Yes 4-8 puffs every 15 min in the first hour after 4 hourly as needed until full response*	Yes, if no nebuliser 10-15 puffs every 15 min in the first hour after 4 hourly until full response*	YES 10-15 puffs as much as needed until full response* (nebuliser is better)
Prednisolone If given for less than 10 days, can stop without reducing slowly	No	YES, important 1mg/kg/day OD until full response*	YES Essential Adult: 1mg/kg/day OD Child: First day: 1mg/kg BID After: 1 mg/kg OD until full response*	YES Essential Adult: 1mg/kg/day OD Child: First day: 1mg/kg BID After: 1 mg/kg OD until full response*
Oxygen	No	No	YES important 6+ litres/minute	YES Essential 6+litres/minute
Salbutamol nebuliser	Not necessary	Yes, if no inhaler 2.5 – 5mg 4 hourly as needed until full response*	Yes with Oxygen 5mg every 15 min to every 4 hours as needed until full response*	Essential with oxygen. 5 mg as often as needed
Hydrocortisone iv	No	No	Can use	Can use
Aminophylline iv	No	No	Maybe use	Can use
Salbutamol iv	No	No	No	Can use
Adrenaline IM	No	No	No	Maybe use
Salbutamol tablet	If no inhaler	If no inhaler/neb	If no inhaler/neb	If no inhaler/neb

***Full response** = Peak Flow values, RR, PR are back to normal, patient can speak and breath normally, is no longer agitated or confused, wheezes are decreased or absent, there is no more chest indrawing.

****** Using a **spacer** makes the inhalation of Salbutamol into the lungs much more effective. If you do not have one, you can easily **make one** with a 1.5/2 litre Sprite or Fanta bottle: make a hole in the bottom, apply the inhaler in it, ask the patient to breath via the top, spray 2-15 puffs (depending on severity) into the bottle.

DOSES OF DRUGS THAT MAY BE USED IN ASTHMA:

1. Aminophylline iv

Adult: Loading Dose 250mg over 30 minutes
Maintenance Dose: 0.5 mg/kg/hour
No loading dose if previously taking oral Theophylline or Aminophylline.

Child: Loading Dose 5mg/kg over 30 minutes
Maintenance Dose: 1 mg/kg/hour
No loading dose if previously taking oral Theophylline or Aminophylline.

- Dilute in D5W or Normal Saline.

2. Salbutamol iv

Adult: 250 micrograms over 10 minutes.

3. Adrenaline IM (1:1000 = 1 mg/ml):

Adult 0.5 – 1 ml

Child

< 1 year:	0.05 ml
1 year:	0.1 ml
2 years:	0.2 ml
3-4 years:	0.3 ml
5 years:	0.4 ml
6-12 years:	0.5 ml

4. Salbutamol tablets may be used when inhalers and nebulisers are not available but have **greater side effects** and are **slower to act**.

Adult: 4 mg TID or QID

Child:

< 2 years:	0.1mg/kg QID
2-6 years:	1-2 mg TID or QID
6-12 years:	2 mg TID or QID

DRUGS SIDE-EFFECTS

- Potassium levels are reduced by Salbutamol, Steroids and Aminophylline and this may lead to levels that can be life threatening.
 ○ If possible, potassium levels should be checked.
- Steroids can make many infections worse. Remember worms (including strongyloides), amoeba, TB, and other bacterial infections. Take a good history for TB, amoeba, other infections.
 ○ Give Albendazole or Mebendazole to prevent spread of worms.

PREVENTION

Prevention of chronic asthma should involve using **regular steroids**, if possible by inhaler, e.g. Beclomethasone twice daily.

- Start OPD patient (mild attack) with persistent symptoms on a low dose steroid inhaler (e.g. one puff BID)
- Start patient discharged from IPD after moderate attack on medium dose steroid inhaler (e.g. two puffs BID), or after severe attack on high dose steroid inhaler (e.g. 4 puffs BID). Follow up in OPD and reduce dose step by step to minimum dose that fully controls symptoms. If symptoms come back, increase dose of steroid inhaler again.
- Review the patient every month or when the steroid inhaler is nearly empty.
- Check his peak flow value.
- Increase the dose until the peak flow value is normal. (always give steroids inhalers BID)
- Then keep the patient at this dose all the time to prevent him getting wheezy.

If you do not have steroid inhalers, you can use a low dose of oral steroids for patients who have symptoms very often (discuss with doctor).

SALBUTAMOL DOES NOT PREVENT ASTHMA.

OTITIS

Otitis is an infection of the ear.

Babies and small children cannot explain that they have ear pain. Check the ears each time they have unexplained fever, vomiting, crying, agitation or diarrhoea.

1) OTITIS EXTERNA : Skin infection of the ear canal

SYMPTOMS AND SIGNS

- Pain
- External canal red, swollen, sometimes with small abscess
- Drum normal
- Foreign body sometimes present

TREATMENT

- Clean the ears with Sterile Water or Normal Saline, especially when there is pus or fluid.
- If a foreign body is present, do not push it with cotton, but clean gently with Sterile Water or Normal Saline until it comes out (sometimes this will need to be repeated for 2-3 days).
- Apply Gentian Violet with a cotton bud.
- Repeat this local treatment every day until cured (usually 3 to 5 days).
- Treat the pain with Paracetamol.
- If no improvement after 5 days, give po Cloxacillin

2) ACUTE OTITIS MEDIA : Acute infection of the middle ear (behind the ear drum).

SYMPTOMS AND SIGNS

- Severe pain, fever
- Crying, agitation
- Vomiting, Diarrhoea
- Ear drums: red / bulged (swollen) / perforated with pus discharge

TREATMENT

- Clean the ears with tissue or cotton wool with Sterile Water or Normal Saline in case of pus discharge.
- Treat the fever and pain.
- Give Cotrimoxazole for 5 days.
- If patient is not better after 3 days, stop Cotrimoxazole and give Amoxicillin for 5 days.

3) CHRONIC OTITIS MEDIA : Chronic discharge from middle ear with ear drum perforation.

SYMPTOMS AND SIGNS

- Pus discharge for more than 2 weeks.
- No fever, or pain.

TREATMENT

- No antibiotic.
- Apply antibiotic cream/drops if available.
- Put small piece of cotton in the ear and ask the mother to change it every 6 hours until the ears dry up.

Note:

- If there is fever and pain, treat like Acute Otitis Media.

CARDIOVASCULAR DISEASES

HYPERTENSION (HIGH BLOOD PRESSURE)

Hypertension (HBP) is an increase of systolic and/or diastolic Blood Pressure (BP). It is a risk factor for cardiovascular diseases (like stroke and heart attack). It is usually present without symptoms and often, it is found during examination.

Blood Pressure (BP) varies with age and time during the day. It is very difficult to give an exact value of “High” Blood Pressure. Never decide to treat Hypertension with medications if you have measured it only one time and the patient has no symptoms.

Most of the time (95%) the cause of HBP is unknown. This is called “**Essential Hypertension**”.

Only sometimes (5%) can a cause be found. This is called “**Secondary Hypertension**”. Causes include:

1. Alcohol.
 2. Smoking.
 3. Obesity.
 4. Certain medicines and drugs: Prednisolone and the Contraceptive pill, Amphetamines (Ya Ba).
 5. Kidney diseases.
 6. Diseases of the adrenal gland or other glands (pituitary).
- Pain and anxiety can cause temporary increase of BP.

Note:

- **Pregnant women** with high BP near the end of the pregnancy may have a very serious condition called Pre-Eclampsia. This condition is very different from essential hypertension. Please refer to the “Common Obstetric Problems” section page 147.

- The patient should SIT QUIETLY for 5 minutes before measuring the BP.
- If the patient is anxious (maybe he is afraid of being seen by a doctor), the BP can go up! Try to make the patient feel comfortable.
- Measure the BP always **on the same arm for the same patient** (write in the chart which arm you use) – traditionally it should be the RIGHT ARM.
- Read the BP at **each 2 mmHg** to be precise (example 118 / 68).

MANAGEMENT OF HYPERTENSION

Hypertension is treated to lower risks of cardiovascular damage, and so preventing heart attacks, stroke, kidney and eye damage.

1. EXPLANATION AND ADVICE

When you have made the diagnosis of hypertension, explain to the patient what hypertension is. Tell them that there is no cure for hypertension and that they will have this disease all their life. However, hypertension can be controlled. Explain that there are drugs which can lower the level of Blood Pressure and that there are also some things that the patient can do to help lower the Blood Pressure level.

2. “LIFE-STYLE TREATMENT”

Look for any cause of HBP and, if possible, treat them or encourage the patient to change some habits:

- **Pain:** if patient has pain, make sure that it is being treated.
- **Anxiety:** try to find out why the patient is anxious.
- **Certain medicines and drugs:** find out if patient is taking steroids or amphetamines or is on the contraceptive pill.
- **Alcohol:** encourage the patient to reduce alcohol.
- **Smoking:** encourage the patient to stop smoking.
- **Weight:** if patient is obese, encourage to lose weight.
- **Exercise:** encourage the patient to take regular daily exercise.
- **Salt:** encourage the patient to reduce salt in the diet.

Lifestyle treatment alone can be very effective in decreasing BP, but it is very difficult and the patient needs lots of encouragement.

3. TREATMENT WITH MEDICATIONS

Start with medications only if you have rechecked the BP at least 3 times during 3 weeks (NOT THE SAME DAY!) and “life style treatment” has failed to decrease the BP. Never start medications if you find BP high only 1 or 2 times (except when diastolic >120mmHg) ==> see “WHO TO TREAT”.

IN ALL PATIENTS:

- **Look for kidney diseases:** check urine for protein and blood: if positive, discuss with doctor.
- **Look for Diabetes:** check urine for glucose: if positive, see “Diabetes” section, page 59.

(A) WHEN STARTING A PATIENT ON MEDICATION:

- Start with one medication only.
- Start with minimum dose and increase every 2-3 weeks if BP does not come down.
- Go up to maximum dose before changing medication or adding one more.
- Remember that most medications take 4-8 weeks to show their maximum effect.

I. After 1-2 months on one medication, the BP is ok

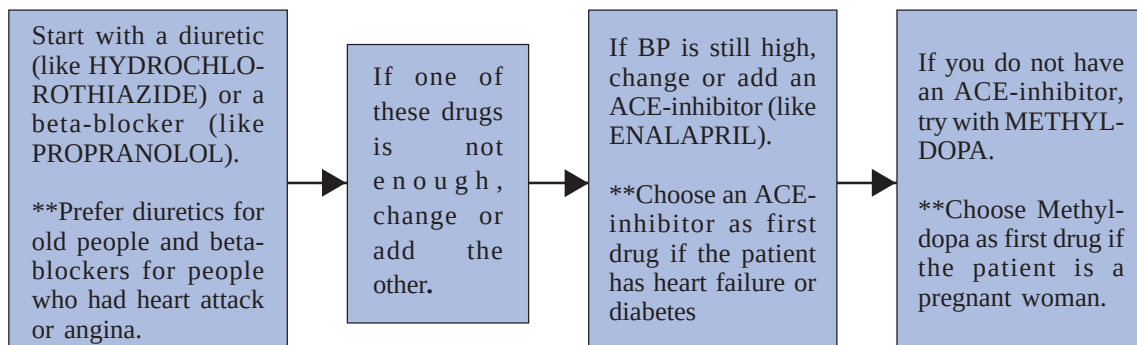
- CONTINUE SAME TREATMENT LONG-TERM.

II. After 1-2 months on one medication, the BP is still high:

- If BP has never come down at all or the patient is having side-effects from the medication:
 ➡ CHANGE MEDICATION
- If BP has come down a little and the patient has no side-effects:
 ➡ ADD ANOTHER MEDICATION

When the BP is controlled, review your patient every month. Treatment is often lifelong and cannot be stopped. It can be dangerous for the patient to stop suddenly especially if they are taking Methyldopa or Propranolol.

(B) WHICH MEDICATIONS TO USE:



(C) ANTI-HYPERTENSIVE DRUGS

MEDICATION	Start dose	Usual maintenance dose	Maximum dose	Contraindications	Side-effects
HYDROCHLOROTHIAZIDE	12.5 mg OD	25 mg OD	50 mg	Gout Severe renal or liver failure Pregnancy	Low potassium (not at low doses) High glucose Postural Hypotension
PROPRANOLOL	80 mg BID Increase by 40 mg BID every 3-4 weeks	120 mg BID	160 mg BID	Asthma Chronic obstructive airways disease HR < 50/min	Slow pulse Cold hands and feet Bad dreams
ENALAPRIL <u>Old people or people on Hydrochlorothiazide</u>	5 mg OD 2.5 mg OD Increase by 2.5 mg OD every 3-4 weeks	10-20 mg OD	40 mg OD	Pregnancy	Very low BP Renal failure Dry cough
METHYLDOPA <u>Old people</u>	250 mg BID 125 mg BID		3 g daily <u>Old people:</u> 2 g daily	Depression Active liver disease	Nausea Stomatitis Dry mouth Oedema
HYDRALAZINE Oral	25mg BID	25-50 mg/day BID	50 mg BID	Renal disease Stroke PR > 140/m	Fast pulse Hypotension Dizziness Fluid retention
HYDRALAZINE I V for Hypertensive crisis	5mg IV every 20-30 minutes until Diastolic BP<110mmHg		20 mg	***Do not use in patients with stroke ****	As above but also causes rapid and profound drop in BP

Note:

- HYDRALAZINE tablets: only use in Pregnancy if Methyldopa cannot control HBP. Usually not used because of dangerous side-effects.
- NIFEDIPINE tablets are no longer recommended for treatment of hypertension, because they may cause large variations in BP and tachycardia. Only SLOW-RELEASE (“modified release”) tablets can still be used to control BP.
- NIFEDIPINE SUBLINGUAL for treatment of severe HBP is no longer recommended, because it can cause the BP to drop too much and too quickly (see below).

(D) WHO TO TREAT :

BP 141-159/91-99 mmHg	Advise “Life-style treatment” Review at least every 3 months
BP 160-199/100-109 no diabetes – no kidney disease	1. “Life-style” treatment 2. Check BP every 2 weeks for 4-12 weeks 3. Start medications only if you find increased BP many times
diabetes – kidney disease history of heart failure	1. “Life-style” treatment 2. Check BP every week for 3-4 weeks 3. Start medications only if you find increased BP at least 3 times
BP 200-220/110-120 mmHg	1. “Life-style” treatment 2. Admit for observation and check BP BID 3. Start medications only if you find increased BP at least 3 times
BP $\geq$ 220/120 mm Hg with no symptoms <u>At present, iv treatment is not usually recommended in these patients</u> Lowering BP too quickly can cause: - Stroke - Blindness - Worsening kidney function - Angina / heart attack	1. Admit to IPD. 2. Absolute bed rest. 3. Give Furosemide 20-80 mg PO stat. 4. Give Hydrochlorothiazide PO or/and Propranolol PO or/and Enalapril PO. In the first 24 hours the Diastolic BP should be down to about 110 mmHg Over the next 2 days the Diastolic BP should be < 100 mmHg. <ul style="list-style-type: none"> • BP should go down in days and not in hours. Discharge the patient on medication.

<p>BP > 220/120 mm Hg with symptoms (= hypertensive crisis, malignant hypertension)</p> <ul style="list-style-type: none"> • Nausea and vomiting • Slow onset headache • Confusion • Restlessness • Convulsion • Coma • Vision problems • Pulmonary oedema • Kidney failure 	<ol style="list-style-type: none"> 1. Admit to IPD. 2. Try to reduce Diastolic to about 110 mmHg over 4 hours with iv drugs, then start oral treatment. <ul style="list-style-type: none"> • Give Furosemide 40-80 mg IV <p>If after 1-2 hours, BP still > 110 mmHg and symptoms:</p> <ul style="list-style-type: none"> • Use iv Hydralazine: <p>Give in bolus (stat): 5 mg iv every 20-30 minutes until Diastolic around 110 mmHg. Max dose 20 mg.</p> <p>⚠ Be careful because Hydralazine can cause sudden drop in BP.</p> 3. When Diastolic is about 110 mmHg, start oral treatment. 4. Discharge when Diastolic < 100 mmHg and aim to reduce Diastolic to about 90 mmHg over 2-3 months. <p><u>If stroke:</u> Treating even very high BP can cause brain damage. Treat with caution and DO NOT use IV Hydralazine or SL Nifedipine.</p>
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Nifedipine sublingual to reduce BP is no longer recommended: it can cause too quick a drop in the BP.

Use it ONLY if you do not have any other drug and the patient's BP is very high.

HEART FAILURE

Heart failure is a problem in which the heart cannot pump out enough blood.

COMMON CAUSES OF HEART FAILURE

1. Hypertension (high blood pressure)
2. Anaemia
3. Beriberi (Vitamin B1 deficiency)
4. Hyperthyroidism (too much thyroid activity)
5. Alcohol
6. Congenital heart disease (heart problem from birth)
7. Valvular heart disease (heart valves too tight or too loose)
8. Myocardial infarction (heart attack)
9. Arrhythmia (irregular heart beating)

SYMPTOMS AND SIGNS

- Difficulty breathing during effort (at the beginning) and then difficulty breathing at rest.
- Difficulty breathing when lying on the back. The patient uses more pillows or sits up to sleep.
- Acute difficulty in breathing in the middle of the night when lying flat.
- Chest pain.
- Fast pulse.
- Sometimes irregular pulse.
- Crackles at both lung bases.
- Neck vein distension.
- Big liver.
- Lower leg oedema, or lower back oedema if lying flat.
- Dry cough especially at night.
- Chronic tiredness.

TREATMENT OF ACUTE HEART FAILURE:

Patients can present with sudden pulmonary oedema. In this case they are suddenly short of breath, anxious and refuse to lie flat on their back.

- Sit the patient up.
- Give Oxygen by mask if available.
- Give Furosemide 40-80 mg IV in adults (Children 1mg/kg).
- Repeat the same dose 30-min later if the patient has not passed urine and has not improved.
- Record the patient's Vital Signs (pulse rate, blood pressure, respiratory rate) every 15 minutes until stable, then every hour.
- Record all the urine output carefully.

Once the patient is better, look for and treat the cause.

IF THE CAUSE IS MAINLY FROM THE HEART:

- Bed rest.
- Fluid restriction (max of 1.5 L/day).
- Encourage to stop smoking.

- Weigh every day.
- Continue the **Furosemide**: 20-40 mg PO daily. Increase by 20 mg every 2 days to keep the patient weight stable Max.80mg/day.
- If available, start treatment with **Enalapril**:
start with 2.5 mg OD slowly increase up to 10 mg BID max. 40 mg per day.
- If Enalapril is not available: start on **Digoxin**:
Adult: 0.25mg TID the first day, then 0.125-0.250 mg OD.
Old people start with 0.125 mg OD, then 0.0625 OD.

Notes on Drugs:

1) Furosemide makes the patient lose Potassium in the urine. If used long-term:

- (a) Encourage the patient to eat bananas.

OR

- (b) Give Potassium chloride 1 to 3 g / day divided BID or TID.

OR

- (c) Add Spironolactone 25mg OD.

2) If you ADD Enalapril to Furosemide, you have to be very careful: the blood pressure can drop suddenly:

- (a) Start these drugs at the minimum dose with the patient in IPD.
(b) Give the first dose in the evening with the patient lying down.

3) Enalapril may cause the potassium to increase and does **not** require Potassium replacement (see Drugs Tables).

4) Digoxin: for Contra-indications and signs of Toxicity, see Drugs Tables.

FOLLOW-UP

The treatment of heart failure should always be supervised closely.

See the patient monthly.

Heart Failure is usually a chronic problem.

If the patient is stable, he should continue on the same treatment.

Do not try to reduce the medication.

RHEUMATIC FEVER

Rheumatic fever is an inflammatory disease which is usually caused by a *Streptococcus* pharyngeal infection. It follows a pharyngitis / tonsillitis by 2 to 6 weeks (average 20 days).

It is most common in children 5-15 years old.

Only 2% of people who have a *Streptococcus* pharyngitis (non- treated or not well-treated) will develop Rheumatic Fever.

SYMPTOMS AND SIGNS

Rheumatic Fever affects four sites (joints, heart, central nervous system and skin) and during an attack, the patient can have any combinations of these symptoms:

- Inflammation of more than one joint (polyarthritis), especially the larger joints (knees, ankles, elbows, wrists). Pain and inflammation “travel” from one joint to another (=migratory arthritis). It is more common in adult patients. There can be only pain or sometimes swelling, redness, tenderness. No deformity.
- Heart Murmur.
- Congestive heart failure.
- Large heart.
- Pericardial rub.
- Chorea (rapid, involuntary, uncoordinated movements especially of head, face, hands and feet, which disappear during sleep).
- Nodules under the skin: small (few millimetres to 2 cm), mobile and painless nodules especially over bony surfaces and tendons (near the elbows, knees, wrists, ankles, over Achilles tendons, vertebrae).
- Erythema marginatum: non-itchy, non-painful rash with a raised edge and clear centre, especially on trunk, thighs and arms. The lesions change often.

There can also be Fever, Abdominal pain, nose bleed, Arthralgia (joint pain).

DIAGNOSIS

There is not a single symptom, sign or investigation characteristic of Rheumatic Fever.

For this reason the diagnosis is based on the “Revised Jones Criteria.” This has 3 parts.

1) Evidence of recent Streptococcal infection

Increase in anti-streptolysin O (ASO) titre

Positive throat culture for Group A beta-haemolytic *Streptococcus*

2) Major criteria

Heart symptoms as above

Polyarthritis

Chorea

Subcutaneous nodules

Erythema marginatum

3) Minor criteria

Arthralgia

Fever

Increased ESR/CRP

To make a diagnosis of Rheumatic Fever, there must be:

1) Evidence of a recent Streptococcal infection AND 2 major criteria **OR**

2) Evidence of a recent Streptococcal infection AND 1 major criteria and 2 minor criteria

DISEASE COURSE

The average course of an attack is about 3 months. Less than 5% of the attacks are longer than 6 months.

COMPLICATIONS

- 1) **Death**, from congestive heart failure.
- 2) **Reactivation of Rheumatic Fever** (5-50%)
- 3) **Chronic Rheumatic Heart Disease** (60% of patients with rheumatic carditis) = deformity of one or more heart valves. This is the only long-term problem of Rheumatic Fever.

If severe enough, this can lead to chronic heart failure.

Chronic rheumatic heart disease usually has no symptoms for years or decades after the initial episode of rheumatic fever.

TREATMENT

- **Benzathine Penicillin** IM stat dose.
If Benzathine Penicillin is not available, give Penicillin V for 10 days.
If allergic to Penicillins, give Erythromycin for 10 days.
- **Aspirin** in high doses until all symptoms have gone:

Children	20-25 mg/kg QID
Adults	1-2 g QID
- **Prednisolone** in case of heart involvement or in case Aspirin is insufficient to control joint inflammation: 2 mg/kg OD for 2 weeks, then slowly decreased.
Continue Aspirin for a month after stopping Prednisolone.
- For **Chorea**: Rest
Diazepam or Phenobarbital
- If the patient develops heart failure: treat (see Heart Failure Chapter, p. 55)

PREVENTION (=PROPHYLAXIS)

- **Primary prevention (Primary prophylaxis):** To prevent development of Acute Rheumatic Fever:

All patients with suspected Streptococcal tonsillitis should be treated with po Penicillin V for a full **10 day course** or a single im Benzathine Penicillin dose.

- **Secondary prevention (Secondary prophylaxis):** To prevent recurrent attacks (reactivation):

All patients who have had one attack of Rheumatic Fever should receive im Benzathine Penicillin 1.2 million IU every 4 weeks.

For how long to continue giving Benzathine Penicillin every 4 weeks?

There is no agreement.

Most people advise to carry on at least until the patient is 20 years old and at least 5 years after an acute attack.

Some advise continuing for life.

DIABETES

Diabetes mellitus is a syndrome caused by lack of insulin from the pancreas or reduced effectiveness of insulin in the body. This causes high blood sugar level (hyperglycemia).

There are two types of diabetes: Type 1 (about 10% of cases) usually starts in childhood and can only be treated with Insulin (oral tablets do not work). Type 2 usually starts in adult life (>40 years) and can usually be managed with tablets. If severe, it may require insulin treatment.

SYMPTOMS AND SIGNS

- Increased thirst.
- Increased urine output.
- Tiredness.
- Weight loss.
- Increased infections: especially skin infections, UTIs, vaginal infections (candidiasis) and TB.
- Symptoms of diabetic complications (see below).

A diabetic patient can present with a coma.

Check the blood sugar level (Dextrostix) in every patient with coma.

If the blood sugar level is high in a comatose patient:

- *Insert an iv cannula*
- *Start a NSS infusion*
- *Refer the patient*

DIAGNOSIS

If someone has the above symptoms, you should check them for Diabetes: **check the urine for glucose.**

If positive for glucose, this suggests diabetes but does not confirm it (some non-diabetic people can have glucose in urine).

To confirm the diagnosis in patients with positive glucose in the urine, check glucose level in the blood.

TEST		PATIENT HAS DIABETES IF
RANDOM BLOOD GLUCOSE	Check Glucose Level at any time of the day. It is NOT important if the patient has eaten or not.	> 11 mmol / L* > 200 mg/ dL
FASTING BLOOD GLUCOSE	Check Glucose Level in the morning: tell patient not to eat or drink anything except water after midnight.	> 7 mmol / L > 125 mg/dL

*Conversion 1mmol/L = 18 mg/dL, 1 mg/dL = 0.055 mmol/L

COMPLICATIONS

Diabetes causes long term damage in the body if it is not treated:

1. **Blood vessel (vascular) disease:** stroke, heart disease like heart attack, peripheral vascular disease (poor blood supply causing cold or painful feet).
2. **Kidney failure:** protein positive on urine Labstix.
3. **Eye disease:** cataracts, glaucoma, damage to the retina (patient complains he cannot see clearly).
4. **Nerve damage:** numbness, tingling and sometimes pain in the hands and feet (worse at night).
5. **Feet problems:** due to poor blood supply and numbness, diabetic feet are at increased risk of infections and wounds.

MANAGEMENT PLAN

Diabetes is treated to lower the blood sugar, which will make the patient feel better and prevent long term damage.

1. EXPLANATION AND ADVICE

When you have made the diagnosis of diabetes, explain to the patient what diabetes is. Tell them that there is no cure for diabetes and that they will have this disease all their life (except diabetes present only in pregnancy - see later). Diabetes can be controlled. Explain that there are drugs which can lower the blood sugar and that there are also some things that the patient can do to help lower the blood sugar level.

2. LIFESTYLE TREATMENT

(a) Diet:

REDUCE SUGAR: in tea, sweets, biscuits, soft drinks like Coke and Fanta, sugar cane, honey. Instead of sugar, eat starchy foods (rice, potato, noodles, bread). These are broken down into sugar by your body but more slowly, so they don't cause high blood sugar.

REDUCE FATS.

INCREASE FIBRE (vegetables, fruit).

REDUCE ALCOHOL.

If overweight, **LOSE WEIGHT:** this can lower blood sugar.

(b) Smoking: Advise the diabetic patient to stop smoking.

(c) Exercise: Advise the patient to do some exercise: walking, playing football every day.

Some diabetics can bring their blood sugar level back to normal just by making some of the above changes.

If at the time of diagnosis the Dextrostix is **140-200 mg/dL (7.7-11 mmol/L)**, you could try lifestyle treatment first.

If it does not work after one month, then start medication.

3. MEDICATION.

Start a diabetic medication if Dextrostix >**200 mg/dL (>11 mmol/L)**, or lifestyle treatment is not working.

The diabetic medications will need to be started by a doctor or senior medic.

Some diabetic medications are:

Name of Drug	START DOSE	MAX. DOSE	NOTES
GLIBENCLAMIDE	5 mg OD Old people: 2.5 mg OD	15 mg OD	Give with breakfast
CHLORPROPAMIDE	250 mg OD Old people: 125 mg OD	500 mg OD	Give with breakfast
METFORMIN	500 mg TID	1 g TID	Give with meals Preferred in overweight patients

Note:

- If it is very difficult to lower the blood sugar level in a patient, you can give Glibenclamide OR Chlorpropamide together with Metformin, BUT NOT Glibenclamide and Chlorpropamide together.
- If the patient takes Diabetic medication but does not eat, or does not eat regularly, he will be at risk of going into hypoglycaemia (too low blood sugar): explain this very carefully to the patient, teach him how to recognise symptoms of hypoglycaemia and how to treat it (eat sugary drink/food).

4. FOLLOW UP CONSULTATION

The aim is to educate, achieve good blood sugar levels and check for complications that you can treat.

- When starting medication, review the patient weekly until Blood Sugar Level is stable. This also gives you the chance to talk to the patient to explain about diabetes and remind him about diet and medication.
- When Blood Sugar Level is stable, review every month.
- Educate the diabetic patient about eating frequent meals with starchy foods to avoid hypoglycaemia.
- Warn every diabetic patient who is on medication about the symptoms of hypoglycaemia and how to treat at home

A. ASK

- Symptoms: have they improved?
- Complications: cold feet, numbness, vision problems – are they present?
- Have they had hypoglycaemia? Describe the symptoms (see below) and explain that this is because of low blood sugar. Educate the patient on how to treat low blood sugar - eat some sugar!)

B. EXAMINE

Every month:

- BP
- Feet for infection, wounds, numbness.

Every 12 months:

- Urine Labstix for protein (kidney failure).
- The heart. Look for signs of heart failure.
- Test vision in eye clinic; look for cataracts.

C. CHECK BLOOD SUGAR LEVEL

	VERY GOOD	GOOD	TOO LOW	TOO HIGH
BLOOD SUGAR LEVEL	>70 < 140 mg/dL >3.8 < 7.7 mmol/L	< 180 mg/dL < 10 mmol/L	< 70 mg/dL < 3.8 mmol/L	> 180 mg/dL > 10 mmol/L
WHAT TO DO	Continue same treatment		- Check if patient is eating regularly. If yes: reduce medication If not: give education - If patient has hypoglycaemic symptoms: treat (see below)	-Check patient is taking medication -if yes; Increase medication. - Think of infection (for example UTI) - Give again diet education

Note:

- Changes of medicine dose should be done by a doctor or senior medic.

HYPOGLYCAEMIA

This is blood sugar level <45 mg/dL (< 2.5 mmol/L).

CAUSES

- 1) Diabetic medication dose too high.
- 2) Diabetic person took their medication but then did not eat.
- 3) Malaria, especially in pregnant women and with quinine treatment.
- 4) Other infections.

SYMPTOMS

- Sweating, hungry, tremor, dizziness.
- More severe: drowsiness, aggressive or irritable behaviour, convulsions and coma.

TREATMENT

- Admit to IPD.
- Check Dextrostix to confirm diagnosis.
- If able to drink, give oral sugar (mix sugar with water) or give a sweet drink.
- If coma or not able to drink, give 50 ml of 50% Dextrose IV stat. When awake, give oral sugar.
- Review the medication doses with a doctor or senior medic.

GESTATIONAL DIABETES

A pregnant woman who has Diabetes before pregnancy or develops it during pregnancy will require Insulin treatment if sugar levels cannot be controlled with diet alone. Oral tablets cannot be used in pregnancy. Refer to hospital or discuss with the doctor.

Pregnant diabetic women have higher rates of stillbirth, pre-eclampsia, premature labour and very large babies
(or less commonly, very small babies).

EPILEPSY

Epilepsy is a chronic neurological disease that presents with convulsions from sudden abnormal electrical activity of brain cells.

There are different kinds of epilepsy. These are the 2 most common forms:

1. GENERALISED CONVULSIONS

Sudden loss of consciousness with or without cyanosis and strong movements of the arms and legs (sometimes the patient also passes urine or bites the tongue) lasting for a few minutes. When the movements stop, the patient may sleep and breath deeply for a few hours.

In small babies arm or leg movements may be absent, but their eyes, angles of mouth or finger tips move.

If the patient is still conscious during the crisis, it is not a convulsion.

2. CHILDHOOD ABSENCE ATTACKS:

The child suddenly stops talking or playing for a few seconds and then starts again to do what he was doing. The child does not remember the attack.

TREATMENT OF GENERALISED CONVULSIONS:

- See “Convulsions” section at page 14.

DIAGNOSIS

Look for another cause of convulsions and treat it before saying it is epilepsy. Convulsions starting in an adult are almost always not epilepsy, but caused by other diseases. The commonest cause of convulsions in adults in the tropics is Cysticercosis: see “Convulsions” section at page .

PREVENTION OF CONVULSIONS IN EPILEPSY

- Consider starting patients on medication if they have more than 2 convulsions in 1 year.
- Explain to the patient that this therapy is long-term and stopping suddenly can cause severe convulsions.
- Talk to the patient about epilepsy and explain to him/her that it is a disease that can be controlled.
- If the patient agrees to treatment, treat with one medication only.
- Start with a small dose and then increase until convulsions are controlled or the patient has side-effects.
- Encourage the patient to come back every month.
- Try to have the same medic see the same patient every time.

Medicines you can use are: Phenytoin, Carbamazepine, Phenobarbitone, Sodium Valproate.

	Tablet	Starting Dose	Max Dose per day	Most Common Side-Effects	Toxic Effects
Phenytoin	50 and 100 mg	200 mg OD or BID	500 mg	depression, polyneuropathy, acne, swollen gums	double vision, tremor, ataxia, difficulty speaking, change in behaviour, anaemia
Carbamazepine	200 mg	100 mg BID	2 g	drowsiness, confusion, rash	rash, nausea, double vision, dizziness, low sodium
Phenobarbitone	30 mg	60 mg at night	180 mg	depression, drowsiness, sedation in adults, excitation in children, confusion in old people	nystagmus, ataxia
Sodium Valproate	200 mg	200 mg TID	3 g	nausea and vomiting, weight increase, ankle swelling	rarely liver failure, especially in children < 3 years old

Note:

- For Children's dose see Drugs Tables.

STOPPING ANTI-EPILEPSY MEDICINES

The majority of patients will have no more convulsions after a few years on medications.

Consider stopping medications if the patient has had no convulsions for more than 2 years and has normal neurological examination.

Discuss the possibility with the patient and take decision together.

Some patients will be too afraid to have convulsions if medication is stopped, other patients will wish to stop as soon as possible.

- More than 60% will have no more convulsions if medication is stopped.
- Less than 40% will start having convulsions again after medication is stopped.

If you and the patient decide to stop the medication, you have to **GRADUALLY DECREASE** the **MEDICATION EVERY 4 WEEKS**:

- 1) Decrease Phenytoin by 50 mg every 4 weeks
- 2) Decrease Carbamazepine by 100 mg every 4 weeks
- 3) Decrease Phenobarbitone by 30 mg every 4 weeks
- 4) Decrease Sodium Valproate by 200 mg every 4 weeks

WATERY DIARRHOEA

Diarrhoea can be considered as 3 or more soft or watery stools per day.

It is a symptom not a disease.

It can have many different causes (food poisoning, gastrointestinal infections, other diseases outside the bowel, surgical problems).

However, any kind of diarrhoea can cause dehydration and death.
Assessment of dehydration is very important.

I. DEFINE THE DIARRHOEA

- How many days has the patient had diarrhoea?
 - How many times a day?
 - Is it watery, with mucus or with blood?
 - Is there abdominal pain, rectal pain after passing stool (tenesmus), fever or vomiting?
1. If there is **fever** you must always think of associated diseases such as malaria, otitis media, pneumonia, meningitis, UTI, generalised sepsis.
 2. If there is **diarrhoea with blood**, this is **dysentery** -> refer to the following section.
 3. If the patient has **abdominal signs**: a tender abdomen or abdominal distension, you must think of surgical causes (appendicitis/obstruction/perforation).

II. DIARRHOEA IN CHILDREN

- When a child has **diarrhoea and fever**, always think of associated diseases (Malaria, Otitis, Pneumonia).
- When a child has **chronic diarrhoea** (>2 weeks), think of malnutrition and chronic diseases. If the child is malnourished and at the same time has diarrhoea, give ORS carefully, as the strength needs to be different in malnutrition (See malnutrition section).
- In **babies**, always think of changes in feeding. Diarrhoea is very common when the mother stops breast feeding and gives bottles (milk is not well diluted or water not boiled or bottle is dirty).

**Breast-feeding prevents diarrhoea in babies.
Encourage breast-feeding and discourage bottles.**

III. LOOK FOR DEHYDRATION

1. Look at the patient:
 - General appearance (awake, irritable, sleepy,...).
 - Eyes, tears, mouth and tongue, fontanelle in babies less than 18 months.
2. Is the patient thirsty? Is there vomiting?
3. Examine the patient:
 - Skin elasticity
 - BP, pulse, RR, Urine output
4. Decide SEVERITY ("No", "Moderate" or "Severe") of DEHYDRATION: Look in the table below:

DEHYDRATION	NO	MODERATE	SEVERE
GENERAL APPEARANCE	normal, awake	*irritable, restless (moving, crying)	*lethargic, unconscious cold hands and feet
EYES	normal	sunken	very sunken
TEARS	present	no	no
MOUTH & TONGUE	wet	dry	very dry
FONTANELLE (6-18 months)	normal	depressed	very depressed
THIRST	drinking normally	*very thirsty	*CANNOT DRINK OR REFUSES
SKIN PINCH	goes back quickly	*goes back slowly	*goes back very slowly
BP	normal	normal	low or not found
PULSE	normal	rapid	rapid, weak, thready
RESPIRATION	normal	deep	deep and rapid
URINE	normal	little, dark (high urine SG 1.030)	no urine
DECISION	NO DEHYDRATION	If the patient has 2 or more signs including at least 1 with *mark MODERATE DEHYDRATION	If the patient has 2 or more signs including at least 1 with *mark SEVERE DEHYDRATION
TREATMENT	Plan A ORS Minimum L / day 1/2 1/2-1 1 1 1/2 2 2-3	Plan B ORS Volume in 4 hours 300cc 500cc 700cc 1 L 1.5 L 3 L	Plan C NSS or RL <2yrs: 70cc/kg in 4 hours >2yrs: 100cc/kg in 4 hours

IV. DECIDE THE TREATMENT OF WATERY DIARRHOEA

***Patients with only watery diarrhoea do NOT need antibiotics.
They only need rehydration***

A) DIARRHOEA WITH NO DEHYDRATION (PLAN A)

- (a) Give ORS to take at home (see the chart above).
- (b) Explain to the mother how to prepare the solution:
1 packet of ORS in 750 ml of clean water OR

Teach the mother how to make a rehydration solution at home with the following ingredients:

1 fist full of sugar
1 pinch of salt (pinch with 3 fingers)
500 cc of drinking water
Few drops of lemon juice (if available)

- (c) Give preventive dose of Vitamin A to all children under 12 years if not received in the previous 4 months.
- (d) Tell the mother to continue breast feeding.
- (e) Tell the patients to continue eating normal food and to drink a lot of fluids (water, rice soup...) in addition to ORS.
- (f) Give more fluids (water, rice soup...).
- (g) Treat the fever and associated diseases (if any).
- (h) Ask the patient to come back if there are signs of dehydration (explain signs to mothers) or if diarrhoea continues after 3 days.

If diarrhoea continues after 3 days: REASSESS THE PATIENT:

- 1. If with moderate dehydration ==> admit in IPD and follow plan B.
- 2. Ask about worms treatment ==> not taken recently, give Mebendazole (>2years old).
- 3. If bloody diarrhoea ==> see Dysentery, p. 69.

B) DIARRHOEA WITH MODERATE DEHYDRATION (PLAN B)

- (a) Admit to IPD
- (b) Give ORS for the first 4 hours (according to the chart above).
- (c) (d) (e) (f) (g) See Plan A

After 4 hours: REASSESS THE PATIENT:

- 1. No longer signs of dehydration ==> continue ORS as in Plan A.
- 2. Patient has signs of "Moderate dehydration" ==> repeat the same quantity of ORS.
- 3. Patients has signs of "Severe dehydration" ==> give NSS/RL: see Plan C.
- 4. Patient has bloody diarrhoea ==> see "Dysentery" p. 69.

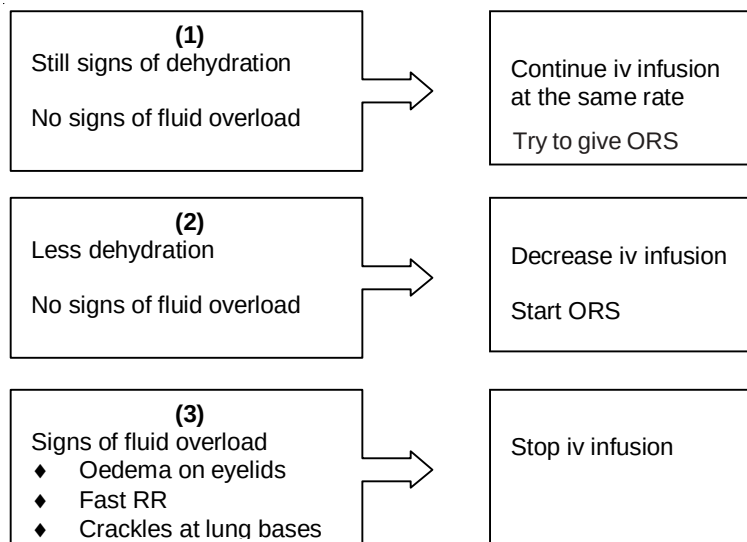
Note:

- To give ORS to small babies use a spoon or syringe. DO NOT GIVE ORS IN BOTTLES.

C) DIARRHOEA WITH SEVERE DEHYDRATION (PLAN C)

- (a) Start Normal Saline (NSS) or Ringer Lactate (RL) IV immediately (see chart above).
- (b) If you cannot put in an infusion, give ORS with a nasogastric (NG) tube, and try again when the patient is better.
- (c) Check every hour (or less if severe case) for signs of dehydration and oedema.
- (d) As soon as patient can drink start ORS.

ADAPT THE TREATMENT ACCORDING TO THESE SIGNS:



- (e) **After 4 hours reassess the patient** (see above box in Plan B).
- (f) Assess fluid balance. Measure the number of stools and the urine output and note the fluid input (IV and PO).
- (g) Give treatment dose of Vitamin A to all children under 12 years.

Fluid overload, too much or too little salt and/or potassium are serious complications of IV therapy

1. Do not give the infusion overnight, without checking.
2. Do not give the infusion if patient can drink enough.
3. Stop infusion as soon as the patient is able to take fluids by mouth.

Note:

- Think of CHOLERA when there is watery diarrhoea with rapid development of dehydration, especially in older children and adults. Arrange to take stool sample for laboratory analysis (culture and sensitivity) and inform the doctor. Follow all the steps for a cholera outbreak.
- Show the doctor (or check sodium and potassium) any child who has needed iv therapy for longer than 2 days for persistent vomiting & diarrhoea or who is developing abdominal distension (ileus).
- Never use antimotility agents (like “Loperamide”).

Remember: $\text{drops/min} = \frac{\text{cc}}{\text{hr}} \times \frac{\text{drop in 1cc.}}{60}$

Example: I want to give 600cc in 4 hours. There are 20 drops in 1cc
Then, $\text{drops/min} = 600/4 \times 20/60 = 50 \text{ drops/min.}$

V. PREVENTION OF DIARRHOEA

Give the following education to all the patients and/or the mothers to prevent diarrhoea:

- Wash hands before eating and after going to latrine.
- Breastfeed babies.
- Boil the drinking water if not chlorinated.
- Cook food well and keep it covered.
- Use latrines.
- Start to give solid food to babies at 4-6 months.
- Clean the stool of children.
- Immunise children against measles.

DYSENTERY

BLOODY/MUCOUS DIARRHOEA

The bloody stool has preferably to be seen by the medic to be sure it is dysentery.

There are two main types of diarrhoea with blood (dysentery):

1) **Amoebic**

Often not acute illness, less than 30% have fever, treated with Metronidazole.

2) **Bacillary** (Several bacteria can cause it, the most severe form is Shigella dysentery)

Often associated with fever, rectal pain after passing stool (tenesmus), unwell patient.

- Well patients should be only given ORS. Diarrhoea will get better on its own.
- At risk patients (see below) or patients very sick should be admitted to IPD and treated with antibiotics.

TREATMENT

It is often not possible to differentiate between Amoebic and Bacillary without a lab. Decide the therapy according to the patient's symptoms (especially presence of fever and if patient is at risk).

PATIENTS AT RISK

1. Children under 2 years old
2. Patient over 50 years old
3. Malnourished
4. High fever >38.5
5. Signs of severe dehydration

1. NO FEVER:

- Treat in OPD if patient's condition is "well".
- Admit to IPD if patient is very sick.
- Treat dehydration using same protocol as for Watery diarrhoea (see above page 78).
- Give **Metronidazole^(a)**: child 7.5mg/kg TID or by age.

1-3 years:	100-200 mg TID x 5 days
4-7 years:	200-250 mg TID x 5 days
8-10 years:	200-400 mg TID x 5 days
11-15 years:	400-500mg TID x 5 days
Adult:	750-800 mg TID x 5 days

^(a) *Metronidazole doses for Amoeba are higher than usual. Follow the recommended dose given here.*

- Give **preventive** dose of **Vitamin A** to children under 12 years who have not received it in the past 4 months.

2. FEVER, PATIENT NOT AT RISK, GENERAL CONDITION "WELL"

- Treat in OPD.
- Treat the fever with Paracetamol.
- Treat dehydration using same protocol as for Watery diarrhoea (see above page 78).
- Give Metronidazole and preventive dose of Vitamin A as for patients with no fever.

3. FEVER, PATIENT IS AT RISK

- **Admit** to IPD.
- Treat the fever with Paracetamol.
- Give **Ciprofloxacin** 7.5mg/kg BID x 3 days.
- Give **Metronidazole** (see dose above)
- Use Cotrimoxazole if Ciprofloxacin is not available (there is a lot of resistance to Cotrimoxazole in Thailand).
- Give **treatment** dose of **Vitamin A** to all children under 12 years.
- Treat Dehydration using same protocol as for Watery diarrhoea (see above page 78).
- Ensure enough food intake: breast feeding for babies and normal diet for older children and adults.
- Watch for complications: abdominal distension, perforation, sepsis.

Note:

- When there is increased number of cases, take stool samples for laboratory analysis (culture and sensitivity), inform the doctor and follow all the steps for a dysentery outbreak.

W O R M S

Intestinal worms are very common (Ascaris / Hookworm / Trichuris / Taenia). The patient gets infected by eating with dirty hands, walking without shoes or eating uncooked meat, fish or vegetables.

Worms should be treated to:

1. Prevent anaemia and malnutrition
2. Prevent complications:
 - i. Intestinal obstruction/obstructive jaundice
 - ii. Cysticercosis (Taenia solium) – lesions in brain and skin

1. COMMON WORMS (ASCARIS, HOOKWORM, TRICHURIS)

SYMPTOMS AND SIGNS

- Worms sometimes seen in the stool or vomit
- Abdominal pain
- Epigastric pain is very common, especially with Hookworm infection.
- Big swollen abdomen
- Anus itching
- Chronic Anaemia
- Malnutrition
- Complications

Note:

- Patients with worms have no fever. If fever, look for another associated disease.

TREATMENT

1. Adults and Children > 2 years: (Not in Pregnant women)

- Mebendazole 100 mg BID x 3 days

OR

- Albendazole 400mg stat

2. Children less than 2 years:

- Pyrantel 10mg/kg stat

OR

- Albendazole 200mg stat

3. Remember to treat any associated anaemia (especially with hookworm).

PREVENTION

Advise people to:

- Use latrines.
- Wash hands after passing stool and before eating.
- Wear shoes.

2) TAENIA (TAPE WORM)

This worm is long, flat and made up of many short pieces. Patients get it by eating meat (pork or beef) that is not cooked well.

SYMPTOMS AND SIGNS

- Patient sees worm pieces in stool.
- Patient always hungry.
- Patient eats a lot, but loses weight.

TREATMENT

- Niclosamide 30 mg/kg stat Tablets need to be chewed before swallowing.
Give Metoclopramide 10mg when the patient wakes up, then ask the patient to chew the tablets.

OR

- Praziquantel 20mg/kg stat

LIVER ABSCESS

There are two types of liver abscess:

1. Amoebic

- Three times more common
- The patient may report a recent episode of dysentery
- Treated with Metronidazole +/- drainage

2. Bacterial

- Mostly from bacteria ascending the bile ducts
- The patient is often more unwell/septic.
- Treated with broad spectrum antibiotics +/- drainage

It is difficult to tell the difference between the two types of abscess.

SYMPTOMS AND SIGNS

- Fever, chills, no appetite, nausea.
- Big painful liver on palpation or percussion (in 50% of cases).
- Sometimes chest pain with a right sided pleural effusion.

Usually no jaundice, no splenomegaly, no ascites (if present think of other diagnoses).

TREATMENT

- Admit to IPD.
- **IF THE PATIENT IS STABLE (not too unwell/septic):**
 - Start **Metronidazole** po; child 7.5mg / kg or by age.

1-3 years:	100-200 mg TID x 5 days
4-7 years:	200-250mg TID x 5 days
8-10 years:	200-400 mg TID x 5 days
11-15 years:	400-500mg TID x 5 days
Adult:	750-800 mg TID x 5 days
 - If patient improving ==> Continue for 14 days.
 - If patient not improving after 3-5 days
==> Add **iv Ampicillin and Gentamicin** (see Drugs Tables).
- **IF THE PATIENT IS UNWELL/SEPTIC:**
 - Start **iv Ampicillin, Gentamicin and po/iv Metronidazole (same dose as above).**
 - Continue for 14 days if responding (stop Genta after 5 days).

Depending on their size, liver abscesses may need to be drained surgically.
If there is no response to therapy, consider other diagnoses
or referral for drainage.

SKIN DISEASES AND OTHER SKIN CONDITIONS

Skin diseases are very common. They are often difficult to treat. Many skin diseases are related to poor hygiene and advice should be given about the importance of regular washing.

Take a good history:

- When did the lesions start?
- Where did they start?
- Did they spread?
- Are they itchy?
- Are there risk factors for skin disease? ==> take job / allergy history.

Examine all the body and describe the lesions:

- Where?
- How many?
- What colour?
- What shape (flat or raised)?
- Hot or cold?

Before starting any treatment, **clean the lesions with water and soap.**

***Remember: any skin lesion can become infected.
If skin lesions are wet with pus, red, warm/hot or if the patient has fever:
treat with antibiotics.***

IMPETIGO

This is a bacterial infection of the skin. It spreads easily amongst children.

Often starts around a bite or a scratch. May spread over days to weeks. The lesions are round, flattish, with crusts and usually 0.5 to 3 cm in size. They are sometimes wet.

1. MILD: Spots with pus on one part of the body, often around the mouth, behind the ears, on the hands or feet. No fever.

TREATMENT

- Clean with water and soap or antiseptic (for example Savlon or Chlorhexidine).
- Remove the crust, cut the fingernails, shave the head if necessary (if a lot of lesions on the head).
- Apply **Gentian Violet** (GV) 2 times/day.
- If on the face, apply antiseptic BID instead of Gentian Violet.

2. MODERATE: Same kind of lesions on a large part of the body, nodes enlarged and painful (axillary nodes when arm lesions, inguinal nodes when foot lesions). There can be fever.

TREATMENT

- Give the same local treatment as for Mild infections.
- Give **Cloxacillin** x 5 days or Erythromycin if allergic to penicillin.

ABSCCESS

This is a collection of pus in the soft tissues. There is a red, painful, hot localised swelling. There may be fever and enlarged lymph nodes. Antibiotics cannot reach the abscess cavity very well, so the treatment is to cut open the abscess to let the pus come out.

**Some abscesses are not hot and not painful (“COLD” ABSCESS).
If you find this ==> think of TB.**

1. FIRST STAGE: the skin is hard.

TREATMENT

- Apply warm compresses four times per day.
- Treat the pain with Paracetamol or Aspirin.
- Usually, **no antibiotic** is needed.
- Give Cloxacillin for 5 days (or Erythromycin if allergic to Penicillin) **only** in case of:
 - i. Cellulitis (see below)
 - ii. General symptoms (fever, chills)
 - iii. Children < 1 year
 - iv. Abscess on the face, head/neck or hand, multiple abscesses.

2. SECOND STAGE: very painful, one point on the skin is soft and ready to open.

TREATMENT

- Use gloves and sterile material.
- Cut a hole in the skin over the abscess with a sterile blade.
- Remove the pus. Clean inside the cavity.
- Wash with Normal Saline.
- Insert a gauze dressing soaked with normal saline into the hole.
- Change dressing daily until the hole begins to close. Do not clean with gauze and Iodine: you will destroy all the new tissue! Only flush gently with Normal Saline until clean water comes out.

CELLULITIS

This is a spreading acute bacterial infection under the skin, with redness, swelling (not localised as in an abscess) & pain with local lymph node enlargement. The borders are not very well-defined.

The bacteria *Streptococcus pyogenes* and *Staphylococcus aureus* are the most common causes. They enter through a wound, a scratch or when the skin is cut open for surgery.

**The risk from Cellulitis is septicæmia (when the bacteria spread into the blood)
==> to prevent septicæmia it is important to diagnose and start antibiotic treatment.**

TREATMENT

- Immobilisation and elevation of the limb.
- Cool and wet dressing.
- **Do not cut open.**
- Give ASA to adults for pain and inflammation. Give paracetamol to children for pain.
- Give Antibiotics:

1. MILD CASES

- **Penicillin V** po x 5 days and follow up regularly.
- For Penicillin allergic patients, use Erythromycin po
- If **no improvement** after 3 days or the patient is getting worse: admit to IPD, **add Cloxacillin** and follow regularly to look for signs and symptoms of septicaemia.

2. SEVERE CASES: high fever, patient unwell.

- Admit to **IPD**.
- Start intramuscular or intravenous **Penicillin**.
- If **no improvement** after 48 hours or patient's condition is getting worse, **add Cloxacillin** (po / iv).

If the cellulitis is associated with an abscess or open wound start treatment with Cloxacillin (iv or po depending on the severity).

WOUNDS AND BURNS

TREATMENT

- Remove foreign bodies with water.
- Clean with antiseptic.
- Apply Gentian Violet.
- Give analgesic pain-killer before cleaning and dressing when painful.
- Give **Tetanus toxoid vaccine**.
- For big wounds you can apply a mixture of sugar and iodine to make the wound heal faster.
- For burns you can apply Zinc Oxide Vaseline ointment or Silver Sulphadiazine cream if available.
- Dress the wound/burn daily until the wound is dry/the burn is clean.
- For large burns, insert an iv line with Normal Saline or Ringer's and consider referral to hospital. Calculate the amount of iv fluid needed according to the area of skin burned and the depth (degree) of the skin damage.
- Refer severe deep wounds to hospital for surgery to clean and repair the wound.

SCABIES

This is a parasitic infection of the skin. It is common and spreads easily.

Symptoms include itching a lot (especially at night), small sores and scratch marks between the fingers and toes, around the wrists, axilla or groin and other places. Other members of the family may have it too. Lasts for weeks to months. Scabies can become infected: treat the infection first (see Impetigo) and then the scabies.

TREATMENT

- Wash the whole body with water and soap.
- Apply **Benzyl Benzoate Emulsion** (BBE) on the whole body (except face and genitalia). Allow to dry and then put on clean clothes. **Do not wash for at least 12 hours.** Repeat each day for 3 days. It may be easier to apply BBE in the evening to avoid washing and leave it on all night.
- Treat the other people in the family **at the same time.**
- Wash the clothes with boiled water and soap.
- Put bedding (for example blankets) in the sun.
- Educate patients that the itching may continue for several weeks. This is a reaction to the dead parasite.

**If no response after treatment make sure that the treatment has been applied properly.
If still no response, give another treatment (for example Lindane).**

FUNGAL INFECTIONS

RINGWORM: Round dry, red lesions that grow slowly (weeks to months). Dry white scales on the edges with clearing in the centre, very itchy but no pain or fever. When on the scalp, it may be associated with localised loss of hair.

TREATMENT

- Clean with water and soap.
- If on the scalp shave the head.
- Apply **Whitfield Ointment** BID for at least 3 weeks.
- If no improvement after three weeks, apply **Clotrimazole cream** BID for three weeks.
- For very severe cases or no improvement after the above treatment, show to the doctor or give Griseofulvin for 3 weeks.
- For ringworm of the scalp that does not improve with topical treatment, treat with Griseofulvin for at least six weeks.

If there is no improvement, make sure it is not leprosy.

THRUSH IN THE MOUTH: (Candidiasis) White spots in the mouth due to *Candida Albicans*. Can be rubbed or scraped off the mucosa leaving a red base. Can be painful with difficulty swallowing.

TREATMENT

- Apply **GV** after each meal.
- If severe or no response to GV, may need **Nystatin** drops/ tablets (to suck in the mouth).
- In HIV/AIDS patients, see p. 86.

ALLERGY / URTICARIA

Raised, red rash: changes quickly in size and shape (minutes) on the whole body. Very itchy.

Allergies are common to:

- **Medications:** If the patient is under a new treatment (Quinine, Amoxicillin, Cotrimoxazole...): **Stop the treatment.**
- Insect bites, cat hair, worms, colour in drinks, contact with plants/metals, food.

Often, it is impossible to find the cause of the allergy.

TREATMENT

- Cool down with water.
- Cut and clean finger nails to prevent infection from scratching.
- If severe itching: give. Chlorpheniramine until itching stops.

In case of oedema on the face — Admit and give Dexamethasone IV or IM.

If difficulty breathing — Give Adrenaline.

See management of Anaphylaxis page 21.

ECZEMA

Itchy and chronic lesions anywhere on the body, usually on both sides of the body (especially at the front of the elbows and behind the knees). It may be localised or widespread, dry or wet but usually long lasting. The dry lesions are very itchy and there is serous (like water) exudation. Can appear and disappear many times at the same place. Can get infected.

If infected, treat the infection first (see Impetigo) and then the eczema.

TREATMENT

- **Do not** scratch.
- **Do not** scrub with water.
- Wash only with water: do not use soap on affected areas.
- **Rinse clothes very well, so that no soap stays on.**
- When dry, apply **Vaseline**.
- If severe, consider using Steroid Cream^(a) for example Hydrocortisone or Betamethasone, if available.
- If very itchy, treat with Chlorpheniramine.

^(a)Note:

- Steroid creams are of different strengths: Hydrocortisone is mild, Betamethasone is stronger. Be careful in applying strong steroid creams for long period: it can damage the skin.

CHICKEN POX

A very common disease caused by a virus (varicella). It spreads easily. Round spots appear, of different sizes with clear liquid inside (vesicles). Some may become crusted. The lesions can be anywhere on the whole body. More on the trunk and less on the arms and legs. They itch. There may be slight fever. Often there are the same symptoms in other people in the family or in the neighbourhood.

TREATMENT

- Clean with water and soap.
- Cut the fingernails, to reduce damage from scratching.
- Apply **GV** only on infected spots.
- Treat the fever with Paracetamol.
- Only in cases of severe itching, give Chlorpheniramine 1-3 days.
- If sores in the eye, treat with Terramycin eye ointment.

HERPES SIMPLEX

Due to infection with Herpes Simplex Virus. After the first infection, the virus stays in the body and can recur if the person has another illness, is stressed or exposed to cold or sunlight. The infection always happens in the same place.

Herpes is spread by direct contact with lesions.

Herpes lesions heal by themselves in approximately 10 days, but they will often recur (come back again).

SYMPTOMS AND SIGNS

- Group of small vesicles filled with clear fluid on the skin or the mucosae (mouth or genital area).
- Often the vesicles have broken and become crusted when the patient comes to the clinic.
- Very painful, may have tingling and itching before the lesions appear.
- In the mouth: Pain and difficulty eating. Ulcers in the mouth and on the lips. Often the gums are swollen.

Complications

Infections can be severe in the eyes, causing keratitis and blindness.

If a pregnant woman has a genital lesion, it can be very dangerous for the newborn baby because the baby can become infected during delivery.

TREATMENT

1. On the skin

- Clean lesions with Savlon and let dry.
- Apply GV (not on the face).

2. In the mouth:

- Wash the mouth with warm salty water.
- Apply GV.
- If secondary infection treat with Amoxicillin.

3. In the eyes:

- Wash the eyes with cool boiled water.
- Terramycine ointment.
- Refer to doctor for consultation.

4. On the genitals: see STI.

- Wash with soap and water. Give paracetamol for pain. Condom helps prevent spread.
- Vaginal infection needs oral aciclovir but it is not sure how safe this is in pregnancy.

Refer to doctor.

HERPES ZOSTER

There is a rash of vesicles (water spots) on one area of the skin supplied by one nerve. This is caused by the same virus (varicella zoster) as causes chicken pox but appears many years after the first infection. It may happen at any age, but frequently occurs in a patient with low immunity.

SYMPTOMS AND SIGNS

- Often fever and chills occur a few days **before** the rash develops and the person feels unwell.
- Moderate to severe pain at the site where the rash will develop but **before** the rash appears.
- 4 or 5 days later the vesicles appear on a red base (similar to herpes simplex but over a larger area).
- The vesicles become pustules, then crusts.
- The rash appears in the distribution of the affected nerve, very often on the chest but it can be found anywhere on the skin or mucosa (depending on the affected nerve).
- The rash is usually only on one side of the body.

TREATMENT

- Treat lesions as for Herpes Simplex.
- Apply cold compresses.
- For pain relief follow protocol in “Pain” section, p. 10.
- If pain is not relieved by painkillers, it may need Amitryptiline.
- If eye is affected or severe disease, refer to a doctor. Aciclovir can help if available.

DISORDERS OF THE JOINTS

Disorders of the joints can be due to infectious (septic arthritis) or non-infectious causes (inflammatory diseases) or injury (strains and sprains).

The treatment of trauma is not discussed in these Guidelines.

1. SEPTIC ARTHRITIS

Acute bacterial infection of a single joint (monoarticular) or many joints (polyarticular) is usually not symmetrical (usually only on one side of the body).

Septic arthritis of a single joint is more common in children and is usually caused by *Staphylococcus*.

Septic arthritis of many joints is more common in adults and may be due to *Gonococcus*.

SYMPTOMS AND SIGNS

- Joint is painful, tender, red, swollen and warm.
- Sometimes fever or chills

TREATMENT

Children:

- Admit to IPD.
- Give IV Cloxacillin for 3 days, followed by 14 days oral.
- If no improvement at day 3, add IM/IV Gentamicin for 5 days.
- Try to splint and rest the joint during the first few days, especially if it is a weight-bearing joint such as the hip or knee.

Adults:

- (a) If no signs of generalised sepsis, treat in OPD:
 - po Ciprofloxacin 500 mg stat + po Cloxacillin 500 mg QID for 14 days.
- (b) If high fever and patient's conditions poor or if no improvement after 2 days of OPD treatment:
 - Admit
 - Treat like OPD PLUS.
 - IM/IV Gentamicin 6 mg OD for 5 days.

Often requires drainage of joint fluid (under doctor/senior medic supervision).

2. NON-INFECTIOUS ARTHRITIS

There are many causes of non-infectious arthritis, the most common are Osteoarthritis, Rheumatoid arthritis and Gout.

**It can be difficult to decide if the joint is infected.
It is important to get a clear history.
If the patient has had the problem for a long time or it keeps coming and going, it is unlikely to be due to infection.
If in doubt, treat for both infection and inflammation.**

A. OSTEOARTHRITIS: When the joints become damaged in old age due to overuse. The most common joints affected are the hips, knees, spine, feet and hands.

SYMPTOMS AND SIGNS

- Pain and stiffness and decreased movement of the joints.
- Joints often swollen and deformed with crackling noise on movement.

TREATMENT

- Paracetamol.
- Anti-inflammatory medicine, ASA, Ibuprofen, Indomethacin.
- Often pain relief is needed long-term: be careful of side-effects, especially in old people.

B. RHEUMATOID ARTHRITIS: Inflammation of the lining of the joints.

SYMPTOMS AND SIGNS

- Patient often says the joints are stiff in the morning (“morning stiffness”).
- Joints are painful, warm, swollen.
- Long term damage causes joint deformities.

TREATMENT

- Anti-inflammatory medicine, ASA, Ibuprofen, Indomethacin.
- Often needed long-term.
- If no response, consider treating with Steroids or chloroquine after consultation with a doctor.

C. GOUT: Caused by abnormal crystals (little stones) forming in the joints.
Can be related to diet or to some medicines.
Most common in knees and joints of the feet (big toe).

SYMPTOMS AND SIGNS

- Joint pain severe.
- Joints are hot, swollen and red.

TREATMENT

- Anti-inflammatory medicine. Indomethacin is the most effective.
- Long term prevention with allopurinol may be considered in chronic cases after consulting a doctor.

LEPROSY

Leprosy can look like many other skin conditions, and some nerve and bone and eye conditions.

Leprosy is caused by a bacterium, *Mycobacterium Leprae*. It is very hard to spread, probably in the air, from the noses of a few untreated, smear positive, lepromatous type cases. Touching the skin of a person with leprosy almost certainly does NOT cause infection. Many leprosy patients are never infectious. Almost all properly treated patients are NOT infectious. Most people do NOT get leprosy illness even if they are in contact with the bacterium.

Two diagnostic points:

- A skin patch that does not itch, lasts for 6 weeks or more, does not look like one of the common skin conditions and does not improve with other treatment may be leprosy.
- Any patient with both skin changes AND nerve signs (enlargement, reduced feeling or loss of movement) could have leprosy. A pale skin patch with reduced feeling and an enlarged nerve is very likely to be leprosy.

Leprosy should be considered in all patients with painless injuries, burn wounds or ulceration of the hands or feet.

SYMPTOMS AND SIGNS

Skin	Macules (flat), often pale centre with raised red edges. Papules (raised, solid, rounded), often red. Plaques (raised, spread), often red.
Nerves	Enlargement of peripheral nerves in legs, arms, neck or head outside brain. Peripheral nerve pain, nerve tenderness, reduced skin feeling, weakness or loss of muscle strength (claw hand, wrist drop, foot drop, facial palsy), muscle wasting.
Eyes	Loss of feeling over conjunctiva (front surface of eye) Not able to close eye (lagophthalmus), lower eye lid turned out (ectropion) Eyebrow loss, eyelashes thin and turning in (entropion), Dry eyes, conjunctivitis, corneal damage, iritis (inflammation of the iris), blindness.

DIAGNOSIS

**If your area has a leprosy control programme,
refer any suspected patient for diagnosis and management.**

If your area has no leprosy control programme, do the following:

- Take the history. Short duration (3 weeks or less), and itching make the diagnosis less likely.
- Test the centre of the skin lesion with cotton wool and a common pin. Loss of sensation suggests leprosy. "Light touch" feeling is lost before pain.

Physical examination should include:

1. All the skin, in a good light, for abnormal patches, colour change, dryness, loss of hair. Make an accurate drawing.
2. Nerves for enlargement
 - Ulnar - inside and slightly above the elbow in the ulnar groove (keep arm bent).
 - Median - in front of the elbow and in front of wrist.
 - Radial - over the distal radius, on the thumb side above the wrist.
 - Peroneal (lateral popliteal) - behind the fibula at the outside of the knee (knee bent).
 - Tibial - behind the medial malleolus at the inside of the ankle.
 - Posterior auricular – in the neck, below and behind the ear, turn the neck.
 - Cutaneous nerves near to a skin patch.
3. Abnormal skin for loss of “light touch” feeling using a piece of cotton wool or paper. Also, for pain (pinprick) and temperature sensation loss.
4. Hands and feet and face for loss of “light touch” feeling using a piece of cotton wool or paper. Also, for pain (pinprick) and temperature sensation loss..
5. Cornea (trigeminal nerve) for loss of touch sensation, using cotton wool.
6. Muscles of the feet, hands and face for weakness and wasting.
 - (Peroneal) - pull foot up (flex ankle), no foot drop
 - (Tibial) - push foot down (extend ankle)
 - (Radial) - bend wrist back (extend wrist)
 - (Median) - back of hand on table, thumb up (abduct thumb)
 - (Ulnar) - back of hand on table, thumb down (adduct thumb) - little finger out (abduct little finger) – index finger out (abduct index finger) – hold paper between fingers (adduct index finger)
 - (Facial) - close eyes

Take a skin smear from 4 to 6 sites and a nose blow specimen.

- Right and left earlobe and the margin of two patches and include two areas of “normal” skin.
- Make a 5mm long and 2 - 3 mm deep cut with a scalpel. Avoid bleeding and blood interfering with the staining by squeezing the skin before and during cutting. Turn the scalpel and scrape the edge of the cut.
- Smear the tissue of each site on a slide over an area about 7mm in diameter, stain according to Ziehl Nielsen method and examine for acid-fast bacilli (AFB).

Diagnosis is confirmed by finding bacteria (AFB) in skin or nose together with clinical changes in skin or nerves typical of “lepromatous” leprosy.

If the skin and nose smears are negative, the patient can still have leprosy. Many patients have “tuberculoid” type leprosy with negative skin smears.

Certain diagnosis is by skin biopsy, rarely biopsy of a cutaneous sensory nerve, or culture in “nude” mice.

TREATMENT

The medical treatment with drugs is probably the simplest part of the help needed by a person with leprosy. It is relatively easy to kill the leprosy bacteria and stop it infecting others, provided the drugs are taken in the correct combination and for long enough. However, nerves damaged

by leprosy do not recover beyond the first few weeks and remain damaged for life. Preventing nerve damage is essential.

Protecting hands, feet and eyes which cannot feel during a whole lifetime, providing rehabilitation with skin care, protective footwear, physiotherapy, occupational therapy and material and psychological support are all essential and require long term commitment to the patient and by the patient.

DRUG TREATMENT:

- Dapsone 100mg daily (OD)
- Clofazimine 50mg daily (OD)
- Rifampicin 600mg once monthly
- Clofazimine 300mg once monthly.

The monthly doses are given under supervision. This triple therapy should be given for a minimum of 2 years and continued until the skin smears becomes negative for acid-fast bacilli from at least 3 sites on at least 2 consecutive occasions separated by at least a month. (WHO is suggesting a 1 year treatment may be long enough)

Drug side-effects:

- Dapsone can produce haemolytic anaemia and G6PD activity should be tested. Dapsone should be used under close supervision or avoided if G6PD-deficient..
- Dapsone may cause skin rash, sometimes severe.
- Clofazimine turns the skin orange/brown. This fades slowly when the drug is stopped.
- Ethionamide or prothionamide are alternatives to clofazimine and may cause liver problems.
- Rifampicin turns urine orange. This is not dangerous.

ACUTE MEDICAL EMERGENCIES IN LEPROSY INCLUDE

1. Severe reaction with sudden onset, usually whilst on treatment, due to a strengthening of immunity causing new nerve or skin damage and presenting with
 - a) rapid nerve swelling with pain and tenderness.
 - b) sudden loss of motor function (wrist drop, foot drop, facial palsy).
 - c) old skin lesions becoming painful, tender, may ulcerate.

Treatment: rest, Aspirin, Prednisolone in high dose (adult 40-60mg daily) which should reduce the nerve pain in 1 to 2 days and be slowly decreased over 3 to 4 months. Continue anti-leprosy treatment.

2. Severe reaction in a patient not treated or partly treated, due to weakening of immunity, with increasing new skin lesions and change in old lesions to become more “lepromatous” (uniform, thick, extensive, nodular) in nature.

Treatment: Start anti-leprosy drugs and use prednisolone.

3. Systemic illness with fever and malaise, usually on treatment.

May be nerve, muscle, bone and joint pain, lymph node enlargement, iritis, testicular pain, proteinuria, erythema nodosum (red tender nodules which may ulcerate) due to an immune-complex reaction. May cause death.

Treatment: Thalidomide is the most effective treatment but is difficult to obtain and absolutely never to be used in women unless it is completely sure they cannot become pregnant. Clofazimine in higher dose (300mg daily for up to 3 months) or Chloroquine may be used. Prednisolone is the treatment for severe cases (when Thalidomide is not available) and it can be difficult to stop this without recurrence of the reaction in some severe chronic cases.

PREVENTION of damage to anaesthetic (non feeling) feet, hands and eyes is essential.

- Footwear with a strong sole (car tyre rubber) to protect against spikes and soft layer (microcellular rubber) to protect against pressure damage are important when feet have no feeling.
- Gloves may be helpful to protect hands during manual work and cooking.
- Plain glasses (no magnification) can help to protect eyes without sensation.
- Hands and feet should be soaked in water for about 30 minutes every day to soften dry skin, then scraped and vegetable oil applied. This prevents the skin from cracking and becoming ulcerated and infected. **SOAK, SCRAPE, OIL.**
- Joint stiffness can be prevented by passive movement exercises and should be done slowly, carefully and regularly every day.

EDUCATION

The patient should be helped and shown how to prevent damage to numb hands, feet and eyes. Rest is the ideal, but is often not possible. The importance of regular (several times a day) examination of the hands and feet for injuries and prompt treatment should be stressed. Thinking about and avoiding problems such as heat burns is important.

REHABILITATION

Surgery and physiotherapy play an important role in the management of ulcers and bone and muscle deformities of the hands, feet and face. Many paralysed muscles can be helped by reconstructive surgery. It is important to emphasize that surgery and drugs cannot restore lost sensation.

THREE STEPS FOR PREVENTION

- Early detection, and treatment of the disease.
- Early recognition and adequate treatment of complications.
- Patient education in self care.

Many people with leprosy become demoralised and depressed by the reaction of others to their deformities and the limitations that this places on their lives. The recognition of depression and its treatment both with drugs and other supportive measures is essential. Overcoming the stigma people attach to this disease and the unnecessary fear, due to ignorance, is a vital part of the long term care of these people.

GENITO-URINARY CONDITIONS

CYSTITIS

Cystitis is an infection of the bladder, most often due to bacteria *E. coli*. It is very common, especially among women and not dangerous by itself. Treat it to prevent Pyelonephritis.

SYMPTOMS AND SIGNS

- The patient passes urine often, in small quantities.
- Passing urine is painful, often described as a burning feeling.
- The patient feels the need to pass urine often.
- **No fever**
- Cloudy urine
- Sometimes blood in the urine (haematuria).

TREATMENT

Mild cystitis can get better by just drinking a lot of water.

- Drink a lot: 3-4 litres/day for an adult.
- Cotrimoxazole for 3 days
- If not better after 3 days and no signs of Pyelonephritis, treat with Amoxicillin for 7 days OR Cephalexin for 7 days.
- For pregnant women Amoxicillin / Ampicillin for 7 days.

Note:

- Men usually do not get cystitis. Think about Sexually Transmitted Infections (STIs) or Prostatitis in a man with cystitis.
- In case of recurrent cystitis, think about bladder stone or STIs.
- Recurrent UTIs in small children should be investigated to prevent kidney damage.

PYELONEPHRITIS

Pyelonephritis is an infection of the kidney. It is a severe infection to be treated in IPD with Antibiotics.

SIGNS AND SYMPTOMS

- High fever, chills.
- Lumbar or back pain.
- The patient may pass urine often and in small quantities. It is painful and burns.
- Urine may be cloudy and sometimes bloody urine.

INVESTIGATIONS

- **Urine microscopy:** Many pus cells, red cells and bacteria on gram stain.
- **Dipstix, multistix:** Positive for Leucocytes and Nitrites.

TREATMENT

- Admit to IPD.
 - Drink a lot of fluid (3-4 litres for an adult).
 - Treat pain and fever with Paracetamol.
 - **Ampicillin** IV/IM x 2-3 days, followed by Amoxicillin/Ampicillin oral (total = 14 days).
- and
- **Gentamicin** IM/IV x 5 days.

Malaria and Pyelonephritis can be associated. Do a malaria smear.

URINARY STONES

Stones can form in the urinary system (in bladder or in kidney) and may cause partial or complete obstruction.

Stones formed in the kidneys can come down to block the ureters or urethra.

Patients with repeated urinary infections should be investigated to look for urinary stones.

SYMPTOMS AND SIGNS

One or more of the following can be present:

- Severe lumbar or pelvic pain, intermittent (renal colic) or constant.
- Blood in the urine.
- Passing of a stone in the urine.
- Signs of secondary infection: fever, chills.

INVESTIGATIONS

- **Dipstix:** positive for blood.
If there are also leucocytes (white cells) and nitrites, there could be associated infection.

TREATMENT

- Admit to IPD
- Drink a lot of fluids, 3-4 litres/day for adults.
- If unable to drink, give IV fluids.
- Treat the pain according to the severity:

1. Aspirin, Ibuprofen, Indomethacin or Diclophenac PO or IM are alternatives.
2. Buscopan (Hyoscine butylbromide) 20 mg/1cc (IM/IV depending on severity).

Buscopan	CHILDREN > 6 years	im/iv	0.5 mg/kg
	ADULTS	im/iv	20 mg

Do not use for children < 6 years and pregnant women.

- You can repeat the same dose after 30 min if there is still pain.
- You can also add 2 vials to 500 cc of D5W and give over 30 minutes.

If pain is not relieved:

3. Pentazocine 30 mg/1cc (IM/IV):

Pentazocine CHILDREN	im	1 mg/kg
	iv	0.5 mg/kg
ADULTS	im/iv	30-60 mg

- If fever and chills (secondary infection), treat as for Pyelonephritis.

- **If pain is not relieved with maximal medication, refer to hospital.**
- **If there are signs of urethral obstruction (suprapubic pain and no urine output), refer to hospital.**
- **Consider referral for chronic obstruction to prevent hydronephrosis and kidney damage.**

ACUTE GLOMERULONE-PHRITIS

Acute Glomerulonephritis (AGN) is an inflammation of the filter of the kidneys. There are multiple causes of this syndrome. One of the common causes that can be treated is Post-Streptococcal Glomerulonephritis. This disease usually follows a skin or throat infection. It can sometimes follow other infections, like pneumonia, typhoid, leptospirosis, malaria, hepatitis B and C, measles. It is more common in children over the age of 3 years.

SYMPTOMS AND SIGNS

50% of AGN are very mild and the patients do not seek medical care.

In other cases, patient can have:

- Smoky, rusty brown coloured urine.
- Swelling from fluid retention (oedema) especially on the face, but it can be generalised in severe cases.
- Low urine output (Oliguria).
- Hypertension: usually mild, but it can be severe in 5-10% of cases.
- If oedema is generalised, there may be signs of pulmonary oedema: difficulty in breathing, crackles at lung bases.

INVESTIGATIONS

Dipstix:

- Protein in urine (proteinuria)
- Blood in urine (haematuria)

Urine microscopy:

- Red and white blood cells, hyaline, granular and red blood cell casts seen.

**Ask for history of previous skin or throat infections.
Look at the skin to find signs of old impetigo.**

TREATMENT

- Admit to IPD.
 - Rest.
 - Restrict salt.
 - Restrict fluid intake to between 500ml and 1 L/day in adults.
 - In case of severe oedema: po Furosemide 1mg/kg/day.
 - Treat the complications: hypertension, acute pulmonary oedema (see relevant Chapters).
 - Antibiotics are recommended if you suspect post streptococcal glomerulonephritis:
 - (a) Penicillin V for 10 days
- OR
- (b) Benzathine Penicillin stat dose
- OR
- (c) Erythromycin if allergic to Penicillin

NEPHROTIC SYNDROME

In Nephrotic Syndrome the kidney filters (glomerulus) leak protein. This may be caused by disease affecting only the kidney (Primary glomerular disease) or can be a complication of disease, such as Diabetes, affecting many parts of the body (Secondary glomerular disease). The exact cause can be found only by doing a renal biopsy.

SYMPTOMS AND SIGNS

Nephrotic Syndrome is a combination of:

- Generalised oedema
- Protein in the urine (proteinuria)
- Low albumin level in the blood

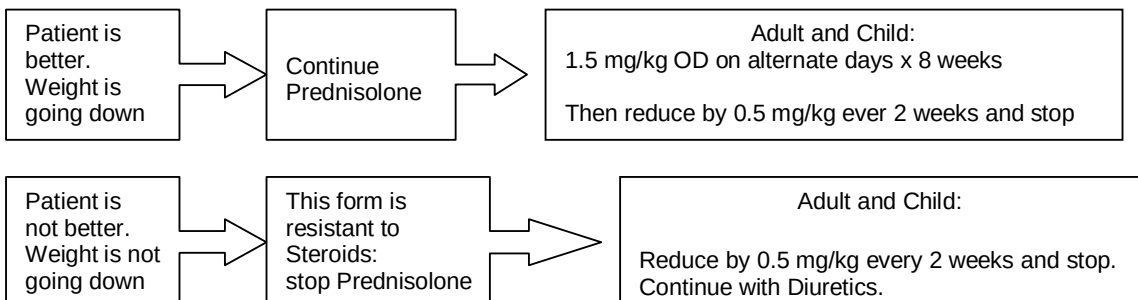
TREATMENT

- Admit to IPD.
- Restrict fluid intake to 500ml-1 L/day for Adults.
- Give Diuretics:
 - 1. Furosemide**
ADULT and CHILD po 1 mg/kg OD

AND

- 2. Spironolactone**
ADULT and CHILD po 3 mg/kg OD

After 4 weeks review the patient:



- Reduce according to clinical response.
- Give **Prednisolone x 4 weeks**
CHILD po 1 mg/kg BID, max 60 mg/day
ADULT po 1-1.5 mg/kg OD.
- Give Albendazole to prevent spreading of worms due to Steroid treatment.
- Take a good history and make sure patient has no active TB and no amoebic disease (steroids can make these worse).
- Weigh patient every day.
- Patients with Nephrotic Syndrome are at high risk of secondary infections due to loss of immune proteins and treatment with steroids.
- Keep in IPD until condition improves, then discharge with **weekly follow-up** (check weight and Dipstix).
- Total treatment course will be of 4-5 months.

Patients who got better on Prednisolone can relapse.

Ask the patient to come back to OPD as soon as they become slightly oedematous.
Restart the treatment again.

GENITAL TRACT INFECTIONS

If you suspect a genital tract infection, you should do a genital examination in a private room to look for discharge, ulcers, warts, inflamed cervix or pain on palpation.

Based on history and examination, use the guidelines for treatment.

I. VAGINITIS

Symptoms	Treat for	Drug Dose
Vaginitis with a. white frothy discharge b. grey-green discharge with fishy smell c. white itchy discharge	a. Trichomonas b. Gardnerella c. Candida	a. **Metronidazole (PO) 2g stat b. **Metronidazole (PO) 2g stat c. Nystatin 100,000 units 1 pessary in vagina for 7 nights

** Do not use Metronidazole in the first trimester (3 months) of pregnancy.

Advise the patient to come back in 14 days.

If, after 14 days, she still has symptoms, treat for cervicitis (Gonorrhoea and Chlamydia): see below.

II. PELVIC INFLAMMATORY DISEASE (PID)

= infections above the cervix (endometritis, salpingitis, tubo-ovarian abscess, pelvic peritonitis).

Symptoms	Treat for	Management
Lower abdominal pain Pain during sexual intercourse Abnormally painful menstruation Vaginal discharge Pain when passing urine	Gonorrhoea Chlamydia Anaerobic Bacteria	<p>Ceftriaxone im 250 mg stat or *Ciprofloxacin po 500mg stat</p> <p>Plus *Doxycycline po 200mg OD/100 mg BID x 14days or *Tetracycline po 500mg QID x 14 days</p> <p>Plus **Metronidazole po 500 mg TID x 14 days</p> <p><u>If severe, admit to IPD and give:</u> Ceftriaxone im 250 mg OD or *Ciprofloxacin po 500mg BID</p> <p>Plus *Doxycycline po 100 mg BID/200 mg OD or *Tetracycline po 500 mg QID</p> <p>Plus **Metronidazole po/iv 500 mg TID or *Chloramphenicol po/iv 500 mg QID</p> <p>Give this regime until patient's condition improve, then continue only with Doxycycline po 100 mg BID/200mg BID x 14 days</p>

* Not in pregnancy: In pregnancy replace Ciprofloxacin with Ceftriaxone and replace Doxycycline with Erythromycin.

**** NOT in first trimester (3 months) of pregnancy.**

IIIA. SEXUALLY TRANSMITTED INFECTIONS (STIs) IN WOMEN

Symptoms/Signs	Treat for	First choice regime	Second choice regime
Genital ulcers (open sores)	Syphilis and Chancroid	Benzathine Penicillin im 2.4 MIU stat ¹ Plus *Ciprofloxacin po 500mg BID x 3 days or Erythromycin po 500 mg QID x 7 days or Azithromycin po 1g stat	Procaine Penicillin im 1.2 MIU OD x 10 days or *Doxycycline po 100mg BID/200mg OD x 15days or *Tetracycline po 500 mg QID x 15 days <hr/> Ceftriaxone im 250 mg stat
Vaginal discharge, pus, cervicitis	Gonorrhoea and Chlamydia	*Ciprofloxacin po 500mg stat or Ceftriaxone im 250 mg stat or Azithromycin po 2g stat Plus *Doxycycline po 100mg BID/200 mg OD x 14days or Azithromycin po 1 g stat	<hr/> Amoxicillin po 500 mg TID x 7 days or Erythromycin po 500 mg QID x 7 days or *Tetracycline po 500 mg QID x 7 days
Genital ulcers** (small, painful blisters)	Herpes	Wash with soap and water x 3 days Paracetamol 1g QID x 3 days	
Genital warts (separate, with dimple in centre)	Molluscum Contagiosum	Wash with soap and water x 3 days Will disappear in about 8 weeks	
Genital warts (in groups, like cauliflower)	Condyloma Acuminata	Wash with soap and water x 3 days Paracetamol po 1g QID x 3 days May need surgical removal	

* Not in pregnancy: In pregnancy replace Ciprofloxacin with Ceftriaxone and replace Doxycycline with Erythromycin.

¹ Because of the volume, this dose of Benzathine Penicillin is usually given as two injections at separate sites.

** Vaginal herpes may need oral aciclovir to prevent infection of child at birth. Discuss with doctor. It is not sure that aciclovir is safe in pregnancy.

To get most effective results:

- Treat the patient **and** the partner.
- Advise the use of condoms and give at least 6 condoms to each patient.

IIIB. SEXUALLY TRANSMITTED INFECTIONS (STIs) IN MEN

Symptoms/Signs	Treat for	First choice regime	Second choice regime
Genital ulcers (open sores) on glans penis	Syphilis and Chancroid	Benzathine Penicillin im 2.4 MIU stat ¹ Plus Ciprofloxacin po 500mg BID x 3 days or Erythromycin po 500 mg QID x 7 days or Azithromycin po 1g stat	Procaine Penicillin im 1.2 MIU OD x 10 days or Doxycycline po 100mg BID/200mg OD x 15days or Tetracycline po 500 mg QID x 15 days Ceftriaxone im 250 mg stat
Penile or urethral discharge, pus, urethral irritation burning in passing urine	Gonorrhoea and Chlamydia	Ciprofloxacin po 500mg stat or Ceftriaxone im 250 mg stat or Azithromycin po 2g stat Plus Doxycycline po 100mg BID/200mg OD x 14days or Azithromycin po 1 g stat	Amoxicillin po 500 mg TID x 7 days or Erythromycin po 500 mg QID x 7 days or Tetracycline po 500 mg QID x 7 days
Inguinal swelling	Chlamydia	see above	
Genital ulcers (small, painful blisters)	Herpes	Wash with soap and water x 3 days Paracetamol 1g QID x 3 days	
Genital warts (separate, with dimple in centre)	Molluscum Contagiosum	Wash with soap and water x 3 days Will disappear in about 8 weeks	
Genital warts (in groups, like cauliflower)	Condyloma Acuminata	Wash with soap and water x 3 days Paracetamol 1g QID x 3 days May need surgical removal	

¹ because of the volume, this dose is usually given as two injections at separate sites.

To get most effective results

- Treat the patient **and** the partner
- Advise the use of condoms and give at least 6 condoms to each patient

MALNUTRITION

Malnutrition results from not eating enough food or not enough of the right kinds of food, or from infections that cause a loss of appetite or changes in how the body uses nutrients. Children under age 5 can easily become malnourished if not given small frequent meals with a variety of foods especially when they stop breast-feeding.

If a child does not take the right kind of food in the right amounts, growth slows or stops. Malnourished children are more likely to become ill and to die from those illnesses than other children.

- All children <5 years coming to IPD or OPD should have their Weight for Height Score checked!
- Take child's weight with a baby scale (Salter Scale) and measure the height.
- Compare with the previous weight registered on their immunisation card.
- Calculate the Weight for Height score (W/H %) using the Weight for Height Table.

"Weight for height" is mostly a measure of "acute" wasting malnutrition.

SYMPTOMS AND SIGNS / DIAGNOSIS

1. MODERATE MALNUTRITION

Weight for height is less than 80% (between 70% and 80% in weight/height chart).

2. SEVERE MALNUTRITION

Weight for height is less than 70% **or** oedema is present.

There are three types of severe malnutrition:

(a) Marasmus malnutrition

- 'Skin and bones', looks very thin, not much fat or muscle.
- Child looks like an old man.
- Does not want to eat, apathetic.
- W/H is less than 70%.

(b) Kwashiorkor malnutrition

- Oedema of the legs, thin upper arms.
- Skin is dry and scaly, skin disease.
- Child has a round "moon" face.
- Does not want to eat, apathetic.
- W/H may be less or more than 70% median (may be more due to oedema).

(c) Marasmic Kwashiorkor

- A 'mixed' type, with a mixture of symptoms and signs.

MANAGEMENT

Moderately malnourished children will be followed in OPD in a **Supplementary Feeding Programme (SFP)**.

Severely malnourished children will be admitted in IPD to a **Therapeutic Feeding Programme (TFP)**.

When these children can be discharged from IPD (see below), they will be referred to SFP in OPD.

Your Clinic should have special charts for feeding treatment.

Be sure to follow the treatment protocol exactly. The outcome depends mostly on the motivation and effort of the person feeding the child.

On Admission/When to discharge:

- Record the child's weight, height and the W/H %.
- Mark on the chart the target weight at which you want to discharge the child from the programme:

Severe malnourished children (Therapeutic Feeding Programme):

• When weight is $>80\%$ W/H for 2 weeks – refer to SFP.

Moderate malnourished children (SFP: Supplementary Feeding Programme):

• Discharge when weight is $\geq 85\%$ W/H for 2 weeks (wet feeding) to 1 month (dry feeding).

1. MODERATE MALNUTRITION (70% to 80% W/H)

Put the child in the Supplementary Feeding Program (SFP)—the child can be treated at home.

- Try to **find out why the child does not grow** – reasons may include
 - i) Poor weaning practices (not giving right food or right amount of food when stopping breast-feeding)
 - ii) Not having enough food in total for the family
 - iii) Not dividing the food into frequent enough small meals for the child to manage to eat enough in total.
 - iv) Illness.
 - v) The mother having another baby and so has no time to look after the first one.
 - vi) The mother having to work and so cannot look after the child.

A home visitor can help by visiting the household and talking with the family.

- **Treat any diseases** – look for diarrhoea, anaemia, other chronic infections.
- **Explain** that the child should eat the foods provided during the week (eggs, beans, other foods) but should not be forced. The child should be encouraged to continue eating his/her normal foods (rice, fish, vegetables, bananas...).
- Ask the mother to **come every week** to receive food distribution.
- **Weigh the child** weekly and mark it on the chart.
- If the child **does not gain weight in 1 month**, admit for supervised feeding.
- **Discharge** the child only after the child gains weight and remains at **85% W/H or more for 1 month**.
- If in a camp, try to find out before discharging the child if every member of the family is registered for and receiving adequate rations.

- **Explain** to the mother that when they stop breastfeeding, children need to eat a variety of foods to stay healthy and grow properly, including rice, beans, fruits, vegetables, meat, eggs, and fish.
- Ensure **follow-up** health and nutrition education in the household by home visitors.

SYSTEMATIC TREATMENT

- **Mebendazole** 100 mg BID x 3 days (or Albendazole) should be given in Phase 2
- **Vit. A**

<6 months old	50,000 IU on D1, D2 and D8.
6 to 11 months (<8 Kg)	100,000 IU on D1, D2 and D8.
1 year and over (>8 Kg)	200,000 IU on D1, D2 and D8.
- **Vit B1** 10 mg OD for 6 weeks.
- **Folate** 5 mg on day 1 and 1mg OD for 3 months.
- **Ferrous Sulphate**

<5kg	: 50mg OD for 3 months.
5-9kg	: 100mg OD for 3 months.
≥10kg	: 200mg OD for 3 months.
- **Zinc** supplements and minerals (magnesium, copper) if available.

2. SEVERE MALNUTRITION (UNDER 70% W/H OR WITH OEDEMA)

Patients need constant monitoring.

The treatment is divided into two phases.

Phase 1 is mostly medical treatment. The patient is started on special feeding, but is not expected to gain weight.

Phase 2 is the nutritional rehabilitation of the patient.

**Severe malnutrition is a MEDICAL EMERGENCY
and MUST be treated in the IPD.**

PHASE 1:

- **Prevent hypoglycaemia** - the child must be fed in small quantities many times **during the day and night**. Be sure to explain this to the family, because they will have to feed the child under the supervision of the medic or nurse.
 - Prepare the High Energy Milk (HEM-75) and give every 2-4 hours according to weight.
 - **The child should receive HEM-75 between 6-12 times during a 24 hour period** (see table below). For very weak and sick children, you might need to give the special milk every hour (24 feeds each day).
 - Give small quantities for the first few days.
 - Use a naso-gastric tube if the child cannot drink.
 - Often these children are lethargic. They do not want to eat because they are very weak. A lot of time should be spent to give to the child all the food needed or to teach the parents to feed the child. The child must be given enough food, but should be given **NOT MORE THAN THE MAXIMUM** recommended amount in phase 1 (before appetite has returned).
- **Prevent the child from becoming cold** – encourage the mother to hold the child close to her at all times. Do not wash the child during the first days.

- **Manage dehydration:** This can be very difficult in the severely malnourished. Assessment of dehydration is difficult: the skin is already loose and eyes sunken in these children: look in the mouth and at the eyes to see if they are moist. Ask if the child is passing urine normally. **Avoid IV rehydration if possible.**
 - Use DILUTED ORS solution (more water and potassium, or less salt than standard ORS) (see box below) or ReSoMal. “Full strength ORS should NOT be used. As total body potassium is low and total sodium high, the rehydration solution should contain less sodium and more potassium than standard WHO ORS solution”(UNICEF–Management of Severe Malnutrition).
 - Continue breast feeding. (Treat the mother for any illness and worms, make sure she can eat well and drink lots of fluids and give her Vitamin A, ferrous sulphate, folic acid, vitamin B1 so that she can produce enough milk containing vitamins and iron for her baby).
 - Provide clean drinking water.
- **Treat infections with antibiotics** (see below). A severely malnourished child can have severe infections **without fever**. Septic shock is a serious complication of severe malnutrition. Give antibiotics to **all** severely malnourished children.
- **Check Malaria Smear in every child**, even if they do not have fever.
- **Monitor vital signs and urine output regularly.**
- **Weigh the child daily and record the weight on the chart.**

PHASE I - HIGH ENERGY MILK / F-75 REQUIREMENTS (130 cc/kg/day)

Weight (kg)	HEM-75 24 feeds per day Amount in each	HEM-75 12 feeds per day Amount in each	HEM-75 8 feeds per day Amount in each	HEM-75 6 feeds per day Amount in each
2.0	11 cc	21 cc	32 cc	43 cc
2.5	13 cc	27 cc	40 cc	54 cc
3.0	16 cc	32 cc	48 cc	65 cc
3.5	19 cc	37 cc	56 cc	76 cc
4.0	21 cc	43 cc	64 cc	87 cc
4.5	24 cc	48 cc	72 cc	97 cc
5.0	27 cc	53 cc	80 cc	108 cc
5.5	29 cc	59 cc	88 cc	120 cc
6.0	32 cc	64 cc	96 cc	130 cc
6.5	35 cc	69 cc	104 cc	140 cc
7.0	37 cc	75 cc	112 cc	152 cc
7.5	40 cc	80 cc	120 cc	162 cc
8.0	43 cc	85 cc	128 cc	173 cc
8.5	45 cc	91 cc	136 cc	184 cc
9.0	48 cc	96 cc	144 cc	195 cc
9.5	51 cc	101 cc	152 cc	205 cc
10.0	53 cc	107 cc	160 cc	216 cc
11-14 kg	60-76 cc	120-150 cc	180-225 cc	238-303 cc

("Management Of Severe Malnutrition-A Manual For Physicians And Other Senior Health Workers", WHO, 1999)

How to prepare HIGH ENERGY MILK F-75 (for PHASE 1 of severe malnutrition)

INGREDIENT	AMOUNT
Dried skimmed milk	25 g
Sugar	70 g
Vegetable Oil	25 g
Rice flour or other cereal flour	35 g

or

INGREDIENT	AMOUNT
Whole dried milk	35 g
OR	
Fresh cow's milk	300 ml
PLUS	
Sugar	70 g
Vegetable Oil	17 g
Rice flour or other cereal flour	35 g

Mix all the ingredients in 700 ml of water. Boil for 5-7 minutes. Cool, and add water to make 1000 ml.

If available, add Mineral Mix as advised by Unicef.

("Management Of Severe Malnutrition-A Manual For Physicians And Other Senior Health Workers", WHO, 1999)

SYSTEMATIC TREATMENT

1. Antibiotics: All children with severe malnutrition should be given broad-spectrum antibiotics on admission.

- For children in stable condition : po Cotrimoxazole or Amoxicillin.
- For children with Kwashiorkor, in suspected septic shock, hypoglycaemia or hypothermia:
 - im* Penicillin/Ampicillin for 2-3days (then oral Amoxicillin) and im Gentamicin for 5 days

If no improvement after 3 days or suspected meningitis:

- im* Chloramphenicol for 2-3 days then oral. (* avoid iv in these children)

2. Vit. A: see Moderate malnutrition.

3. Vit B1: see Moderate malnutrition.

4. Folic acid see Moderate malnutrition .

5. Zinc supplements and minerals (magnesium, copper) if available.

6. When the child is eating well (phase 2) give anti-worm medicine and ferrous sulphate.

7. Check if vaccinations are up-to-date. If not, vaccinate.

Dilute ORS for severely malnourished children in PHASE 1 (half strength salt / sodium; usual strength sugar; and extra potassium).

1 packet (size for 750cc water)) of ORS powder + **1500** cc clean water +30g sugar + potassium 1.5g

or

1 packet (size for 1000cc water) of ORS powder + **2000**cc clean water + 40g sugar + potassium 2.5g

Make your own Dilute ORS for treating dehydration in Phase 1 of severe malnutrition.

Water 1 litre
Sugar 40g (normal amount)
Salt(NaCl) 2g (half normal)
Potassium (KCl) 2.5g (increased)
and add
(Magnesium chloride 0.6g - if available
Copper sulphate 0.01g - if available
Zinc acetate 0.066g – if available)

PHASE 2:

A child enters this rehabilitation phase when a good appetite returns.

No child who is being fed via nasogastric tube is in Phase 2.

- Start with the same quantity (cc) of HEM as in Phase 1, but use HEM-F100 (this special solution contains more calories than the HEM-F75)
- If the child finishes the meal, increase the size of the next meal by 10 ml. Slowly add other food. The amount of HEM and other foods can be increased according to the appetite of the child.
- When the child reaches 80% W/H and stays at 80% for 2 consecutive weeks, no longer has oedema, and is free from infection, refer to OPD for the **Supplementary Feeding Programme** for follow up.
- If the child has already improved from phase 1 to phase 2 and then does not gain more weight over a 3 day period (secondary failure) and feeding is supervised consider infection and chronic illness:
 - **Check for chronic diseases**, such as TB, AIDS, Thalassaemia, Cardiac disease, Hepatitis B.
 - **Check for infections**, such as Diarrhoea, Pneumonia, UTI, Parasite infection.

Make sure food is prepared correctly and given according to schedule.

PHASE II HIGH ENERGY MILK F-100 REQUIREMENTS+LOCAL FOOD (this is only a guideline)

Time	Meal	<5 kg	5-7.4 kg	7.5-9.9 kg	10-12.4 kg	12.5 kg or more
6 am	HEM F100	170 cc	250 cc	335 cc	420 cc	500 cc
9 am	Local meal	HEM F100 170 cc	50 g beans 1 egg	100 g beans 1 egg	100g beans 1 egg	100 g beans 50 g rice, 1 egg
1 pm	HEM F100	170 cc 1 banana	250 cc 1 banana	335 cc 1 banana	420 cc 1 banana	500 cc 1 banana
4 pm	Local meal	HEM F100 170 cc	50 g rice 1/2 tin fish	50 g rice 1 tin fish	50 g rice 1 tin fish	50 g rice 1 tin fish
9 pm	HEM F100	170 cc	250 cc	335 cc	420 cc	500 cc
1 am	HEM F100	170 cc	250 cc	335 cc	420 cc	500 cc

Note:

- The timetable could be adapted according to the context, but the child should receive feedings in both day and night time.

How to prepare HIGH ENERGY MILK F-100 (for PHASE 2 of severe malnutrition)

INGREDIENT	AMOUNT
Dried skimmed milk	80 g
Sugar	50 g
Vegetable Oil	60 g

or

INGREDIENT	AMOUNT
Whole dried milk	110 g
Sugar	50 g
Vegetable Oil	30 g

or

INGREDIENT	AMOUNT
Fresh cow's milk	880 ml
Sugar	75 g
Vegetable Oil	20 g

Mix all the ingredients in 700 ml of water. Boil for 5-7 minutes. Cool, and add water to make 1000 ml.

("Management Of Severe Malnutrition-A Manual For Physicians And Other Senior Health Workers", WHO, 1999)

TREATMENT

- Continue with Folic Acid, B1 and Zinc supplements.
- Mebendazole 100 mg BID x 3 days (or Albendazole - see does chart)

3. Add Ferrous Sulphate after 2 weeks of admission or when the child moves into phase 2 and continue for 3 months:

< 5 kg:	50 mg OD
5-9 kg:	100 mg OD
≥ 10 kg:	200 mg OD

MALNUTRITION IN OLDER CHILDREN AND ADULTS

Adolescents and adults may present with severe malnutrition, indicated by low Body Mass Index (BMI) and need to be treated with therapeutic feeding.

To check BMI, use the following calculation: weight (kilograms) / height² (meters) [wt/ht²]

For example: weight of man = 38kg and height = 1.60m
BMI = 38 / 1.60 x 1.60 = 38 / 2.56 = 14.84

DIAGNOSIS

- BMI is less than 16. **OR**
- The person is thin plus has oedema.

These people are malnourished and **need therapeutic feeding**.

For adolescents, malnutrition should be identified using one or more of the following clinical indicators:

- bi-lateral oedema not attributable to other causes.
- clinical marasmus – extreme thinness.
- night blindness, extreme pallor (paleness), or other vitamin and mineral deficiencies.
- presence of diseases, such as diarrhea, measles.

MANAGEMENT

PHASE I

The feeding food used is the same as that of therapeutic feeding for children, but the amounts are different. Feedings should be frequent (at least 6 meals per day).

PHASE I - HIGH ENERGY MILK F-75 REQUIREMENTS

Age	Amount of HEM F75 per Day cc/kg body weight	How To Calculate the Amount in Each Meal 6 Meals per Day (every 4 hours)
7-10	70 cc/kg	70 cc x total body weight (kg) / 6
11-14	60 cc/kg	60 cc x total body weight (kg) / 6
15-18	50 cc/kg	50 cc x total body weight (kg) / 6
>19	40 cc/kg	40 cc x total body weight (kg) / 6

SYSTEMATIC TREATMENT

The same as for severely malnourished children: Broad spectrum antibiotic, Vit A 200 000 IU as single dose, Vitamins as for malnourished children. WHO has no recommendation for deworming in adolescents or adults.

PHASE II

- Start Phase II when appetite returns.
- Patients may feel very hungry, so offer plenty of local foods in addition to the HEM.
 $\bar{O}$ Be sure that they eat plenty of foods other than rice (rice fills the stomach quickly, but it is not very nutritious), and small amounts of rice or noodles.

PHASE II HIGH ENERGY MILK F-100 REQUIREMENTS+ LOCAL FOOD

Time	Meal	Foods for Meals	Snack Foods
6 am	HEM F-100	rice or noodles	bananas and other fresh fruits
9 am	HEM F-100 + meal	eggs	fried yellow bean
1 pm	HEM F-100 + snack	beans – soups, fried or	sticky rice in banana leaf
4 pm	HEM F-100 + meal	tinned fish or other meats	other local snacks as desired
9 pm	HEM F-100 + snack	fresh vegetables	
1 am	HEM F-100	use oil for cooking or mix with rice	

TREATMENT

The same as for severely malnourished children. Note above.

- Adolescents and adults can be discharged when they are eating well, are gaining weight, and are free from infections.
They should receive supplementary food at home until BMI reaches 18.5 or other signs of malnutrition have subsided.

VITAMIN DEFICIENCIES

VITAMIN A DEFICIENCY

Please refer to the Burma Border Primary Eye Care Manual for more detailed information regarding Vitamin A Deficiency.

Vitamin A Deficiency is an important cause of blindness, and is a very important factor in many childhood illnesses, especially diarrhoea, pneumonia and measles. Vitamin A Deficiency mostly affects small children, but can also affect adults, especially women of reproductive age.

SYMPTOMS AND SIGNS

The symptoms and signs of Vitamin A Deficiency are found in the eyes. The signs and symptoms include night blindness (chicken blindness), Bitot's spot (a white spot), dry cornea and some types of corneal damage. For every case with clinical signs, there are many without.

TREATMENT

Vitamin A capsules come in two sizes 200,000 IU (International Units) and 25,000 IU. Read the bottle carefully for the strength of the capsules.

Write down very carefully on the health record the date and dose of treatment.

- **Children less than 6 months**

Day of diagnosis (D 1)	50,000 IU
Next day (D 2)	50,000 IU
One week later (D 8)	50,000 IU
- **Children between 6 and 11 months (<8 kg)**

Day of diagnosis (D 1)	100,000 IU
Next day (D 2)	100,000 IU
One week later (D 8)	100,000 IU
- **Children age 1 year and older (>8 kg)**

Day of diagnosis (D 1)	200,000 IU
Next day (D 2)	200,000 IU
One week later (D 8)	200,000 IU
- **Women of reproductive age**

10,000 IU OD for two weeks (or 25,000 IU once a week) for 8 weeks.

- **All patients with confirmed signs or symptoms of Vitamin A deficiency.**
- **All cases of severe malnutrition.**
- **All children with measles.**
- **All children with severe respiratory infections requiring admission to IPD.**
- **All children with severe diarrhoea requiring admission to IPD.**

should receive treatment dose of Vit A even if they have received a recent prevention dose.

PREVENTION

The cause of Vitamin A Deficiency is lack of food containing Vitamin A, which is found in leafy green vegetables, carrots, eggs, many kinds of meat and in mango, papaya, pumpkin, squash, gourds and many fruits. A mother's breast milk is a very important source of Vitamin A. Rice, bananas and oranges contain little or no Vitamin A.

As many people cannot afford meat, eggs and other foods with Vitamin A, capsules need to be distributed to children to prevent Vitamin A deficiency. A single dose of 200,000 IU will provide one child with enough Vitamin A to last for four to six months.

- | | |
|---|--------------------------------|
| • Newborn | 50,000 IU at birth |
| • Less than 6 months (if not given at birth) | 50,000 IU |
| • Children 6 months to one year | 100,000 IU every 4-6 months |
| • Children one year and older | 200,000 IU every 4-6 months |
| • Mothers | 200,000 IU at delivery of baby |

Before giving a prevention dose of Vitamin A check if a treatment or preventive dose has been given in the last 4 months.

Note: Giving doses smaller than 200,000 IU:

- Most capsules are 200,000 IU (International Units) in strength. If you need to give a smaller dose, such as 100,000 IU, cut the capsule with scissors and give 3 drops to the child and discard the rest (or give to the next child).
- Do not give high dose to a woman who is pregnant or could be pregnant (age 15 – 50 years).
- If a TREATMENT dose has been given in the past 1 month, do not treat again. Wait for one month to pass between treatments and re-evaluate.

VITAMIN B1 DEFICIENCY (BERIBERI)

This disease is common on the Thai-Burmese border, especially in pregnant and lactating women and in their babies. The disease may present in different ways, as 'Dry Beriberi,' and 'Wet Beriberi,' or in combination. Most vitamin B1 deficiency seen on the border is mild.

1. VITAMIN B1 DEFICIENCY IN ADULTS

SYMPTOMS AND SIGNS

A. Dry Beriberi:

Mild:

- Numbness.
- Burning sensation or tingling in lower legs or hands.

Severe:

- Weakness so that the person cannot walk alone or stand up from squatting position.
- Reduced tendon reflexes.

B. Wet Beriberi:

- Oedema (legs, trunk, face).
- Difficulty breathing.
- Fast pulse which can lead to heart failure.

TREATMENT

For mild deficiency: (Mild dry Beriberi)

- Vitamin B1 po, 100 mg OD x 7 days,
then 10 mg OD x 6 weeks.

For severe deficiency (Wet Beriberi and Dry Beriberi with severe signs):

- Admit to IPD.
- Vitamin B1 im 100 mg TID for 1 day.
- Then vitamin B1 po 100 mg OD x 7 days then po 10 mg OD x 6 weeks.
- Consider giving B-Complex as other B vitamins may be deficient in the patient.

**Advise patients not to take Vitamin B1 tablets and chew Betel-nut at the same time.
Betel-nut inactivates the Vitamin B1.**

PREVENTION

Patients should be advised to do the following to prevent Vitamin B1 deficiency:

- Eat a variety of foods (for example yellow beans, meat, fruits and vegetables).
- Do not chew betel-nut just before or after eating – wait several hours.
- Wash rice only once before cooking and use the cooking water to make other food.

**To prevent Vit. B1 deficiency in pregnant women and their babies:
Give Vit. B1 po 100 mg daily to all pregnant and lactating women up to 6
months of lactation.**

2. VITAMIN B1 DEFICIENCY IN INFANTS

Beriberi is common in babies <1 year who only suck breast milk and whose mothers have Vitamin B1 deficiency or low intake of Vitamin B1.

This is a very dangerous condition in infants and can lead to death within only a few days.

SYMPTOMS AND SIGNS

Think of Beriberi in previously healthy babies when they present with one or more of the following signs:

- Difficulty breathing,
very fast breathing with RR >50/min.
- Generalised oedema.
- Cyanosis.
- Low urine output.
- Large palpable liver.
- Convulsions.
- Clear lungs on auscultation.
- Strange voice change or loss of voice.
- Fast pulse.
- Not sucking well.
- Vomiting.

**THIS IS AN EMERGENCY! WITHOUT TREATMENT
THE CHILD WILL DIE QUICKLY.**

TREATMENT

- Admit to IPD.
 - Vitamin B1 im 50mg (0.5 cc) TID for 1 day.
 - Then vitamin B1 po 10 mg OD x 6 weeks.
 - Treat the mother: Vitamin B1 po 100 mg OD x 7 days, then 10 mg OD x 6 weeks.
- Vitamin B1: 1 vial = 1cc = 100mg

DENTAL PROBLEMS

A. DISEASES OF GUMS AND TEETH

The most common problems are infections in the tooth (dental caries or decay) and inflammation of the gums (gingivitis). Decay is caused by too much sugar, especially sweets to suck, sugar cane and fizzy drinks.

Gingivitis is the result of lack of daily cleaning of teeth and gums and eventually causes tooth loss.

I. Dental Caries (Infections of the Tooth / Cavities)

Caused by differences in saliva, diet (sugar intake), natural individual teeth strength, bacteria and teeth cleaning.

SYMPTOMS AND SIGNS

Black colouration and tooth erosion.

Pain, especially when eating or drinking cold foods.

TREATMENT

- Treat the pain with Paracetamol or ASA.
- If possible fill the cavity.
- Extract the tooth (when it cannot be filled).

PREVENTION

- Daily (morning, evening and after meals) cleaning of the teeth and gums. Avoid sweet drinks and food.

II. Gum Diseases

Gum diseases don't cause much pain, so people may not realise that they have a problem.

a) Gingivitis

The most common oral disease.

This is an inflammation of the gums around the teeth.

SYMPTOMS AND SIGNS

Red and swollen gums, bleeding while brushing. Bad smell.

TREATMENT

- Daily cleaning (several times a day) of teeth and gums
- Chlorhexidine 0.2 % mouthwash or salt water mouthwash.

b) Periodontitis

It is a bacterial infection of the supporting structures of the teeth.

SYMPTOMS AND SIGNS

Pain.
Fever.
Swelling of the gums and/or pus.

TREATMENT

- Daily oral hygiene.
- Oral Amoxicillin/Ampicillin and Metronidazole.
- Extraction of the affected tooth.

B. DISORDERS OF THE MOUTH SURFACE (oral mucosa)

The oral mucosa can be affected by viral, bacterial and fungal infections. Traumatic problems and systemic diseases may also cause sores or ulcers. A disorder of the oral mucosa heals once you remove the cause usually in about 10 days. After more than 2 weeks of treatment without getting better you should discuss with the doctor.

TREATMENT

- I. Viral and bacterial infections: Chlorhexidine 0.2 % or 3% Hydrogen Peroxide mouthwash.
- II. Fungal infections like Thrush (Candidiasis): see Skin section, p. 72.

C. TRAUMA

If a **permanent tooth** is knocked out, it should be replaced (pushed back into the socket) as quickly as possible.

Do **not** replace **children's milk (primary) teeth** that have been knocked out.

TREATMENT

- Treat the pain with Paracetamol or ASA.
- Put the permanent tooth back.
- Advise the patient to avoid solid food for 2 weeks.

EYE PROBLEMS

Note: Please refer to the Burma Border Primary Eye Care Manual for more detailed information regarding eye problems.

1. POOR VISION

(a) Poor vision all of the time

Poor vision can be due to disease or the need for eyeglasses. Most of the conditions that will cause poor vision can be seen on careful examination of the eye (corneal scars, cataracts, obvious infections, etc.).

- Using a **PINHOLE** will help decide if eyeglasses will be helpful.

If vision improves when looking through a pinhole, then eyeglasses will be helpful.

(b) Poor vision up close

Almost all persons above the age of 40 will suffer from poor near vision, or poor vision up close. Activities such as reading and sewing become difficult or impossible. The loss of close up vision is a natural ageing process.

- These people can be helped with reading glasses.

(c) Poor vision at dusk and at night

Night blindness is one of the early signs of Vitamin A Deficiency. This is often referred to as “chicken blindness” on the border. This will be more common in young children but can also occur in adults. Everybody has trouble seeing at night, but the person with night blindness will have much more difficulty than other people seeing at night and when it is just starting to get dark.

- For treatment, see the Vitamin A Deficiency section of this book.

2. INFECTIONS

(a) Conjunctivitis and General Infections

It is sometimes difficult to know if an eye inflammation is due to infection (bacterial or viral), to allergy, to irritation or to other causes.

- Bacterial infections will usually respond to treatment.
- Virus infections will **not** respond to treatment, but will usually go away within one week without complications. In the rainy season there are often outbreaks of VIRAL conjunctivitis. This may affect up to 20-30% of the population of the camps affected.

Viral conjunctivitis does not respond to treatment with Terramycin Eye Ointment and this condition is usually not serious.

TREATMENT

The only eye medicine that is available to all border locations is Terramycin Eye Ointment (TEO).

Although TEO contains tetracycline, it is safe to use ointment form in children and in pregnant and breast feeding women.

- Antibiotic ointment (TEO): apply QID until two tubes are finished.
- Hot compresses may help reduce swelling in many eye infections.
- Show patient how to put ointment in the eye. Mothers may have to put ointment in their children's eyes. The patient should wash his face and hands before putting in the ointment.
- The patient should return if the eye is not better after treatment is finished.

Serious eye infections, infections involving the cornea and infections not responding to treatment should be referred.

(b) Trachoma

Trachoma is caused by the Chlamydia organism and is common on the border. The active infections are often found in children and adults who care for children. Most people will not be aware that they have trachoma.

Trachoma is more common when sanitation and hygiene are not good.

Health education and prevention are an important part of controlling trachoma.

With repeated infections over a lifetime, this disease can cause blindness.

DIAGNOSIS is made by looking underneath the upper eyelid for presence of follicles and signs of inflammation.

Diagnosis should be made by a medic who has been trained in eye care.

TREATMENT (ACUTE PHASE)

- Four tubes of TEO to be applied in both eyes QID until finished.
- Eyes and face to be washed four times a day (before using TEO)
- Health education about hygiene and sanitation, check all other family members for possible infection.
- Return to clinic when treatment finished for re-evaluation as sometimes a second round of treatment is needed.
- Severe cases may benefit from oral antibiotic treatment (erythromycin, doxycycline or azithromycin)

TREATMENT (LATE PHASE)

In the later stages of Trachoma, the infection may be gone, but there is damage underneath the eyelid (scarring) and the eyelashes may turn in (trichiasis) and cause damage to the cornea (cornea opacity).

- All eyelashes that turn in need to be removed with forceps on a monthly basis to prevent damage to the cornea and vision loss.
- In some cases surgery is helpful.
- These patients should be referred to a medic who has had eye-care training.

3. EYE INJURIES

Injuries or trauma to the eye can cause vision loss, blindness or loss of the eye.

Once the injury has happened, you must prevent secondary infection.

TREATMENT

- Clean the eye carefully with Normal Saline Solution or CLEAN water.
- Remove any foreign bodies that are stuck to the eye.
- Look very carefully at the cornea and under the upper eyelid as this is where most foreign bodies stick to the eye.
- Apply a large amount of antibiotic ointment.
- Apply a pressure patch to the eye if the cornea is scratched and the eye has pain.
- Remove the patch and re-evaluate the next morning.
- Continue treatment with ointment and patching as needed.
- Never leave a patch on longer than overnight.

If an infection develops, STOP patching.
A patched eye is a good place to grow bacteria.
NEVER PATCH AN INFECTED EYE.

- Refer to hospital very serious injuries, where the eyeball has been opened or penetrated: Use an eye shield (not a patch) if a patient with an open eye injury needs to be moved to another location.
Most of the time, these serious injuries result in blindness or loss of the eye.

4. CATARACT AND OTHER SURGICAL CASES

(a) Cataract

Cataract is probably the leading cause of blindness on the border.

Cataracts can be seen by carefully looking through the pupil.

There are no medicines that can treat cataract and only surgery will help.

- List all known cataract and other eye surgical patients in an eye surgery register. For each patient list the name, age, sex, house number, diagnosis and vision in each eye. Having an eye surgery register will allow for better planning of eye surgery visits, will allow you to find these patients quickly and will save visiting eye surgeons time.

(b) Cross Eyed patients, patients with large **Pterygium** and **other eye surgical cases** should be listed in the eye surgery register.

5. VITAMIN A DEFICIENCY

Vitamin A Deficiency is a significant problem on the border, not only for eyes, but for childhood illnesses and child mortality.

Please read the Vitamin A Deficiency section on page 117.

MENINGITIS

Meningitis is an infection of the membranes covering the brain. In most cases it is caused by a bacteria or a virus. Fungi can also cause meningitis, especially in people with poor immunity. Only a laboratory can differentiate between different causes.

Bacterial meningitis can kill quickly. If you suspect meningitis, start antibiotic immediately

SYMPTOMS AND SIGNS

Children < 1 year:

- Fever (38.5 or more), unwell, drowsy, not sucking well, vomiting, convulsions, coma.
- Crying a lot or lying very quiet without moving.
- Swollen (=bulging) fontanelle.
- Usually no neck stiffness.

Older children and adults:

- **Fever** (38.5 or more), **headache, vomiting.**
- Neck stiffness
- Light hurts the eyes (photophobia).
- Positive signs of meningism (*Kernig's and/or Brudzinksi sign positive*).
- Convulsions and coma.

Always think of meningitis in febrile patients with severe headache or coma.
Check if the neck is stiff.

Note:

- Malaria and Meningitis can occur together in the same patient at the same time: Do a malaria smear.
- If possible in your situation, do a lumbar puncture, send the fluid to the lab to check for Gram stain, cells, protein and glucose.
- If you cannot do a lumbar puncture, start antibiotics.

Do not delay starting antibiotics to wait for a senior medic to do a lumbar puncture.
Delay in starting antibiotics can mean death of the patient.
If lumbar puncture cannot be done as soon as patient is admitted: start antibiotics.

TREATMENT

- Admit to IPD.
- Give Antibiotics:

1. Children > 2 months and Adults: Chloramphenicol iv/im 25 mg/kg QID.

When patient's condition has improved and fever is down:

Change to oral and halve the dose (12.5 mg/kg QID) for total 10 days.

2. Children < 2 months: Ampicillin iv/im 50 mg/kg QID AND **Gentamicin** im 6-7 mg/kg OD for 5-7 days.

When patient's condition has improved and fever is down:

Change to oral Amoxycillin 25mg/kg TID for a total of 10 days.

3. Pregnant Women: Ampicillin iv 2 g QID

When patient's condition has improved and fever is down:

Change to oral Amoxycillin 500 mg TID for a total of 10 days.

1.2.3. can also be treated with: Ceftriaxone iv/im 50-100 mg/kg/day OD for 7 days.

- Treat the fever with Paracetamol.
- Treat any convulsions with Diazepam.
- Give special nursing care if the patient is in coma (see Coma section, p. 15).

Note:

- In **TB meningitis** the fever is not very high, sometimes only on and off. Suspect TB meningitis in young patients with neurological signs (hemiplegia, paraplegia). Usually has a gradual onset. Often the patient will have changes in their behaviour.
- **Cryptococcal meningitis** is more common in patients with depressed immunity and also has a slow onset. The fever is not high and sometimes there is no fever. Often there is severe persistent headache (see treatment in HIV/AIDS section, p. 111).

TYPHOID FEVER

Typhoid fever is a bacterial infection caused by *Salmonella typhi*.
It is transmitted by contaminated food, water or dirty hands.

SYMPTOMS AND SIGNS

Typhoid is suspected in a patient with:

- Prolonged fever of 38.5 C (axillary) or above for more than 7 days.
- Negative malaria smear, no other identified cause of fever **and** at least **one of the following**:
 - Abdominal pain.
 - Diarrhoea.
 - Constipation.
 - Relative bradycardia.

Symptoms are non-specific in the first week, so the diagnosis can be difficult.

Other signs and symptoms that can be present:

- Tiredness, headache, the patient does not want to eat (anorexia).

In the 2nd week:

- Rash (rose spots on the abdomen and the chest).
- Relative bradycardia (when the pulse doesn't increase with the high fever).
- Big liver and spleen (hepatosplenomegaly).

In the 4th week complications can happen even when the patient seems to be cured:

- Intestinal perforation.
- Bleeding or peritonitis.
- Septic shock.
- Drowsiness and confusion with signs of meningitis.

Typhoid is confirmed by a positive blood culture for *Salmonella typhi*.

TREATMENT

- Admit to IPD.
- Give Fluids: ORS or IV fluids (NSS or RL).
- Treat the fever with Paracetamol.
- Antibiotics.

1st choice: Ciprofloxacin: Child 7.5 mg/kg BID for 5-10 days
Adult < 40 kg 250 mg BID for 5-10 days
Adult > 40 kg 500 mg BID for 5-10days

There is good new evidence that 3 days of Ciprofloxacin is long enough (White N.+Parry C.) but this has not yet been generally accepted as standard practice.

2nd choice: Chloramphenicol: Child 75mg/kg/day, divided in 4 doses for 14 days
Adult 500 mg PO QID 14 days

Pregnant Women and Babies: Ceftriaxone iv/im 50mg/kg OD for 7 days

- For severe presentations (shock, coma): add **Dexamethasone** 3 mg/kg IV loading dose, then 1 mg/kg every 6 hours for 2 days. (This has been shown to decrease deaths)

The response to treatment is slow. Patients can still have fever after 5 days of treatment, but will generally feel better. Be patient! However, if the fever is still up on day 8: re-think diagnosis or suspect resistance to antibiotics.

PREVENTION

This disease is contagious.

Advise the family and the neighbours to use latrines and to wash their hands after passing stools and before eating.

If you notice an increased number of cases, inform the doctor in order to avoid an epidemic.

SCRUB TYPHUS

A bacterial disease (caused by *Orientia Tsutsugamushi*, a *Rickettsia*) transmitted by the bite of a mite, living in moist grasslands and jungle. Common in the Asia Pacific Region.

Scrub typhus is one of the most common causes of Fever of Unknown Origin in the tropics.

If not treated, many people will get better, but some will die.

SYMPTOMS AND SIGNS

- Fever.
- Severe headache.
- Red eyes (conjunctival injection).
- Enlarged, painful lymph nodes (adenopathies) first near the site of the bite, then generalised.
- Skin lesion, called an eschar, at the site of the infecting mite's bite: small, round, hard red papule becoming bigger with a dead (necrotic) centre, covered by a black hard surface. Look for it on the patient's back, inguinal area and scrotum.
- After a few days of fever, a typical (maculopapular) rash appears, starting on the trunk and extending to the limbs.
- Sometimes signs and symptoms of meningitis / encephalitis.
- Rarely atypical pneumonia, big spleen, myocarditis (inflamed heart), neuropsychologic signs (strange behaviour) and kidney failure.

People living in areas where scrub typhus is common have a less severe illness, often with NO RASH and NO ESCHAR.

DIAGNOSIS

The diagnosis is clinical: history and examination findings suggestive of scrub typhus and a negative malaria smear.

TREATMENT

- Treat the fever and the pain.
- Antibiotic:
 1. First choice: **Doxycycline** Child:** 4.5mg/kg OD for 7 days
Adult 200 mg PO for 7 days
(Some books recommend a stat dose; other books a longer course of 14 days).
 2. Second choice: **Chloramphenicol** 500 mg PO QID for 7 days.

** In Children and Pregnant Women if suspicion of Scrub Typhus is strong, the benefit of short courses of Doxycycline outweighs the risk of no treatment.

• Cotrimoxazole, Erythromycin, Gentamicin and Penicillins are NOT EFFECTIVE in Scrub Typhus.

If the fever does not go down within 48 hours after starting treatment: the patient very likely does not have scrub typhus:

- think of other diagnoses (Dengue, Leptospirosis, Typhoid fever, etc.).

DENGUE FEVER

Dengue fever is a viral illness transmitted by a mosquito bite.

The mosquitoes responsible bite during the daytime and are more common in the wet season.

Dengue can present in 2 ways:

1. Dengue Fever (DF)
2. Dengue Haemorrhagic Fever (DHF) that can develop into Dengue Haemorrhagic Shock Syndrome (DHSS).

SYMPTOMS AND SIGNS

Dengue Fever is suspected in a patient with:

- Fever for 2-7 days.

AND

- Negative malaria smear, no other identified cause of fever.

AND at least **one of the following**:

- Tourniquet test positive.*
- Severe body pains.
- Typical rash (red maculopapular or petechial rash on the limbs).
- Low platelets (Thrombocytopenia).

Other signs and symptoms that can be present:

- Severe headache.
- Skin rash : diffuse redness on the neck, face and chest.
- Lymph node enlargement (lymphadenopathy).
- Painful enlarged liver (tender hepatomegaly).
- Almost never enlarged spleen (splenomegaly).

***Tourniquet Test:** A blood pressure cuff should be inflated on the upper arm to midway between systolic and diastolic blood pressure for 5 minutes. The number of petechiae in a 2.5cm square should be counted on the front (palm side) of the forearm just below the elbow. A positive test is when there is greater than 20 petechiae. A positive test reflects capillary fragility and thrombocytopenia. (WHO reference). Studies have shown that an elastic/rubber tourniquet is just as reliable. 20% of patients with a viral illness that is not dengue will have a positive test.

In Dengue Haemorrhagic Fever

- As in Dengue Fever.

PLUS

- Haemorrhagic signs : bleeding from the nose, gums and sometimes from the rectum.
- Generalised petechiae (red or blue dots on the skin) are common on the extremities, chest and face.
- Shock can develop, usually on the 3rd or 4th day after the fever has decreased.
- No jaundice.

DIAGNOSIS

Clinical but it can be confirmed by a laboratory test.

TREATMENT

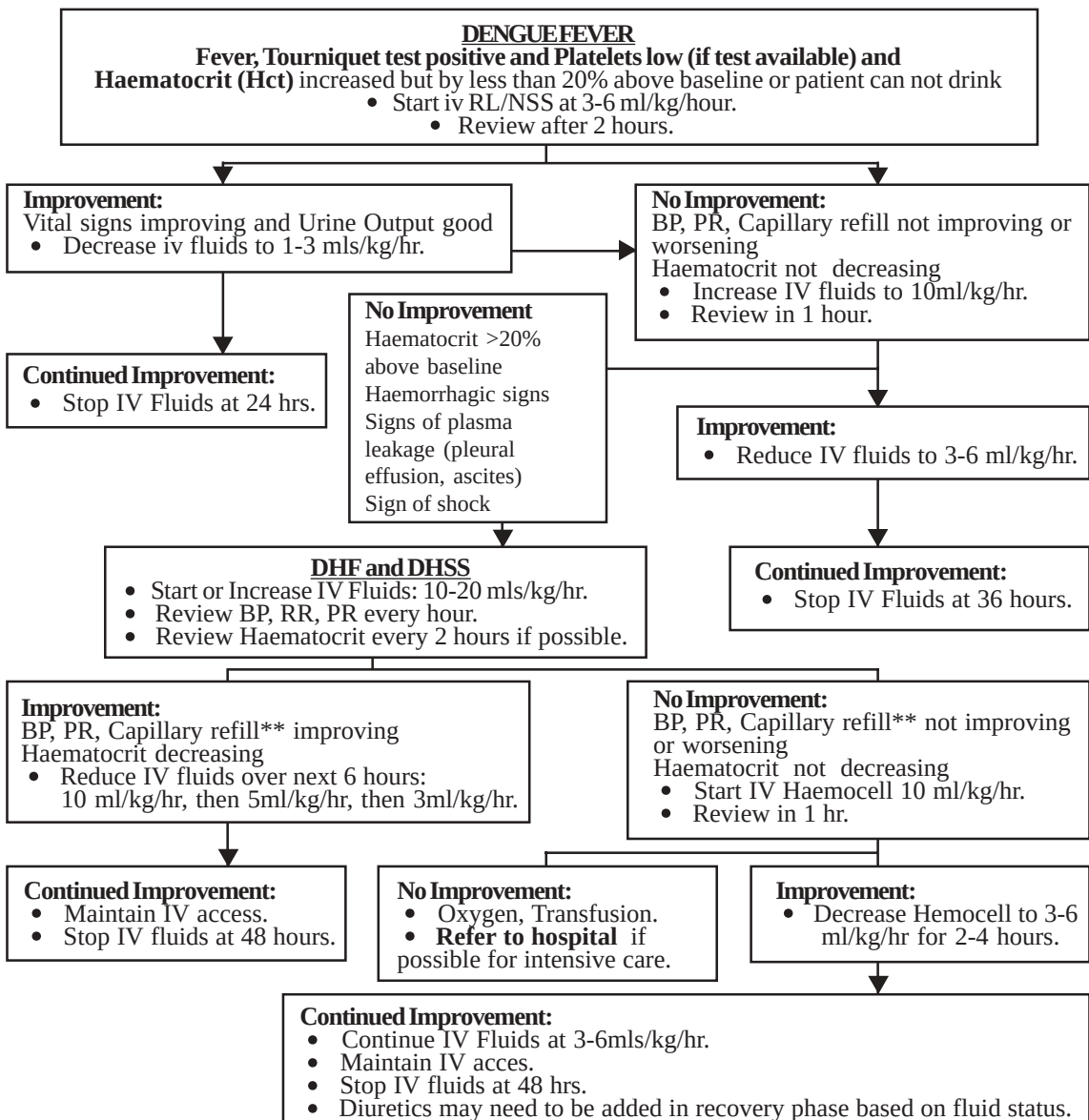
1. Dengue Fever

There is no drug to cure this disease, treatment is to prevent complications (bleeding, shock).

- Treat the fever with Paracetamol.
- **Do not give ASA – as it can make bleeding worse.**
- Hydration: start with ORS. If the patient is unable to drink, start an infusion of RL or NSS (see chart below).
- Monitor the vital signs and the urine output and observe for signs of shock, especially from day 3-7 or when the fever decreases.

**If you notice an increased number of cases,
inform the doctor in order to avoid an epidemic.**

2. Dengue Haemorrhagic Fever and Dengue Haemorrhagic Shock Syndrome



LEPTOSPIROSIS

Leptospirosis is caused by a spiral bacteria (spirochaet) called *Leptospira*. These live in animals (especially rats, but also dogs, cats and cattle) and they are excreted in their urine. Then, they live in the soil for months.

People become infected when damaged skin or mucous membranes come into contact with soil/water infected with animal urine or in direct contact with infected animals.

**At risk of infections are farmers and miners,
people walking without shoes in rivers, sewage and canals,
people swimming in rivers and lakes and people working in abattoirs.**

SYMPTOMS AND SIGNS

- Sudden high fever with chills and rigors.
- Conjunctival suffusion (eyes are pink, no pus).
- Severe muscle pain and tenderness.
- Headache.

Sometimes also: abdominal pain; nausea and vomiting; diarrhoea; cough and pharyngitis; chest pain; arthralgia.

This phase lasts 5-9 days and can be very mild or very severe. In many patients the disease stops here.

But sometimes these symptoms persist or return after stopping for a few days and **complications** appear:

1. **Meningitis:** with severe, bitemporal and frontal headache.
2. **Liver and Kidney failure (Weil's disease):** high fever over 40C, jaundice, oliguria/anuria, haemorrhagic pneumonia, cardiac arrhythmias and circulatory collapse.
In some patients you will find an enlarged liver and spleen (hepatosplenomegaly).
3. **Haemorrhagic pneumonia with acute respiratory distress syndrome:** can also happen without liver and kidney failure. The patient coughs up blood (haemoptysis) and often chest examination is normal (no crackles).
4. **Uveitis**

Liver failure usually gets better, but kidney failure and respiratory distress syndrome have a poor prognosis (outcome).

DIAGNOSIS

Suspect Leptospirosis in a patient with a negative malaria smear and the presence of the above symptoms (especially high fever, severe muscle pain, jaundice, low urine output).

INVESTIGATIONS

- **Dipstix:** protein and blood in urine.
- Raised CK and bilirubin.
- Definite diagnosis by special blood test (serology), but it is not easy to interpret.

TREATMENT

Should be started as early as possible, but it is now thought effective also if started late:

- Treat the fever and the pain.
- Give iv fluids.

(a) Mild infections

- po Doxycycline 200 mg OD x 7 days.

In Children and Pregnant Women:

- po Amoxycillin 500 mg TID x 7 days.

(b) Severe infections

- iv Ampicillin 500mg - 1g QID x 7 days.

PREVENTION

1. Immunisation of farm animals and pets.
2. Protective clothing and shoes for farmers.
3. Collection of rubbish to reduce rat population.
4. Education of people at risk.

MEASLES

Measles is a very contagious disease. It is common in childhood, and can result in severe complications.

Measles is due to a virus. There is no treatment for the disease itself, so prevent measles and treat its complications.

SYMPTOMS AND SIGNS

- (>38.5 C) more than 3 days fever.
- Conjunctivitis (red eye), runny nose, cough.
- Sometimes white spots on the mucosa of the mouth (Koplick spots).
- After two to three days, red spots appear on the whole body (red rash), beginning on the neck then chest then abdomen and legs.
- Diarrhoea is common.

COMPLICATIONS

- Pneumonia.
- Otitis Media.
- Diarrhoea and dehydration.
- Vitamin A deficiency.
- Sometimes malnutrition a few weeks later.

TREATMENT

- Treat the fever, diarrhoea and dehydration.
- If treated in IPD immunise other patients and siblings (6-9 month age group included).
- Daily eye wash. Treat the conjunctivitis with Terramycin eye ointment.
- Advise the mother to continue breast feeding babies and to give normal food to older children.
- In case of Pneumonia, check the signs of severity (see Pneumonia section, page 48) and treat accordingly.
- Give treatment dose of Vitamin A (see Vitamin A deficiency section page 117).

**A single case should be notified and surveillance improved
as there is a high risk of epidemic.**

PREVENTION

It is very important to advise mothers to bring their children to immunisation sessions. Children die from measles and it can be prevented with a single dose of vaccine.

HIV / AIDS

AIDS (Acquired Immune Deficiency Syndrome) is caused by HIV (Human Immunodeficiency Virus).

HIV infects a type of white blood cell called **CD4** lymphocytes which work for our **immune system**. When too many CD4 cells have been destroyed by the HIV virus, the patient is no longer able to fight against infections.

Some organisms can cause disease only in people with low immunity, these are called **Opportunistic Infections** (OIs). When a person who is HIV positive gets these infections, they have **AIDS**.

Every person infected with HIV will develop AIDS. Today, there is no cure for HIV infection. But we can prevent and treat some **Opportunistic Infections** and temporarily stop the HIV getting worse with **Antiretroviral** drugs (ARV).

HIV TRANSMISSION

ROUTE OF TRANSMISSION	PREVENTION
Sexual Contact.	Abstinence. Using condoms. Avoidance of multiple sexual partners. Early diagnosis and treatment of STI.
Contaminated syringes, needles and other sharps. For example IV Drug users, Health workers, Tattoos.	Avoidance of IV drug use. Use of new sterilised syringes and needles. Universal precautions for Health Workers.
Infection by blood and blood products. For example transfusion with contaminated blood.	Reducing number of transfusions. Proper screening and HIV testing of blood donors before transfusion.
Mother to child transmission.	Family planning in HIV infected women. Using ARV in pregnant women and newborn Avoiding breast-feeding.

HIV TESTING

WHY TEST FOR HIV?

(a) Screening for blood transfusion

The primary concern is the provision of safe blood (See Transfusion section, p. 24), to avoid infection through blood transfusion.

The tests used for blood screening should NEVER be used to diagnose HIV.

They are for rapid screening of donated blood only. They give too many false positives to be used for patients.

(b) Diagnosis of HIV infection

Before testing your Clinic needs to be able to offer the patient the following:

1. **CONFIDENTIALITY:**

The information about a person's status (negative or positive) must never be passed on to anyone without that person's permission. People are better able to discuss their feelings if they know that the counsellor will not tell anybody else without the patient's permission.

2. **PRE-TEST COUNSELLING:**

Information and support given before the HIV test to make it possible for people to make an informed choice (to understand before they choose) whether to take the test or not.

3. **INFORMED CONSENT:**

After pre-test counselling, the patient understands what is HIV/AIDS and that he might have it. **The decision to have the test is up to the patient.** You have to respect his decision and cannot test if the patient does not wish to. Informed consent needs to be given by the patient, not the relatives.

4. **POST-TEST COUNSELLING:**

Provided after the test result is known to be positive or negative. It is essential to help those with a positive test to cope with the news and live positively, and to advise those with a negative result about how to prevent HIV infection in the future.

5. **HOSPITAL LABORATORY TESTING:**

Minimum 2 different tests, preferably on 2 different samples.

These can not be rapid tests. They can be ELISA or Western Blot.

6. **SOCIAL AND PSYCHOLOGICAL SUPPORT SERVICES.**

Note:

It is important to think about how the diagnosis might affect the patient and what you can offer as treatment and help. HIV counselling should be done by people who have been trained and have experience.

STAGES OF HIV INFECTION / SYMPTOMS AND SIGNS

1. **Acute Stage/ Primary HIV infection**

- The patient gets infected
- Sometimes, the patient has non-specific signs (like fever, rash, enlarged lymphnodes) for some weeks, **but the HIV test (serology) is still negative.**
- **Even if the test is negative, the patient may already have transmitted the virus to other people.**
- When the body starts to produce antibodies, the HIV test will become positive (2 weeks to 3 months after the infection).

2. **The Latent Phase/ Asymptomatic HIV infection**

- The patient doesn't feel sick, so he often doesn't know he is infected by HIV.
- However, the virus is continuing to multiply in the body
- The patient can transmit the virus to other people.
- This stage can last several years.

3. Early HIV Disease/ Symptomatic HIV infection

The patient starts developing clinical symptoms and signs:

- Marked weight loss.
- Night sweats.
- Skin rash.
- Fever.
- Diarrhoea.
- Painful, swollen lymphnodes (lymphadenitis).
- Tiredness and weakness.

The patient often has **common infections** such as:

- Oral Candidiasis.
- Skin infections like Herpes Zoster (shingles) or Herpes Simplex, fungal infections.
- Respiratory infections.
- Pulmonary Tuberculosis.
- Diarrhoeal diseases.

These diseases can be treated and respond to treatment but can reappear.

4. Late HIV Disease / AIDS

The patient often presents with **severe malnutrition** (‘wasting’), sometimes with cancer like lymphoma and with **very severe infections** that are more difficult to treat, such as:

- Recurrent respiratory infections: pneumonia, including pneumocystis carinii pneumonia (PCP).
- Extra-pulmonary Tuberculosis.
- Oesophageal Candidiasis.
- Severe and chronic diarrhoeal disease.
- Cryptococcal Meningitis.
- HIV Encephalitis.

Survival usually depends on the type, severity and number of infections the patient gets.

GENERAL MANAGEMENT

- Psychosocial support.
- Education of patient (and family) is important to reduce the risk of transmission.
- Patient must be protected against being judged, excluded, treated badly, isolated by the community.
- Patients should be advised on adopting a healthy lifestyle and diet.

DIAGNOSIS & TREATMENT OF OPPORTUNISTIC INFECTIONS

1. Oral Candidiasis (Thrush)

SYMPTOMS AND SIGNS

White patches or spots on tongue, palate, cheek or gums. These can be scraped off easily.
Sometimes pain when eating.

TREATMENT

Gentian Violet 1%: local application BID x 7 days OR
Nystatin tablets 500 000 IU QID x 7 days

If no improvement:

Ketoconazole po:	Child>2 years: 3-6 mg/kg/day x 7-14 days. Adult: 200mg/dose OD x 7-14 days.
OR Fluconazole po:	Child: 2-4 mg/kg/day x 7-14 days. Adult: 100mg OD x 7-14 days.

2. Oesophageal Candidiasis

SYMPTOMS AND SIGNS

Difficulty in swallowing usually associated with thrush.
Can be ulcerous and painful.
Major cause of weakness and weight loss in AIDS.

TREATMENT

Fluconazole: 200mg OD x 14-28 days.

3. Pneumocystis Carinii Pneumonia (PCP)

SYMPTOMS AND SIGNS

Fever, fatigue, and weight loss for weeks before developing respiratory symptoms.
Then fever, dry cough (without sputum), and increasing shortness of breath.
Sometimes crackles in both lungs.
Sometimes pneumothorax.

TREATMENT

Cotrimoxazole 30 mg/kg QID x 21 days.

(follow by secondary prophylaxis for life = cotrimoxazole, adult 960mg OD, child 25mg/kg/day OD)

If severe dyspnoea:

Prednisolone:	Child: 2 mg/kg/1st day, then 1mg/kg/day, then decrease slowly.
Adult:	80mg OD x 5 days 40mg OD x 5 days 20mg OD x 10 days Then decrease slowly

4. Penicilium marneffei infection

It is an important cause of HIV associated disease in Thailand.

SYMPTOMS AND SIGNS

Fever, anaemia, weight loss, and generalised papular skin lesions.
Enlarged lymph nodes and enlarged liver.

LABORATORY

Blood or skin lesions fungal culture.

TREATMENT

Fluconazole: Child: 2-4 mg/kg/day x 7 days.
Adult: 100mg OD x 7 days.

(Many authors suggest; for mild cases use Itraconazole 400mg OD x 10 weeks. For severe cases use Amphotericin B 0.7 mg/kg/day x 2 weeks then Itraconazole 200 mg OD for life)

5. Cryptococcal Meningitis

SYMPTOMS AND SIGNS

It is unlike a bacterial meningitis:

Fever, stiff neck photophobia, nausea and vomiting are less common.

Severe headache, malaise, confusion and convulsions are more common.

LABORATORY

Send CSF for India ink test and/or Fungal Culture.

Send CSF or Blood for Cryptococcal Antigen.

If diagnosis not possible – refer.

TREATMENT

OR Amphotericin B 0.7-1.0mg/kg/day IV 2 weeks.
Fluconazole Child: 4-6 mg/kg/day 6 weeks.
Adult: 400-800mg OD 6 weeks.

(followed by secondary prophylaxis for the whole life=fluconazole 200 mg OD)

6. Tuberculosis

SYMPTOMS AND SIGNS

Same signs and symptoms as patients not infected with HIV.

AFB often negative even in pulmonary TB.

Extrapulmonary diseases more common.

TREATMENT

Same drugs, protocols, duration and side effect. (see section on TB).

PROPHYLAXIS (= PREVENTION) OF OPPORTUNISTIC INFECTIONS

Each infection makes the patient weaker, resulting in the decrease of the CD4 count. This lowers immunity and makes infections more likely. That is why it is important to try to prevent and treat infections as soon as possible.

Fortunately, some opportunistic infections can be prevented by simple treatment. This is called *PROPHYLAXIS*.

There are two kinds of prophylaxis (=prevention):

Primary prophylaxis: if the patient has never before had the disease, we want to prevent it.

Secondary prophylaxis: if the patient has already experienced the disease and we want to protect him from having a relapse.

1. Pneumocystis Carinii Pneumonia (PCP)

PRIMARY & SECONDARY PROPHYLAXIS

When to start	Symptoms of HIV illness (stage III) and no signs of active pneumonia. CD4 count <200/mm ³ or <15% for children.	
Drug	Cotrimoxazole	Adult 960 mg OD Child: 25mg/kg/day
Contraindications	Allergy to Cotrimoxazole (Dapsone is an alternative).	
Side effects	Nausea, vomiting, skin reactions, anaemia.	

When to stop CD4 Count > 200/mm³ for patients under ARV treatment.
If ARV not available, treatment will be lifelong.

2. Cryptococcosis

Cryptococcus is rare in children and prophylaxis is not recommended.

(A) PRIMARY PROPHYLAXIS

When to start Symptoms of HIV illness (stage III) and no signs of active cryptococcus disease.
CD4 count < 100/mm³.

Drug **Fluconazole** 400 mg / **week** (a precise day of the week).

When to stop When CD4>100 and patient is on ARV treatment. If there is no ARV, then prophylaxis is life-long.

(B) SECONDARY PROPHYLAXIS

When to start Patient already had cryptococcus disease.

Drug **Fluconazole**: 200 mg daily PO.

When to stop CD4 Count > 100/mm³ for patients under ARV treatment.
If ARV is not available, treatment is lifelong.

PREVENTION OF MOTHER TO CHILD TRANSMISSION (PMCT)

HIV can be passed from the mother to the baby during the pregnancy.

The highest risk is later in the pregnancy and during the delivery.

- All pregnant women should be informed and offered voluntary HIV testing and counselling.
- There are several different treatments used to lower the risk of transmission to the baby: they involve treatment for the mother late in the pregnancy, for the baby soon after birth and avoiding breastfeeding.
- Caesarean Section has also been shown to reduce transmission.

This is the currently recommended regime in Thailand:

All HIV infected pregnant women who decide to continue their pregnancy will be offered **AZT (Zidovudine)** as follows:

- 300mg PO BID from 34 weeks gestation until labour.*
- 300mg PO every 3 hours from onset of labour until delivery.

*Other regimes recommend starting AZT at an earlier stage for example 28 weeks.

Babies born to HIV infected mothers will be offered **AZT** treatment **2mg/kg QID** as follows:

- If mother got AZT for >4 weeks, infant receives AZT for 1 week.
- If mother got AZT for <4 weeks, infant receives AZT for 6 weeks + free infant formula (milk) until 12 months.

ANTIRETROVIRAL THERAPY (ARV)

There are 3 classes of drugs currently in use:

1. **NRTI's** (Nucleoside Reverse Transcriptase Inhibitors); 3TC, D4T, ddI, AZT.
2. **NNRTI's** (Non - Nucleoside Reverse Transcriptase Inhibitors) : Nevirapine, Efavirenz.
3. **PI's** (Protease Inhibitors) : Ritonavir, Indinavir and Nelfinavir.
 - The best available treatment combines 3 or 4 drugs (usually 2 NRTI's and either a NNRTI or a PI).
 - Such therapy requires close follow-up because of side-effects.

Therapy is life long as these drugs do not cure HIV and if the drugs are stopped, the virus begins to multiply again.

FOLLOW-UP

Regular follow-up is essential to monitor if the patient is taking the drugs, the clinical response and the side effects.

The following is a guide to follow-up that should be adjusted depending on the clinical condition of each individual patient.

	Weeks				Months																	
	1	2	3	4	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Activity																						
Full med exam																						
Weight																						
Supplementary food																						
Drug counselling																						
Psychological / social counselling																						
Investigations																						
CD4																						
CBC																						
AST, ALT																						
Creat/BUN																						
AFB																						
CXR																						
Treatment																						
ARV Dispensed																						
OIs Prophylaxis																						

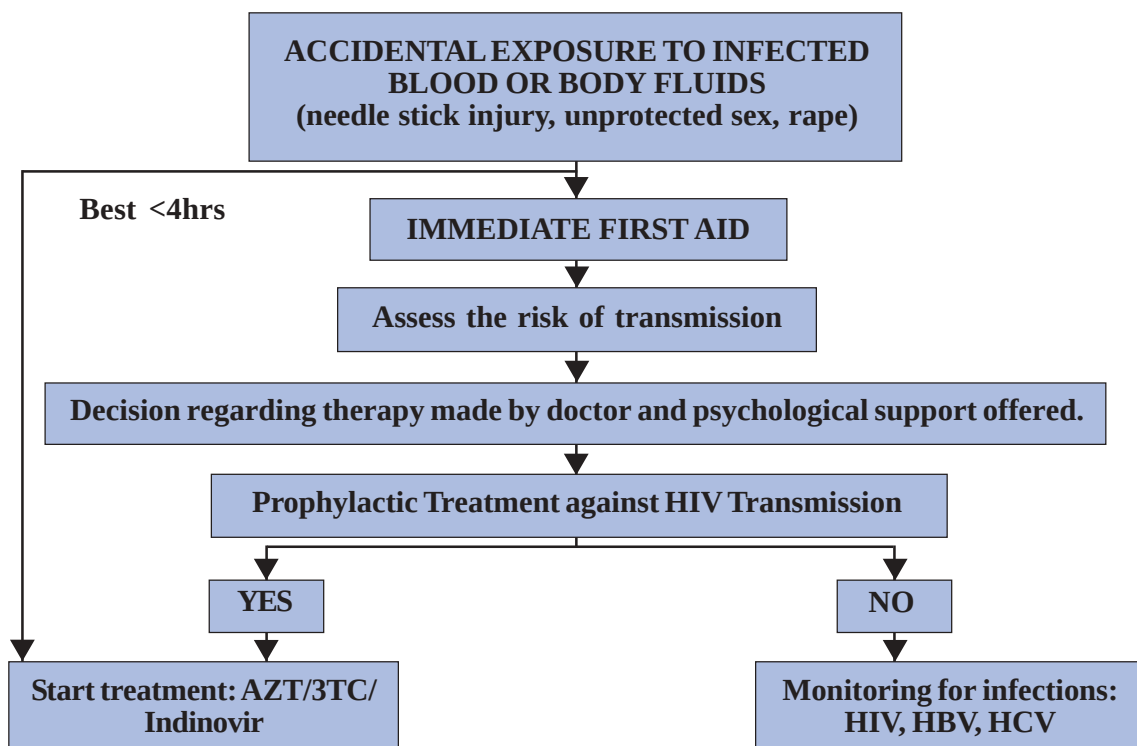
Grey boxes = required

X = as required, when clinically indicated

nvp = for patients on Nevirapine

azt = for patients on AZT

POST-EXPOSURE PROPHYLAXIS (PEP)



Cutaneous Exposure:

In case of injury by blood contaminated equipment, or following contact between body fluids and broken skin:

1. Immediately wash the wound area with water and soap, and then rinse.
2. Disinfect the wound area (respecting the minimum length of contact time) with:
 - Povidone iodine 2.5% (Betadine) for 5 Minutes.**OR**
 - A Chlorine solution 12 diluted to 1/10th For 10 minutes.**OR**
 - Alcohol to 70% for 3 Minutes.

Exposure of Eyes or mucous membranes:

Rinse the exposed area with isotonic saline solution for 10 minutes. If saline solution is not available, use clean water.

The doctor should evaluate the following factors when considering Post Exposure Prophylaxis:

- Nature of the exposure.
- Supposed HIV status of the source/patient.
- The situation and wishes of the exposed person regarding therapy.

If the source patient has disappeared or is unknown, or if there is doubt as to the HIV status of the source patient, the main consideration to take into account in deciding on therapy will be the gravity of the exposure.

The risk of transmission after anal or vaginal unprotected sex with an HIV positive partner is comparable to the risk of transmission after a needle stick injury (around 3 out of 1000).

Rape is considered a higher risk because:

- The act is violent and entails traumatic lesions of genital mucosa.
- The source person – rapist is probably a high risk contact.

In cases where it is decided not to start PEP, it is essential to propose clinical, biological and psychological follow-up for the exposed person.

PEP Treatment Regime:

In order to work most effectively the treatment should be started within 4 hours of the exposure! It can be started up to 72 hours later but is less effective.

Treatment is a combination therapy with AZT, 3TC and Indinovir. It should be taken daily for a period of 4 weeks.

AZT (Zidovudine) 300 mg BID for 4 weeks.

3TC (Lamivudine) 150 mg BID for 4 weeks.

For high risk exposure it is recommended to add Indinovir to this regime if available:

Indinovir 400 mg TID for 4 weeks.

Side Effects:

Short term side effects include nausea, diarrhoea, muscle pain and headache. This only lasts for the first few days. The patient should have this explained, so he/she doesn't stop the treatment.

Anaemia, leucopenia (low white blood cells) and thrombocytopenia (low platelets) can also occur, after day 10 and require laboratory follow-up.

Psychological Support:

During a confidential meeting with the exposed person the following points should be discussed:

- The risk of transmission after an accidental exposure to blood is estimated at 0.3% (3 in 1000). The risk is similar to unprotected sex with an HIV positive partner.
- The decision to give PEP depends on both the type of exposure and the presumed status of the source patient.
- PEP is not 100% effective.
- The side effects of PEP are minor but require monitoring.
- After exposure it is recommended that the exposed person should not have unprotected sexual relations until it is confirmed in month 3 that he/she is not seropositive.
- Exposure to blood and body fluids also carries a risk for Hepatitis B and Hepatitis C infection.
- If the person is not well vaccinated for Hep B, a booster vaccination is recommended.
- There is currently no vaccination available for Hepatitis C.

Follow-up:

- HIV serology should be carried out before day 8 post-exposure. If negative, a serological follow-up should be carried out in the 3rd month and again before the end of the 6th month.
- In the weeks following the accident, the person should be monitored for the appearance of signs indicating seroconversion: acute fever, lymphadenopathy, cutaneous eruption, pharyngitis, flu like symptoms, ulcers of mouth or genital area. This appears in 50-70% of individuals with primary infection usually within 3-6 weeks after exposure.
- Until confirmation is received in the third month, unprotected sex is strongly discouraged and pregnancy should be postponed.

COMMON OBSTETRIC PROBLEMS

A. BLEEDING IN EARLY PREGNANCY = Bleeding before 28 weeks.

1) ABORTION = Spontaneous (miscarriage) or induced end of the pregnancy before 28 weeks

ALWAYS DO A SPECULUM EXAMINATION AND BIMANUAL VAGINAL EXAMINATION.

LOOK FOR PRODUCTS (PLACENTA AND FOETUS). REMOVE ALL PRODUCTS IMMEDIATELY IF IN THE CERVIX.

	HISTORY	SIGNS & SYMPTOMS	TREATMENT
COMPLETE ABORTION	Cramps. Bleeding. Passage of products seen and complete.	Slight bleeding. Cervix closed.	1. Rest in IPD. 2. Paracetamol for pain. 3. Check Hb next day.
THREATENED ABORTION	Mild bleeding and pain. No products passed.	No shock. Cervix closed.	1. Rest in IPD until bleeding stops. 2. Advise to return to clinic if bleeding returns.
INCOMPLETE ABORTION	Bleeding and some products passed.	May have shock. Bleeding from cervix; may see products in cervix. Cervix open.	1. Remove all products from cervix using sponge forceps. 2. If unable to remove all products or bleeding is heavy and continuous: <ul style="list-style-type: none"> Place IV line, give IV NSS/RK/Haemaccel (see Shock section, page 19) Consider transfusion. Give Oxytocin IV 10-20iu or Ergometrine IV 0.2mg (can be given IM but IV works more quickly). <ul style="list-style-type: none"> REFER for curettage.
SEPTIC ABORTION	Same as incomplete abortion plus: FEVER Pelvic pain. Vaginal discharge. Bad smell.	Same as incomplete abortion plus: May see pus or foul vaginal discharge. Cervix tender.	1. Manage the same as incomplete abortion plus: 2. Tetanus injection if not done during pregnancy 3. 7-10 days of antibiotics: SEVERE SEPSIS- all 3 combined <ul style="list-style-type: none"> Ampicillin IV 1g QID Gentamicin IV/IM 6mg/kg OD [max. 360 mg] Metronidazole PO 500 mg TID LESS SEVERE- <ul style="list-style-type: none"> Oral Amoxicillin and Metronidazole.  you suspect STI, see treatment on page 105.

2) ECTOPIC PREGNANCY = the foetus grows outside the uterus, usually in the Fallopian Tube.

After a few weeks (typically 8 weeks but it may be before or after), bleeding starts and the tube may break (rupture). Rupture causes very dangerous bleeding and shock with high risk of death.

SYMPTOMS AND SIGNS

- Positive pregnancy test (but it may be negative).
- Lower abdominal pain, usually one-sided.
- Slight bleeding which may be very dark colour.
- May have shock.
- Vaginal examination = tender cervix or on one side of cervix.

Always suspect Ectopic if a woman has one sided lower abdominal pain

TREATMENT

- Start IV NSS or Ringer.
- Blood transfusion may be needed if heavy bleeding.
- **REFER for urgent surgery.**

B. BLEEDING IN LATE PREGNANCY = Bleeding after 28 weeks (ANTEPARTUM HAEMORRHAGE)

The most common causes are:

1. **PLACENTA PRAEVIA** (all or part of the placenta covering the inside opening of the cervix).
Usually = Painless bleeding.
2. **PLACENTAL ABRUPTION** (separation of the placenta from the uterus wall).
Usually = Severe pain. Hard uterus and absent foetal heart sounds.

**DO NOT DO BIMANUAL EXAMINATION (= examination with two hands).
BECAUSE OF RISK OF TEARING (= breaking) THE PLACENTA.
DO CAREFUL SPECULUM INSTEAD.**

TREATMENT

- Admit to IPD.
 - Immediately insert a large IV cannula and give IV NSS or Ringer (blood if shocked).
1. If bleeding is small and foetal heart is good:
 - Keep in IPD and discuss referral with midwife or doctor.
 - This is not an emergency, but referral will be probably needed for ultrasound to look for placenta praevia.
 2. If bleeding severe and/or no foetal heart sounds:
 - **REFER.**
 3. If cervix well-dilated and patient is close to delivering.
 - Continue to do delivery in clinic.

DO NOT DO A MANUAL VAGINAL EXAMINATION IN A WOMAN PREGNANT FOR 28 WEEKS OR MORE WITH BLEEDING FROM THE VAGINA. IT IS VERY DANGEROUS WHEN THERE IS PLACENTA PRAEVIA.

C. BLEEDING AFTER DELIVERY = Blood loss of > 500 ml
(POST-PARTUM HAEMORRHAGE)

The most common causes are:

1. A piece of placenta remaining inside the uterus. This must be removed as quickly as possible.
Always examine the placenta carefully to see if it is complete.
2. Soft uterus not well-contracted.
3. A rip or tear, especially of the cervix or a vaginal blood vessel.

TREATMENT

- Immediately put in a large IV cannula and give IV NSS or Ringer or Haemaccel and/or blood.
- Put in urinary catheter.
- **Massage** (rub) uterus to make it contract. Empty the uterus by pressing firmly on lower abdomen.
- **Look for bleeding** from a tear (perineum, vagina or cervix). Apply sponge forceps to stop the bleeding then suture.
- If **placenta is incomplete**,
 - Do manual exploration of uterus.
 - If you cannot do it or you try and it does not work:
• REFER for curettage (scrape of inside of uterus).
- If **placenta has not delivered**,
 - Do manual removal of placenta.
 - If you cannot do a manual removal or if you try and it does not work (placenta accreta):
• REFER.
- **Give Oxytocin or Ergometrine.**

OXYTOCIN 1 vial = 10 iu in 1cc	ERGOMETRINE / METHYLERGOMETRINE 1 vial = 0.2mg in 1cc
<ul style="list-style-type: none"> • Give 10iu IV or IM stat • Then put 20iu in 500ml D5W and run at 3cc/min. • Reduce to 1cc/min as haemorrhage slows. 	<ul style="list-style-type: none"> • Give 0.2mg stat IV or IM. • Repeat the same dose up to 2 more times if bleeding continues. • IV works more quickly but should be given slowly over 1 minute. • Ergometrine can cause a rise in BP: do not give if high BP or eclampsia-use Oxytocin instead.

Note:

- Loss of <500ml of blood at delivery is NORMAL BLEEDING.
- Slight bleeding for a few days after delivery is normal. It should be like a normal period, decreasing over one week.

D. THREATENED PREMATURE LABOUR = Contractions start before 36 weeks

Always look for an infection. For example: malaria, UTI, pyelonephritis, pelvic infection, respiratory infection, typhoid.

TREATMENT

- Treat any infection you find.
- Treat the fever with Paracetamol.

1. < 26 weeks:

If the baby is born, it will probably be too young to survive.

- Give Diazepam 5mg TID to reduce contractions by relaxing the mother.

2. Between 26 and 34 weeks AND cervix < 4cm AND membranes not ruptured:

Try to stop the labour:

- Give **Salbutamol** 8mg PO TID to stop the contractions.
 - (a) If contractions reduce in frequency and intensity. Decrease to 4mg TID until contractions stop.
 - (b) If contractions and cervical dilatation increase. Stop and prepare for delivery

Do not use Salbutamol if woman has high BP.

Salbutamol can cause palpitations and tremor: warn the patient about these effects.

- Give **Dexamethasone** 6mg IM BID for a total of 4 doses to help the baby's lungs mature.

This takes 48 hours to work.

- (a) If contractions stop Give 6mg IM BID every week until 34 weeks gestation.
- (b) If contractions and cervical dilatation increase Stop salbutamol and prepare for delivery.

3. > 34 weeks OR cervix > 4cm dilated OR membranes ruptured:

DO NOT try to stop the labour.

- **Prepare for delivery of premature baby.**

PRE-ECLAMPSIA & ECLAMPSIA

These are syndromes found at the late stage of pregnancy.

They are very serious and there is every chance for the baby and the mother to die.

**High Blood Pressure (HBP) during pregnancy
= >140mm Hg systolic and /or >90 mm Hg diastolic.**

OR

A rise of 30 mm Hg systolic or 15 mm Hg diastolic during the pregnancy.

1. Pre-Eclampsia:

BP > 140/90 AND

Protein in the urine OR

Oedema (legs, hands, face)

Between 20th week of pregnancy and end of 1st week post-partum

2. Severe Pre-Eclampsia:

BP > 150/110 AND

3+ proteinuria OR

Marked oedema

Between 20th week of pregnancy and end of 1st week post-partum

Headache, upper abdominal pain and visual disturbances are symptoms indicating the severity of the pre-eclampsia and can quickly develop into eclampsia.

3. Eclampsia: Pre-Eclampsia + Convulsions or Coma

RISK FACTORS

- First pregnancy (primipara).
- Age > 35.
- Multiple pregnancy.
- History of HBP.
- History of Pre-eclampsia in previous pregnancy.
- Hydatiform mole
- Too much amniotic fluid (Polyhydramnios).

WHEN A PATIENT WITH SYMPTOMS OF PRE/ECLAMPSIA PRESENTS TO OPD:

- Check the past medical history and history of previous pregnancies for HBP.
- Check the Antenatal Card for previous readings of BP.
- Ask about symptoms of oedema, headache, blurred vision and abdominal pain.
- Ask about foetal movement, vaginal bleeding and uterine contractions.
- Admit the patient to IPD.

TREATMENT

1. Pre-Eclampsia

- Admit to IPD.
- Rest for 2-3 days.

(a) If rest decreases BP

- Discharge with weekly follow-up.

(b) If rest does not control the BP in 2-3 days:

- start Methyldopa 250-mg po TID and increase progressively to 500mg po TID.

NOTE: Methyldopa is slow acting. It will take 2 or 3 days for the drug to have full effect.

(c) If rest AND Methyldopa do not control the BP in 3-4 days:

- **add** Propranolol 40 mg po BID and increase progressively to a max 360 mg/day.

Do not use diuretics (Furosemide or Hydrochlorothiazide).

- Discharge when BP decreased with weekly follow-up until delivery.

2. Severe Pre-Eclampsia:

The treatment of severe pre-Eclampsia is delivery.

- Start IV with Normal Saline or Ringer to hydrate the patient (3-4 lt/24 hours).
- Start Magnesium Sulphate if available.
- Start Hydralazine iv if BP > 180/110 (see dose in Hypertension section, p. 51).
Be careful, Hydralazine can reduce BP very quickly and the patient may go into shock..
- Refer the patient for delivery as soon as possible.
- If no referral service is available, induce delivery with artificial rupture of membranes.

3. Eclampsia:

The treatment of Eclampsia is delivery.

- Put the patient in a safe position, lying on the left side and prevent injuries.
- Maintain a clear airway from secretions and vomit.
- Stop the convulsions with Diazepam.
- Put in a urinary catheter and keep the patient in the dark.
- Follow treatment for Severe Pre-eclampsia. Start magnesium sulphate if available.
- Refer the patient as soon as possible for urgent delivery.
- If no referral service is available induce delivery with artificial rupture of membranes.

SEVERE PRE-ECLAMPSIA and ECLAMPSIA = URGENT DELIVERY!!

Note:

- 25% of cases **present after delivery**. Apply same treatment.

HYDATIFORM MOLE

Hydatiform mole is an abnormal pregnancy due to abnormal growth of the placenta which very rarely develops into a cancer.

Usually noticed at 10-16 weeks of the pregnancy.

SYMPTOMS AND SIGNS

- Severe morning sickness (nausea and vomiting) and tiredness.
- Irregular bleeding with passage of vesicles (they look like grapes).
- The uterus is larger than expected for the age of the pregnancy and soft.
- Absent foetal heart beat.
- The pregnancy test is usually positive.

TREATMENT

- Refer the patient for ultrasound and Curettage.
- If patient's condition is unstable, start iv fluids.

COMPLICATIONS

- Infection and bleeding.

FOLLOW-UP

The patient should be followed-up for one year and pregnancy test done every 2-months. She should be offered contraception and be advised not to become pregnant for one year.

**The patient's future pregnancies should be followed closely.
There is an increased risk of a second hydatiform mole.**

FAMILY PLANNING GUIDELINES

We can offer the following methods of contraception:

1) CONDOM

A condom is a tube made of rubber and closed at one end. It fits over the erect penis. It contains all the semen ejaculated during intercourse and prevents sperm from entering the vagina. A condom can only be used once, and then it must be thrown out. Do not use a condom with Vaseline or oil - this may affect the rubber and cause it to break.

EFFECTIVENESS

Condoms are very effective if used every time during sexual intercourse.

Condoms are the only contraception that also protect against sexually transmitted infections including HIV.

2) ORAL CONTRACEPTIVE PILL:

PREPARATION:

Each tablet contains a progesterone and an oestrogen.

It is a “combined pill” and cannot be used by breastfeeding women.

EFFECTIVENESS

If used properly, the pill is about 95% effective.

CONTRAINDICATIONS – Do not give if:

1. Age over 40 years
2. Obese patient
3. Breast-feeding woman
4. Jaundice
5. No menstruation
6. High BP >140/90
7. Uterus or Breast Cancer
8. Taking these drugs: Carbamazepine, Griseofulvin, Phenobarbital, Phenytoin, Rifampicin.

MOST COMMON SIDE EFFECTS ARE:

1. Breast tenderness
 2. Nausea
 3. Weight gain
 4. Headache
 5. Depression
 6. Some irregular bleeding
- Before prescribing oral contraceptive pills you must take a full history and do a full examination, especially to exclude all of the above contra-indications. Do a pregnancy test. Examine thoroughly to exclude abdominal mass or breast mass. Discuss any questions or concerns with the doctor.
 - Discuss with a doctor before prescribing for smokers who are more than 35 years old.
 - Advise all smokers to stop smoking.

- You need to explain the possible side effects to the woman before starting oral pills. Most of the side effects will stop after 1 to 3 months.

What to tell women taking the pill:

1. Take one tablet every day.
2. Start taking tablets on day 1 of menstruation.
3. Take the pill at the same time every day. If a pill is >12 hours late, take it as soon as remembered, continue taking the pills in the packet and use condoms for 7 days.
4. Continue to take tablets even if sick or husband is absent.
5. Start the new packet as soon as the last tablet is finished.
6. **If sick with vomiting or taking antibiotics**, the pill may not work well, so continue taking pills but use condoms while sick or on antibiotics and for 7 days after.

3) DEPOT INJECTION

PREPARATION

Each injection of Depot contains 150mg of Medroxyprogesterone Acetate in 3ml.

Depot contains no oestrogen and can be used for lactating women (it can be given soon after delivery, but this may cause heavy bleeding; it is best to wait 6 weeks after delivery and give it then).

DOSE

One injection of 3ml IM every 3 months.

Check pregnancy test before starting Depot.

EFFECTIVENESS

Almost 95% effective.

CONTRAINDICATIONS – Do not give if:

1. Liver disease
2. Severe heart disease

If >40 years old, diabetic, high BP or obese - discuss with the doctor.

MOST COMMON SIDE EFFECTS ARE:

1. Irregular vaginal bleeding.
2. No bleeding at all (50% of women have no menstruation after 12 months on Depot. The periods return when Depot is stopped).
3. Nausea.
4. Weight gain.

IMPORTANT

Make it very clear to the woman when the next injection is due (11-12 weeks).

If over 1 week late, do urine pregnancy test:

- (a) If positive do not give Depot.
- (b) If negative, give Depot and advise to use condoms for 14 days.

CONTRACEPTION AVAILABLE FROM REFERRAL HOSPITALS:

**MALE STERILISATION- VASECTOMY.
FEMALE STERILISATION- TUBAL LIGATION.
NORPLANT.
IUD (intrauterine device).**

GENDER VIOLENCE/RAPE

Rape is a traumatic experience both emotionally and physically. People may react in a number of ways to this trauma. By presenting to the clinic the woman shows that she has a health concern. The clinic staff can address these health concerns and help her to recover by providing compassionate and good quality medical care.

Women will recover more quickly if they have emotional support and understanding from people they trust.

DO NOT BLAME WOMEN WHO HAVE BEEN RAPED. IT IS NOT THEIR FAULT.
REMEMBER: RAPE IS A SERIOUS CRIME AND NOBODY DESERVES TO BE
RAPED.

Be very careful of maintaining **confidentiality**. Do not discuss the case with anyone who does not need to know.

Note:

- The patient may want to **report** this incident to the **Women's group** in the camp or to the **Camp Committee**. Ask her if she would like you to accompany her.
- If she wants to **report the incident to the police**, she will need to have the **medical examination in a Thai hospital**. Advise her not to change her clothes or bathe before the medical examination as evidence will be collected at this time. It is best if a trusted female staff member from the camp goes with her.

MANAGEMENT

1. Wound care:

- Examine the patient to check for wounds if she give permission /consents.
- Clean any tears, cuts and abrasions and remove any dirt or dead and damaged tissue.
- Suture if necessary and give appropriate wound care.

2. Prevention of sexually transmitted infections:

- Treat for Gonorrhoea and Chlamydia even if there are no symptoms (see STIs protocol page 106).
- See follow-up schedule for Syphilis testing.

3. Prevention of Tetanus.

- If the woman has external wounds and is not vaccinated against Tetanus, give Tetanus vaccine. Advise her to finish the course. (See Vaccination schedule page 163).

4. Prevention of Hepatitis B:

- If the woman has not already been vaccinated, give immunisation with hepatitis B vaccine **as soon as possible**, if available. Advise her to finish the course. (See vaccination schedule at page 163).

5. Prevention of unwanted pregnancy – Emergency contraception :

- Women are going to be very concerned about the possibility of pregnancy as a result of the rape.
- They should be counselled about the availability of emergency contraception.
- **The decision to take emergency contraception should be left to the woman.**
- If the survivor wants to take emergency contraception but the **health worker does not want to prescribe it, the survivor should be referred to someone who is willing to prescribe it.**
- The management varies depending on how soon the woman presents to the Clinic after the incident.

A. IF THE WOMAN COMES TO THE CLINIC WITHIN 72 HOURS OF THE INCIDENT:

You can offer 2 types of emergency contraception:

• **Hormonal: Emergency Contraception Pills, (ECP)**

- a) Combined oral contraceptive pill, for example, Anna: Each pill contains 30 micrograms of Ethinyl Oestradiol and 150 micrograms of Levonorgestrel.
Dose: Give four tablets stat and another four tablets 12 hours later OR
 - b) Levonorgestrel 0.75 mg.
Dose: Give one tablet stat and then another tablet 12 hours later.
 - Give Metoclopramide 10mg IM or PO one hour before the pills (both doses) to prevent vomiting.
- Taking emergency contraception pills (ECP) within 72 hours of unprotected intercourse will reduce the chance of an unwanted pregnancy by about 80%.
 - Ask the woman to come back for a follow-up in 2 weeks time (see below).

Before giving ECP **do a Pregnancy Test.** Give ECP only if PT is negative.

• **Non-hormonal: Intrauterine Device (IUD)**

- An IUD should be inserted by an experienced person.
- If an IUD is inserted at this time, it can be removed after one month.
- Ask the woman to come back for a follow-up in 2 weeks time (see below).

Before inserting an IUD **do a Pregnancy Test.** Insert IUD only if PT is negative.

B. IF THE WOMAN COMES TO THE CLINIC AFTER 72 HOURS BUT WITHIN 7 DAYS OF THE INCIDENT:

- It is too late to offer the Emergency Contraceptive Pill.
- You can only offer IUD (see above).

C. IF THE WOMAN COMES TO THE CLINIC AFTER 7 DAYS OF THE INCIDENT:

- It is too late to prevent pregnancy.
- Do a Pregnancy Test and ask her to come for a follow-up (see below).

6. Prevention of AIDS

- Women may be very concerned about the possibility of HIV infection.
- Explain to her that she has valid reasons to be concerned, but that the actual risk of contracting HIV is very small.
- Offer her voluntary testing and counselling.
- **Post exposure prophylaxis** for HIV (see HIV/AIDS section, page 142) may help to prevent HIV after rape (but the evidence for this is still not clear).
- Where available, prophylaxis should be prescribed **after** counselling **if** the woman has come **within 72 hours** of the incident.

HIV prophylaxis should be started as soon as possible after the incident, preferably within 1-2 hours, but no more than 72 hours after.

- If the woman comes to the clinic more than 72 hours after the incident, it is too late for HIV prophylaxis.
- Refer the woman for voluntary testing and counselling three months after the incident (see follow-up).

After the appropriate medical management:

- Ask the woman if she has a safe place to go and if someone she trusts will accompany her when she leaves the clinic. If she has no safe place to go, care should be taken to find a safe place.
- Refer the woman to the relevant person in your community for psychological support.

FOLLOW-UP

Follow up these patients regularly. They will need continuing emotional support.

Inform them that she can return anytime to the clinic if she has questions or other health problems.

Give clear advice on the need to follow-up for wound care or vaccinations.

The **minimum** follow-up should be:

1. TWO WEEKS:

- Do a Pregnancy Test.
- Ask about STI symptoms and treat if necessary. Take blood for Syphilis testing.
- Offer emotional support, make sure she is getting continuing mental support from the appropriate person in the community.

2. ONE MONTH

- Repeat the Pregnancy Test.
- Ask about STI symptoms and treat if necessary. Take blood for Syphilis testing.
- Offer emotional support.

3. THREE MONTHS:

- Ask about STI symptoms and treat if necessary. Take blood for Syphilis testing.
- Offer voluntary testing and counselling for HIV.
- Offer emotional support.

COMMON PSYCHIATRIC DISORDERS

1) Anxiety disorders

Anxiety or mental stress is the feeling that we have when we are frightened or scared of something. When feeling stressed the heart usually starts beating faster, reactions are quicker and we are more alert. This is the body's normal reaction to stress, but problems occur when levels of stress are too high or are unable to be relieved.

- Everyone reacts to psychological stress; headaches, feeling uptight and nervous can all be symptoms of stress. More severe symptoms from unrelieved anxiety can include sleeplessness, heart palpitations, depression, violence, withdrawal and psychosomatic complaints.
- Psychosomatic disorders: these occur when a person is unable to deal with increasing levels of mental stress or tension. Because the patient is unable to deal with the mental consequences of high levels of stress, the body will develop a physical symptom such as pain, numbness, or in some cases paralysis. Generally the patient is able to discuss physical aches and pains more openly than their underlying psychological stress and the causes for it.

2) Post Traumatic Stress Disorder

- Post Traumatic Stress Disorder (PTSD) is a condition that occurs as a response to extremely frightening, severe and prolonged fear. It is characterised by high levels of anxiety that interfere significantly with the person's ability to lead his/her life.
- Common in people that have escaped or experienced violent situations or have escaped from life-threatening situations, all of which are common to refugees.

CAUSES

- Life threatening violence, one event or constant over a period of time.
- Violence experienced either directly by the patient or observed as it happened to somebody else.
- Escaping from possible violence, fear of capture.

SYMPTOMS AND SIGNS

- Disturbs person's ability to interact with others, live and enjoy life. Withdrawal (little or no communication with others).
- Panic attacks (episodes of sudden fear occurring apparently for no reason).
- Often manifests itself as vague symptoms such as headache, sleeping problems, joint pain, tiredness, irritability, irrational fear, flattened or inappropriate mood.
- Personality changes, violent outbursts, poor concentration.
- Disturbed sleep patterns.
- Chronic physical symptoms, psychosomatic complaints: not relieved by symptomatic medical intervention, frequent visits to medical facilities.

TREATMENT

- Counselling (see following on counselling).
- Relaxation therapy.
- ‘Survivors of violence’ need to feel safe and secure in their environment.
- Empathy: listen and accept what the person is saying ask how they feel about the incident, express your support that though you probably don’t know what it was like to experience something like that, nonetheless you understand the emotion they are presenting with.
- Talk and listen, ask the patient about the history of their problems, when was the first time they felt the headaches, inability to sleep, what things were happening in their lives around that time, try to locate a probable cause for their symptoms.
- Try to listen to the patients problems. Do not judge them based on their stories, express that you are interested in what they have to say and try to let them express themselves. Above all, let the patient know they are not alone and that you understand the reasons for their stress.

3) PSYCHOSIS

- A severe form of mental illness in which the patient is unable to distinguish between the real world and the world of their hallucinations and delusions.

1. Hallucinations: where one has the experience of hearing, seeing, smelling and even feeling things that are not there; i.e. the patient may hear voices talking to them though there is no-one around them, see things that are not there. It is important to realize that the patient is not imagining these sensations, they really experience them and it is very frightening.
2. Delusions: fixed false beliefs that are not shared by other members of the person’s culture or society. Ideas that seem strange and bizarre such as having powers that others don’t possess; i.e. can read people’s minds or are from another planet. Delusions are generally so strange that many people’s first reaction is to laugh; however, to the patient these beliefs are completely real.

- Due to the extreme nature of hallucinations/ delusions the patients are often unable to care for themselves and are likely to be disruptive in the community and generally stand out. Unfortunately, these people are often regarded as fools and not considered worthy enough for medical help; however, with the proper medical intervention psychotic patients can get better and lead productive and meaningful lives.
- Acutely psychotic patients are difficult to talk to, as they are not able to understand what is happening around them. However, the staff should make attempts to let the patient know where they are and what is happening to them i.e. that they are in a hospital, they will receive treatment, etc.
- Medication: for acutely psychotic patients Phenergan 25mg + Haloperidol 5mg either orally or by IM injection (both medications can be administered together in the same syringe).

Need to be monitored closely as these medicines have severe and distressing side effects. Long term medical management needs to be tailored individually to the patient and should only be prescribed by experienced medical personnel.

SIDE EFFECTS

- Tremors.
- Stiffness.
- Parkinsonism.
- Occulogyric crisis (eye rolling Movements): especially in young men.
- Torticollis (neck twisting movements): especially in young men.

COUNSELLING

- Counselling is a method used to help treat people with emotional trauma. Counselling is sometimes referred to as a "talking cure".
- The method used to help people is by listening to them talking and discussing their problems with them.
- The counsellor can help them to find solutions to their problems and find better ways of dealing with their emotional trauma.
- Counselling generally takes a long time to be effective and takes experience to be fully effective.

Some of the rules:

CONFIDENTIALITY: This means that whatever you learn in the counselling session is not told to anyone else without the person's permission. The only exception to this rule is if the person has told you that he/she plans to either harm themselves or others. It is through confidentiality that a trusting relationship can develop.

TRUST: Needs to be developed between the counsellor and the person seeking help. Without trust effective counselling cannot occur.

EMPATHY: The counsellor must try to understand the person's situation as well as they can. To empathise means to see the world through another's eyes, to imagine being the person and imagining how it would have felt to have suffered their problems.

NON JUDGEMENTAL: When hearing the person's problems and life story, you are being placed in a very powerful position. The person has placed his/her trust in you and is relying upon you for acceptance. The people who need counselling are in a very fragile emotional state and need acceptance and support. Not judging the person's behavior, even though you may disagree with it, is an essential element of counselling.

LISTENING: The counsellor needs to be a good listener. Allow pauses in conversation, do not try to push the person to speak and let them tell you what they feel comfortable in telling you at that time.

BODY LANGUAGE: The way a person sits and their movements often display what they are feeling. During counselling it is important to make the person aware that you are interested and listening to them. One way of doing this is to follow these rules:

Square: sit facing the person, do not sit sideways to them, be able to look directly at them.

Open: sit with an open posture, don't cross your arms or lower your head.

Leaning forward: by leaning slightly forward towards the person you are showing them that you are interested.

Attentive: be attentive to what they are saying, listen to them and nod your head to show you understand.

Relaxed: be relaxed during the counselling session, try not to feel tense or excited, hopefully the person will sense this and will become more relaxed themselves.

The Counselling Session:

Here are some guidelines on how a counselling session can be run.

To begin with:

Explain that you want to help them, introduce yourself and your position (medic, social worker). Explain that you would like to get to know them better so that you can effectively deal with their specific problem/circumstance. Ask if they have any questions and answer them. Be honest. Find a quiet, comfortable and private environment to talk in.

Õ Family history

Life story: how did you come to the camp? What happened to you while in Burma? Why did you come? Medical history and cultural background.

Õ Discover what the problem is

Ask the person what problems they are having. Allow time for the person to talk, allow pauses in the conversation and be patient.

Some questions you could ask:

- How does it feel when you talk about what happened?
- Does it interfere with your sleep? Do you have nightmares about what happened?
- What effect does the problem have on your life?
- Does it affect your health?
- Do you suffer headaches or other body pains? If so did they begin after the incident?
- How long have you had the problem?
- How do you think the problem can be solved?
- Discuss possible solutions with them? But don't feel that you must solve the person's problem.

Õ During your discussion determine the person's mental state

- Is the person angry, sad or feeling nothing. Are they depressed or anxious?
- Does the person make sense?
- Is the person psychotic?
- Do the person's emotions make sense? i.e. when relating a bad or sad story is the person smiling/ looking happy or when talking of a happy event, sad/crying.
- Find out if the person feels good or bad about themselves? Does he/she have high or low self-esteem? Does the person feel powerless? Does the person think everything they try to do fails (signs of depression)
- Does the person have a history of violence? Does he/she feel violent or suicidal?

All these are things that can be discovered, not through one counselling session but perhaps over a series of interviews as the person becomes more relaxed and begins to trust you more.

DO NOT TRY TO DO TOO MUCH DURING THE FIRST SESSION. The first session is mainly to begin the process, successful counselling can take months. These questions don't necessarily need to be asked directly, but the counsellor can assess or feel the real answers from the person's reactions and attitude.

Referral: the counsellor may need to make a decision as to whether or not the person needs a referral to another service in the camp. The person may need medical help, or protection to escape from an abusive relationship. Any referral should be undertaken only with the person's understanding and permission.

Some important points to remember:

- Understand that the person is taking a risk in telling you his/her story. It is very personal information, which you must respect.
- The person is taking a risk to confront painful memories and undergo change and the counsellor is the one to provide strength and security.
- The counsellor must be aware of the effect of hearing sad and disturbing stories and must be prepared to handle hearing and advising on difficult life situations.
- The counsellor must be aware that they are taking on a lot of responsibility. The counsellor has a lot of power over the person's life. They need to be aware of this and not use this power in a negative way. If unaware of this relationship, the counsellor can unconsciously become a part of the problem.

Finally:

The object of counselling is to help the person to find solutions to his/her problems and to strengthen the person, to lead him/her to an independent and happier/ healthier life. This ideal cannot always be met but by sharing their problems with another who respects and is interested in the person, and his/her problems, the person will leave any counselling session with more confidence and security.

DRUG AND ALCOHOL INTOXICATION

Acute intoxication: When the patient has taken too much of the substance (alcohol, drug) in the last hours and the body cannot remove it fast enough.

Symptoms and signs include coma, agitation, myosis (constricted pupils), change in behaviour. Symptoms can last a few hours or until the drug disappears from the body.

Withdrawal reaction: For chronic consumers of a substance (people who use the drug often). The body starts to need the drug to function normally (physical dependence), and when the drug is missing (consumption stopped), the body is not able to function normally.

Symptoms and signs: the patient has clinical signs usually the opposite of the effects of the drug. Symptoms can stay several days.

If someone wants to stop using a drug or alcohol: After the acute reaction (withdrawal), more long term follow-up must be organized with some counsellors, the patient and the relatives otherwise the person will start using the drug again!

These 2 acute problems due to the consumption of drugs can be mild or severe, even life threatening.

Always keep in mind that these reactions can be associated with trauma. Intoxicated people have more accidents.

1) ALCOHOL

Acute intoxication:

SYMPTOMS AND SIGNS

- Smell of alcohol
- Possibility of vomiting, change in behavior, agitation, euphoria - patient laughing a lot, loss of control - disinhibition, poor coordination. With increasing amounts, the person can become drowsy and comatose.

TREATMENT

- If coma,
Rehydrate with iv saline when unconscious, then by mouth when able to swallow safely, to induce more urine (and eliminate the alcohol). Look for and treat hypoglycaemia.
Check urine output and vital signs every hour initially.
Be careful: position the patient in a lateral position because of possible vomiting and aspiration of vomit.
- If agitated or violent:
Diazepam 10 mg IV, repeat if needed after 30 minutes.
Rehydrate by mouth if conscious, iv if unable to swallow safely.
Remember hypoglycaemia and treat if present.

In acute alcohol intoxication there is a high risk of hypoglycemia.

Withdrawal reaction:

SYMPTOMS AND SIGNS

Fast heart beat.

Possibility of slight fever (sign of severity).

Sweating.

Nausea, vomiting.

Neurological signs such as anxiety, tremor (alternating movements of flexion and extension of the wrists), or more severe such as convulsions,

Auditory and visual hallucinations,

Confusion, hyperactivity, anxiety attacks, poor sleep.

TREATMENT:

- Diazepam 10 mg IV, can be repeated every hour until sedated.
- If hallucinations, Chlorpromazine 100-300 mg PO QID.
- If convulsions, use Diazepam.
- Vitamins: Thiamine (B1) 100 mg/day, Vitamin B12 1 mg/day, Folic Acid 1 mg/day.

2) OPIOID/HEROINE/MORPHINE

These drugs can be smoked, or snorted (inhaled by the nose), or injected iv.

Acute intoxication:

SYMPTOMS AND SIGNS

Euphoria (patient always laughing).

Flushing (feeling of being hot on the face, red skin).

Itching on the skin (especially with morphine).

Myosis (small pupils).

Drowsiness (want to sleep).

Deep and decreased respiratory rate.

Hypothermia.

Bradycardia (slow pulse), hypotension.

TREATMENT:

The antidote for morphine overdose is not available in our context, so treatment is symptomatic - analgesia and sedation.

Withdrawal reaction:

DIAGNOSIS:

Anxiety.
Increased respiratory rate.
Increasing body secretions: sweating, running nose, tears.
Mydriasis (dilated pupils).
Piloerection= skin hairs becoming straight ('gooseflesh').
Tremors: flexion/extension of the wrists.
Muscles show small contractions, muscle pain.
Hot and cold flushes.
Anorexia.
Abdominal pain/cramps.

TREATMENT:

Diazepam 10 mg IV, repeat every hour until sedation.
Methadone and Clonidine are used elsewhere but are not available in our setting.

3) AMPHETAMINES

Several amphetamines can be mixed together or with other substances in the same tablet.
Amphetamines can be inhaled by the nose, smoked, swallowed or injected iv.
Even if only used one time, amphetamines can give acute psychiatric problems:

SYMPTOMS AND SIGNS

Very tired.
Not sleeping.
Anxiety reaction.
Severe depression with possibility of suicide.
Auditory and visual hallucinations:

- Paranoia = wrong ideas about what people think of you.
- Persecution = feeling of being the victim.
- Omnipotence = feeling of having power over everything and everyone.

Some amphetamines can give more severe signs:

- severe hyperthermia (very high temperature).
- disseminated intravascular coagulation (bleeding disorders).
- rhabdomyolysis (muscle damage).
- convulsions, acute renal failure, liver toxicity and heart problems.

TREATMENT

Chlorpromazine 25-50mg IM rapidly reverses the acute agitation.
Ammonium chloride 500mg PO every 4 hours (makes urine more acidic and so facilitate the elimination of the amphetamines).

SCHEDULE OF IMMUNISATION

Several diseases can be prevented by immunisation. The following vaccines are available in this area:

Disease	Vaccine
Tuberculosis	BCG
Measles	Measles
Poliomyelitis	OPV
Diphtheria	DPT
Pertussis(whoopingcough)	DPT
Tetanus	DPT or T alone
Hepatitis B	Hep B

1) RECOMMENDED SCHEDULE OF VACCINATION (WHO) – *this is not the only valid schedule

At birth	BCG + polio 0 + HepB1
At 6 weeks	DPT1 + polio1 + HepB2
At 10 weeks	DPT2 + polio2
At 14 weeks	DPT3 + polio3 + HepB3*
At 9 months	Measles
1 year after DPT3	booster DPT + polio

*HepB3 could be given 6 months after HepB2.

- **In case of a measles epidemic, immunise all children from 6 months to 10 years. Repeat a dose after 12 months for the babies who received the vaccine between 6 and 9 months.**

2) PREGNANT WOMEN AND MOTHERS

During the first ANC consultation	T1
1-2 month after T1	T2
6 months after T2	T3
One year after T3	T4
One year after T4	T5
OR	
Any time (15 to 45 years of age)	T1
One month after T1	T2
Any time during next pregnancy	T3
Any time during next pregnancy	T4
Any time during next pregnancy	T5

HAEMOGLOBIN WITH LOVIBOND METHOD WITH HAEMATOCRIT EQUIVALENTS

READING ON DISC	g/100ml	SEVERITY	HAEMATOCRIT EQUIVALENT
20	3.3	+++	10
24	4.0		12
28	4.7		14
32	5.3	++	16
36	6.0		18
40	6.7		20
46	7.3	+	22
52	8.7		26
58	9.7		29
64	10.7		32
70	11.7		35
76	12.7		38
84	14.0		42
92	15.3	0	46
100	16.7		50
110	18.3		55
120	20.0		60
130	21.7		65

PEAK FLOW NORMAL VALUES TABLE

PEAK FLOW – NORMAL VALUES

MEN

HEIGHT in cm	157	160	162	165	167	170	172	175	177	180	182	185	187
AGE in years													
15	525	525	525	525	530	535	535	540	545	545	550	555	560
20	565	570	575	580	580	585	585	590	595	595	600	605	610
25	590	600	605	605	610	615	615	620	625	630	630	635	640
30	605	610	615	620	620	625	630	635	640	640	645	650	650
35	610	615	620	620	625	625	630	635	640	640	645	650	650
40	600	605	615	615	615	620	625	630	630	635	635	640	645
45	585	595	600	600	605	610	610	615	615	620	625	630	635
50	570	575	585	585	590	590	595	600	600	605	610	610	615
55	560	565	570	575	575	580	585	590	590	595	600	605	605
60	550	555	560	560	565	570	570	575	580	585	590	600	600
65	540	545	550	550	555	560	560	565	570	575	580	590	590
70	530	535	540	540	545	550	550	555	560	565	570	575	580

PEAK FLOW – NORMAL VALUES

WOMEN

HEIGHT in cm	147	150	152	155	157	160	162	165	167	170	172	175	177
AGE in years													
15	435	440	450	455	455	460	465	465	470	475	475	480	485
20	450	450	455	460	460	465	470	475	480	480	485	490	490
25	450	455	460	460	465	470	475	480	480	485	490	490	495
30	455	455	460	465	470	475	480	480	485	490	490	495	500
35	455	455	460	465	470	475	480	480	485	490	490	495	500
40	450	450	455	460	465	470	475	480	480	485	490	490	495
45	445	450	450	460	460	465	470	475	475	480	485	485	490
50	440	440	445	450	455	460	460	460	470	470	475	480	480
55	430	430	435	440	445	450	450	455	460	460	465	470	470
60	415	420	425	430	430	435	440	445	450	455	455	460	460
65	400	405	410	415	415	420	435	430	435	440	445	445	450
70	390	390	395	400	400	405	410	410	415	420	425	430	440

WEIGHT / HEIGHT SCORE

HEIGHT FOR WEIGHT CHART

length (cm)	well nourished				length (cm)	well nourished			
	median(kg)	90%	80%	70%		median(kg)	90%	80%	70%
49	3.2	2.9	2.6	2.2	67	7.6	6.8	6.1	5.3
49.5	3.3	3.0	2.6	2.3	67.5	7.8	7.0	6.2	5.5
50	3.4	3.1	2.7	2.4	68	7.9	7.1	6.3	5.5
50.5	3.4	3.1	2.7	2.4	68.5	8.0	7.2	6.4	5.6
51	3.5	3.2	2.8	2.5	69	8.2	7.4	6.6	5.7
51.5	3.6	3.2	2.9	2.5	69.5	8.3	7.5	6.6	5.8
52	3.7	3.3	3.0	2.6	70	8.5	7.7	6.8	6.0
52.5	3.8	3.4	3.0	2.7	70.5	8.6	7.7	6.9	6.0
53	3.9	3.5	3.1	2.7	71	8.7	7.8	7.0	6.1
53.5	4.0	3.6	3.2	2.8	71.5	8.9	8.0	7.1	6.2
54	4.1	3.7	3.3	2.9	72	9.0	8.1	7.2	6.3
54.5	4.2	3.8	3.4	2.9	72.5	9.1	8.2	7.3	6.4
55	4.3	3.9	3.4	3.0	73	9.2	8.3	7.4	6.4
55.5	4.4	4.0	3.5	3.1	73.5	9.4	8.5	7.5	6.6
56	4.6	4.1	3.7	3.2	74	9.5	8.6	7.6	6.7
56.5	4.7	4.2	3.8	3.3	74.5	9.6	8.6	7.7	6.7
57	4.8	4.3	3.8	3.4	75	9.7	8.7	7.8	6.8
57.5	4.9	4.4	3.9	3.4	75.5	9.8	8.8	7.8	6.9
58	5.1	4.6	4.1	3.6	76	9.9	8.9	7.9	6.9
58.5	5.2	4.7	4.2	3.6	76.5	10.0	9.0	8.0	7.0
59	5.3	4.8	4.2	3.7	77	10.1	9.1	8.1	7.1
59.5	5.5	5.0	4.4	3.9	77.5	10.2	9.2	8.2	7.1
60	5.6	5.0	4.5	3.9	78	10.4	9.4	8.3	7.3
60.5	5.7	5.1	4.6	4.0	78.5	10.5	9.5	8.4	7.4
61	5.9	5.3	4.7	4.1	79	10.6	9.5	8.5	7.4
61.5	6.0	5.4	4.8	4.2	79.5	10.7	9.6	8.6	7.5
62	6.2	5.6	5.0	4.3	80	10.8	9.7	8.6	7.6
62.5	6.3	5.7	5.0	4.4	80.5	10.9	9.8	8.7	7.6
63	6.5	5.9	5.2	4.6	81	11.0	9.9	8.8	7.7
63.5	6.6	5.9	5.3	4.6	81.5	11.1	10.0	8.9	7.8
64	6.7	6.0	5.4	4.7	82	11.2	10.1	9.0	7.8
64.5	6.9	6.2	5.5	4.8	82.5	11.3	10.2	9.0	7.9
65	7.0	6.3	5.6	4.9	83	11.4	10.3	9.1	8.0
65.5	7.2	6.5	5.8	5.0	83.5	11.5	10.4	9.2	8.1
66	7.3	6.6	5.8	5.1	84	11.5	10.4	9.2	8.1
66.5	7.5	6.8	6.0	5.3	84.5	11.6	10.4	9.3	8.1

category
 well nourished
 mild malnutrition
 moderate malnutrition
 severe malnutrition

weight for height
 >90% of median
 80-89% of median
 70-79% of median
 <70% of median

length (cm)					length (cm)				
	median(kg)	90%	80%	70%		median(kg)	90%	80%	70%
		well nourished	mild malnut.	moderate			well nourished	mild malnut.	moderate
				severe					severe
85	12.0	10.8	9.6	8.4	108	17.8	16.0	14.2	12.5
85.5	12.1	10.9	9.7	8.5	108.5	18.0	16.2	14.4	12.6
86	12.2	11.0	9.8	8.5	109	18.1	16.3	14.5	12.7
86.5	12.3	11.1	9.8	8.6	109.5	18.3	16.5	14.6	12.8
87	12.4	11.2	9.9	8.7	110	18.4	16.6	14.7	12.9
87.5	12.5	11.3	10.0	8.8	110.5	18.6	16.7	14.9	13.0
88	12.6	11.3	10.1	8.8	111	18.8	16.9	15.0	13.2
88.5	12.8	11.5	10.2	9.0	111.5	18.9	17.0	15.1	13.2
89	12.9	11.6	10.3	9.0	112	19.1	17.2	15.3	13.4
89.5	13.0	11.7	10.4	9.1	112.5	19.3	17.4	15.4	13.5
90	13.1	11.8	10.5	9.2	113	19.4	17.5	15.5	13.6
90.5	13.2	11.9	10.6	9.2	113.5	19.6	17.6	15.7	13.7
91	13.3	12.0	10.6	9.3	114	19.8	17.8	15.8	13.9
91.5	13.4	12.1	10.7	9.4	114.5	19.9	17.9	15.9	13.9
92	13.6	12.2	10.9	9.5	115	20.1	18.1	16.1	14.1
92.5	13.7	12.3	11.0	9.6	115.5	20.3	18.3	16.2	14.2
93	13.8	12.4	11.0	9.7	116	20.5	18.5	16.4	14.4
93.5	13.9	12.5	11.1	9.7	116.5	20.7	18.6	16.6	14.5
94	14.0	12.6	11.2	9.8	117	20.8	18.7	16.6	14.6
94.5	14.2	12.8	11.4	9.9	117.5	21.0	18.9	16.8	14.7
95	14.3	12.9	11.4	10.0	118	21.2	19.1	17.0	14.8
95.5	14.4	13.0	11.5	10.1	118.5	21.4	19.3	17.1	15.0
96	14.5	13.1	11.6	10.2	119	21.6	19.4	17.3	15.1
96.5	14.7	13.2	11.8	10.3	119.5	21.8	19.6	17.4	15.3
97	14.8	13.3	11.8	10.4	120	22.0	19.8	17.6	15.4
97.5	14.9	13.4	11.9	10.4	120.5	22.2	20.0	17.8	15.5
98	15.0	13.5	12.0	10.5	121	22.4	20.2	17.9	15.7
98.5	15.2	13.7	12.2	10.6	121.5	22.6	20.3	18.1	15.8
99	15.3	13.8	12.2	10.7	122	22.8	20.5	18.2	16.0
99.5	15.4	13.9	12.3	10.8	122.5	23.1	20.8	18.5	16.2
100	15.6	14.0	12.5	10.9	123	23.3	21.0	18.6	16.3
100.5	15.7	14.1	12.6	11.0	123.5	23.5	21.2	18.8	16.5
101	15.8	14.2	12.6	11.1	124	23.7	21.3	19.0	16.6
101.5	16.0	14.4	12.8	11.2	124.5	24.0	21.6	19.2	16.8
102	16.1	14.5	12.9	11.3	125	24.2	21.8	19.4	16.9
102.5	16.2	14.6	13.0	11.3	125.5	24.4	22.0	19.5	17.1
103	16.4	14.8	13.1	11.5	126	24.7	22.2	19.8	17.3
103.5	16.5	14.9	13.2	11.6	126.5	24.9	22.4	19.9	17.4
104	16.7	15.0	13.4	11.7	127	25.2	22.7	20.2	17.6
104.5	16.8	15.1	13.4	11.8	127.5	25.4	22.9	20.3	17.8
105	16.9	15.2	13.5	11.8	128	25.7	23.1	20.6	18.0
105.5	17.1	15.4	13.7	12.0	128.5	26.0	23.4	20.8	18.2
106	17.2	15.5	13.8	12.0	129	26.2	23.6	21.0	18.3
106.5	17.4	15.7	13.9	12.2	129.5	26.5	23.9	21.2	18.6
107	17.5	15.8	14.0	12.3	130	26.8	24.1	21.4	18.8
107.5	17.7	15.9	14.2	12.4					
category					weight for height				
well nourished					>90% of median				
mild malnutrition					80-89% of median				
moderate malnutrition					70-79% of median				
severe malnutrition					<70% of median				

DRUGS DURING PREGNANCY

Always ask a woman if she is pregnant, before treating her.

Give medicine carefully during pregnancy.

Some drugs can be given safely (Table A).

Some drugs are not recommended in pregnancy, but the benefits outweigh the risks, so they can be given after discussion with the doctor. Some are contraindicated only during one part of the pregnancy. (Table B).

Some drugs should not be given at all in pregnancy (Table C).

TABLE - A

Drugs safe to use in pregnancy:

ALUMINIUM HYDROXIDE
METHYLDOPA
AMPI/AMOXICILLIN
METOCLOPRAMIDE
CEFTRIAZONE/CEPHALOSPORINS
MULTIVITAMINS
CHLOROQUINE
NICLOSAMIDE
CLOXACILLIN
NYSTATIN
DEXAMETHASONE
ORS
ERYTHROMYCIN
PARACETAMOL
FERROUS SULPHATE
PENICILLINS
FOLIC ACID
QUININE
HYDRALAZINE
SALBUTAMOL
VITAMIN B1

TABLE - B

Drugs that must be prescribed with care; if necessary discuss with the doctor:

ADRENALINE
DIAZEPAM
AMINOPHYLLINE
FUROSEMIDE
ARTESUNATE
GENTAMICIN
ATROPINE/HYOSCINE
INDOMETHACIN
ASA (ASPIRIN)
METRONIDAZOLE
CIPROFLOXACIN
PHENOBARBITONE
CHLORPHENIRAMINE
PREDNISOLONE
PRAZIQUANTEL

TABLE - C

Drugs Contraindicated:

CHLORAMPHENICOL
COTRIMOXAZOLE
CIMETIDINE
ERGOMETRINE
HYDROCHLOROTHIAZIDE
GRISEOFULVIN
MEBENDAZOLE
MEFLOQUINE
PRIMAQUINE
TETRACYCLINES (including
DOXYCYCLINE)
VITAMIN A
STREPTOMYCIN

MALARIA TREATMENT TABLES

For doses and length of treatment: see **Malaria Chapter**, p. 24.

ARTESUNATE 50

This table is made calculating 1 tablet = 50 mg.

There are also 200 mg tablets: in this case calculate according to strength.

WEIGHT kg	4 mg/kg mg-tablets	2 mg/kg mg-tablets	WEIGHT kg	4 mg/kg mg-tablets	2 mg/kg mg-tablets
5-7	20-28mg=1 ¹ / ₂ t	10-14mg=1 ¹ / ₄ t	37-39	148-156mg=3t	74-76mg=1 ¹ / ₂ t
8-9	32-36mg=3 ³ / ₄ t	16-18mg=1 ¹ / ₄ t	40	160mg=3 ¹ / ₄ t	80mg=1 ¹ / ₂ t
10	40mg=3 ³ / ₄ t	20mg=1 ¹ / ₂ t	41-42	164-168mg=3 ¹ / ₄ t	82-84mg=1 ³ / ₄ t
11-14	44-56mg=1t	22-28mg=1 ¹ / ₂ t	43-45	172-180mg=3 ¹ / ₂ t	86-90mg=1 ³ / ₄ t
15	60mg=1 ¹ / ₄ t	30mg=1 ¹ / ₂ t	46	184mg=3 ³ / ₄ t	92mg=1 ³ / ₄ t
16-17	64-68mg=1 ¹ / ₄ t	32-34mg=3 ³ / ₄ t	47-48	188-192mg=3 ³ / ₄ t	94-96mg=2t
18-20	72-80mg=1 ¹ / ₂ t	36-40mg=3 ³ / ₄ t	49-51	196-204mg=4t	98-102mg=2t
21	84mg=1 ³ / ₄ t	42mg=3 ³ / ₄ t	52-53	208-212mg=4 ¹ / ₄ t	104-106mg=2 t
22-23	88-92mg=1 ³ / ₄ t	44-46mg=1t	54	216mg=4 ¹ / ₄ t	108mg=2 ¹ / ₄ t
24-26	96-104mg=2 t	48-52mg=1t	55-57	220-228mg=4 ¹ / ₂ t	110-114mg=2 ¹ / ₄ t
27-28	108-112mg=2 ¹ / ₄ t	54-56mg=1t	58-59	232-236mg=4 ³ / ₄ t	116-118mg=2 ¹ / ₄ t
29	116mg=2 ¹ / ₄ t	58mg=1 ¹ / ₄ t	60	240mg=4 ³ / ₄ t	120mg=2 ¹ / ₂ t
30-32	120-128mg=2 ¹ / ₂ t	60mg=1 ¹ / ₄ t	61-64	244-256mg=5t	122-128mg=2 ¹ / ₂ t
33-34	132-136mg=2 ³ / ₄ t	66-68mg=1 ¹ / ₄ t	65	260mg=5 ¹ / ₄ t	130mg=2 ¹ / ₂ t
35	140mg=2 ³ / ₄ t	70mg = 1 ¹ / ₂ t	66-67	264-268mg=5 ¹ / ₄ t	132-134mg=2 ³ / ₄ t
36	144mg=3t	72mg = 1 ¹ / ₂ t	68-70	272-280mg=5 ¹ / ₂ t	136-140mg=2 ³ / ₄ t

CHLOROQUINE

This table is made calculating 1 tablet = 150 mg of Chloroquine base.

weight kg mg	total dose (25 mg/kg) tablets	dose 1 10mg/kg tablets	dose 2 10mg/kg tablets	dose3 5 mg/kg	weight kg mg	total dose (25 mg/kg) tablets	dose 1 10mg/kg tablets	dose 2 10mg/kg tablets	dose3 5 mg/kg
5	125mg	1/4 t	1/4 t	1/4 t	38	950 mg	2 + 1/2 t	2 + 1/2 t	1 + 1/4 t
6-7	150- 175 mg	1/2 t	1/4 t	1/4 t	39-40	975-1000 mg	2 + 1/2 t	2 + 1/2 t	1 + 1/2 t
8	200 mg	1/2 t	1/2 t	1/4 t	41	1025 mg	2 + 3/4 t	2 + 3/4 t	1 + 1/4 t
9-10	225-250 mg	1/2 t	1/2 t	1/2 t	42-43	1050-1075 mg	2 + 3/4 t	2 + 3/4 t	1 + 1/2 t
11	275 mg	3/4 t	3/4 t	1/4 t	44	1100 mg	3 t	3 t	1 + 1/4 t
12-13	300-325 mg	3/4 t	3/4 t	1/2 t	45-46	1125-1150 mg	3 t	3 t	1 + 1/2 t
14	350 mg	1 t	1 t	1/4 t	47	1175 mg	3 t	3 t	1 + 3/4 t
15-16	375-400 mg	1 t	1 t	1/2 t	48-49	1200-1225 mg	3 + 1/4 t	3 + 1/4 t	1 + 1/2 t
17	425 mg	1 t	1 t	3/4 t	50	1250 mg	3 + 1/4 t	3 + 1/4 t	1 + 3/4 t
18-19	450-475 mg	1 + 1/4 t	1 + 1/4 t	1/2 t	51-52	1275-1300 mg	3 + 1/4 t	3 + 1/4 t	2 t
20	500 mg	1 + 1/4 t	1 + 1/4 t	3/4 t	53	1325 mg	3 + 1/2 t	3 + 1/2 t	1 + 3/4 t
21-22	525-550 mg	1 + 1/2 t	1 + 1/2 t	1/2 t	54-55	1350-1375 mg	3 + 1/2 t	3 + 1/2 t	2 t
23	575 mg	1 + 1/2 t	1 + 1/2 t	3/4 t	56	1400 mg	3 + 3/4 t	3 + 3/4 t	1 + 3/4 t
24-25	600-625 mg	1 + 1/2 t	1 + 1/2 t	1 t	57-58	1425-1450 mg	3 + 3/4 t	3 + 3/4 t	2 t
26	650 mg	1 + 3/4 t	1 + 3/4 t	3/4 t	59	1475 mg	4 t	4 t	1 + 3/4 t
27-28	675-700 mg	1 + 3/4 t	1 + 3/4 t	1 t	60-61	1500-1525 mg	4 t	4 t	2 t
29	725 mg	2 t	2 t	3/4 t	62	1550 mg	4 t	4 t	2 + 1/4 t
30-31	750-775 mg	2 t	2 t	1 t	63-64	1575-1600 mg	4 + 1/4 t	4 + 1/4 t	2 t
32	800 mg	2 t	2 t	1 + 1/4 t	65	1625 mg	4 + 1/4 t	4 + 1/4 t	2 + 1/4 t
33-34	825-850 mg	2 + 1/4 t	2 + 1/4 t	1 t	66-67	1650-1675 mg	4 + 1/4 t	4 + 1/4 t	2 t
35	875 mg	2 + 1/4 t	2 + 1/4 t	1 + 1/4 t	68	1700 mg	4 + 1/4 t	4 + 1/4 t	2 + 1/4 t
36-37	900-925 mg	2 + 1/2 t	2 + 1/2 t	1 t	69-70	1725-1750 mg	4 + 1/4 t	4 + 1/4 t	2 + 1/2 t

MEFLOQUINE ပုံ

This table is made calculating ၁ tablet = 250 mg.

Do not repeat Mefloquine in children < 2 months: it can cause toxicity.

WEIGHT kg	TOTAL DOSE 25mg/kg mg- tablets	FIRST DOSE 15mg/kg tablets	SECOND DOSE 10mg/kg tablets	WEIGHT kg	TOTAL DOSE 25mg/kg mg- tablets	FIRST DOSE 15mg/kg tablets	SECOND DOSE 10mg/kg tablets
5-6	125-150 mg=1/2t	1/4	1/4	39-41	975-1025mg=4t	2 1/2 t	1 1/2 t
7-8	175-200 mg=3/4	1/2	1/4	42-43	1050-1075mg=4?t	2 1/2 t	1 3/4 t
9-11	225-275 mg=1t	1/2	1/2	44-46	1100-1150mg=4?t	2 3/4 t	1 3/4 t
12-13	300-325 mg=1 1/4	3/4	1/2	47-48	1175-1200mg=4?t	2 3/4 t	2 t
14-16	350-400 mg=1 1/2t	1 t	1/2 t	49-51	1225-1275mg=5t	3 t	2 t
17-18	425-450 mg=1 3/4t	1 t	3/4 t	52-53	1300-1325mg=5?t	3 1/4 t	2 t
19-21	475-525 mg=2t	1 1/4 t	3/4 t	54-56	1350-1400mg=5?t	3 1/4 t	2 1/4 t
22	550mg=2 1/4t	1 1/4 t	1 t	57-58	1425-1450mg=5?t	3 1/2 t	2 1/4 t
23	575mg=2 1/4 t	1 1/2 t	3/4	59-60	1475-1500mg=6t	3 1/2 t	2 1/2 t
24-26	600-650 mg=2 1/2t	1 1/2 t	1 t	61	1525mg=6t	3 3/4 t	2 1/4 t
27-28	675-700 mg=2 3/4t	1 3/4 t	1 t	62-63	1550-1575mg=6?t	3 3/4 t	2 1/2 t
29-31	725-775 mg=3t	1 3/4 t	1 1/4 t	64	1600mg=6?t	3 3/4 t	2 3/4 t
32-33	800-825 mg=3 1/4t	2 t	1 1/4 t	65-66	1625-1650mg=6?t	4 t	2 1/2 t
34-36	850-900 mg=3 1/2 t	2 t	1 1/2 t	67-68	1675-1700mg=6?t	4 t	2 3/4 t
37-38	925-950 mg=3 3/4t	2 1/4 t	1 1/2 t	69-70	1725-1750mg=7t	4 1/4 t	2 3/4 t

Do not give: Pregnancy; History of mental illness; History of epilepsy; Received Mefloquine in the past 63 days.

QUININE 300 mg tablet

This table is made calculating 300 mg tablet = 300 mg.

WEIGHT kg	DOSE = 10mg/kg TID	
	mg	Tab
< 5	75 mg BID	1/4 BID
6-9	75 mg TID	1/4 TID
10-16	150 mg TID	1/2 TID
17-23	225 mg TID	3/4 TID
24-33	300 mg TID	1 TID
34-50	450 mg TID	1½ TID
> 50	600 mg TID	2 TID

ARTEMETHER 80 mg vial

This table is made calculating 80 mg vial = 80 mg in 1cc.

Weight kg	Loading dose 3.2 mg/kg cc	Maintenance dose 1.6 mg/kg cc	Weight kg	Loading dose 3.2 mg/kg cc	Maintenance dose 1.6 mg/kg cc
2-3	0.1	0.05	43	1.7	0.9
4-6	0.2	0.1	44-46	1.8	0.9
7	0.3	0.1	47	1.9	0.9
8	0.3	0.2	48	1.9	1.0
9-11	0.4	0.2	49-51	2.0	1.0
12	0.5	0.2	52	2.1	1.0
13	0.5	0.3	53	2.1	1.1
14-16	0.6	0.3	54-56	2.2	1.1
17	0.7	0.3	57	2.3	1.1
18	0.7	0.4	58	2.3	1.2
19-21	0.8	0.4	59-61	2.4	1.2
22	0.9	0.4	62	2.5	1.2
23	0.9	0.5	63	2.5	1.3
24-26	1.0	0.5	64-66	2.6	1.3
27	1.1	0.5	67	2.7	1.3
28	1.1	0.6	68	2.7	1.4
29-31	1.2	0.6	69-71	2.8	1.4
32	1.3	0.6	72	2.9	1.4
33	1.3	0.7	73	2.9	1.5
34-36	1.4	0.7	74-76	3.0	1.5
37	1.5	0.7	77	3.1	1.5
38	1.5	0.8	78	3.1	1.6
39-41	1.6	0.8	79-80	3.2	1.6
42	1.7	0.8			

QUININE IV infusion LOADING DOSE = 20mg/kg

This table is made calculating

1 vial = 600 mg in 2cc.

IV fluid giving set: 1cc = 20 drops.

20 mg/kg Quinine in 4 hours. Followed by iv fluids alone in 4 hours.

You can dilute Quinine in D5W, D10W, D5S and NSS.

Use **D10W** for pregnant women.

	H0		H4	
Weight kg	cc of Quinine in IV fluids	drop/mn	IV fluids alone	drop/mn
4-6	0.4 cc in 100 cc	8d/mn	100 cc	8d/mn
7-9	0.6 cc in 150 cc	13d/mn	150 cc	13d/mn
10-12	0.8 cc in 200 cc	17d/mn	200 cc	17d/mn
13-15	1 cc in 250 cc			
16-18	1.2 cc in 250 cc			
19 -21	1.4 cc in 250 cc			
22-24	1.6 cc in 250 cc			
25-27	1.8 cc in 250 cc			
28-31	2 cc in 250 cc			
32-34	2.2 cc in 250 cc			
35-37	2.4 cc in 250 cc	21d/mn	250 cc	21d/mn
38-40	2.6 cc in 250 cc			
41-43	2.8 cc in 250 cc			
44-46	3 cc in 250 cc			
47-49	3.2 cc in 250 cc			
50-52	3.4 cc in 250 cc			
53-55	3.6 cc in 250 cc			
56-59	3.8 cc in 250 cc			
>59	4 cc in 250 cc			

QUININE IV infusion MAINTENANCE DOSE = 10 mg/kg TID

This table is made calculating **1 vial = 600 mg in 2cc.**
IV fluid giving set: 1cc = 20 drops.

You can dilute Quinine in D5W, D10W, D5S and NSS.

10 mg/kg DOSE:

Weight kg	cc of Quinine in IV fluids	drop/min
4-6	0.2 cc in 100 cc	8d/mn
7-9	0.3 cc in 150 cc	13d/mn
10-12	0.4 cc in 200 cc	17d/mn
13-15	0.5 cc in 250 cc	
16-18	0.6 cc in 250 cc	
19 -21	0.7 cc in 250 cc	
22-24	0.8 cc in 250 cc	
25-27	0.9 cc in 250 cc	
28-31	1 cc in 250 cc	
32-34	1.1 cc in 250 cc	
35-37	1.2 cc in 250 cc	
38-40	1.3 cc in 250 cc	21d/mn
41-43	1.4 cc in 250 cc	
44-46	1.5 cc in 250 cc	
47-49	1.6 cc in 250 cc	
50-52	1.7 cc in 250 cc	
53-55	1.8 cc in 250 cc	
56-59	1.9 cc in 250 cc	
>59	2 cc in 250 cc	

QUININE LOADING DOSE = 20mg/kg

This table is made calculating: 1 vial = 600 mg in 2cc.

- 1) Dilute 1 vial (2cc) of Quinine in 3 cc of water for injection. It makes 5 cc of solution.
- 2) Take the quantity you need according to the weight of the patient. Inject half of this dose in each thigh.
- 3) The injection must be done in very clean conditions (wash your hands, clean the thigh with Savlon, inject deeply). Otherwise, you may provoke an abscess.
- 4) Tell the patient that the injection is going to be painful.

Weight kg	Diluted Quinine GIVE	Weight kg	Diluted Quinine GIVE
4-6	1 cc	35-37	6 cc
7-9	1.5 cc	38-40	6.5 cc
10-12	2 cc	41-43	7 cc
13-15	2.5 cc	44-46	7.5 cc
16-18	3 cc	47-49	8 cc
19 -21	3.5 cc	50-52	8.5 cc
22-24	4 cc	53-55	9 cc
25-27	4.5 cc	56-59	9.5 cc
28-31	5 cc	>59	10 cc
32-34	5.5 cc		

QUININE MAINTENANCE DOSE = 10mg/kg TID

This table is made calculating: 1 vial = 600 mg in 2cc.

Follow above 1-4 steps.
10 mg/kg DOSE:

Weight kg	Diluted Quinine GIVE	Weight kg	Diluted Quinine GIVE
4 to 6 kg	0.5 cc	35 to 37 kg	3 cc
7 to 9 kg	0.7 cc	38 to 40 kg	3.2 cc
10 to 12 kg	1 cc	41 to 43 kg	3.5 cc
13 to 15 kg	1.2 cc	44 to 46 kg	3.7 cc
16 to 18 kg	1.5 cc	47 to 49 kg	4 cc
19 to 21 kg	1.7 cc	50 to 52 kg	4.2 cc
22 to 24 kg	2 cc	53 to 55 kg	4.5 cc
25 to 27 kg	2.2 cc	56 to 59 kg	4.7 cc
28 to 31 kg	2.5 cc	> 59 kg	5 cc
32 to 34 kg	2.7 cc		

DRUG DOSES

po = oral
mcg=microgram
im = intramuscular
mg = milligram
iv – intravenous
g = gram
sc = subcutaneous
kg = kilogram
pr = per rectum

BID = 2 times/day = every 12 hours
IU = International Units
TID = 3 times/day = every 8 hours
S-E = Side effects
QID = 4 times/day = every 6 hours
Max = Maximum
stat = one dose only
Start = Starting
pv = per vagina

- **Length of treatment (=how many days) depends on the infection treated: see relevant Chapter.**
- **Only more common side effects are listed. Most of the drugs can give Diarrhoea, Nausea and Vomiting.**
- **All drugs can give allergic reactions, rashes and anaphylactic shock (severe allergic reaction).**
- **Always be careful when you prescribe for a pregnant woman: see pages 169-170.**
- **If Kidney and/or liver functions are not good, be careful prescribing full dose of the majority of drugs.**

ACETYL SALICYLIC ACID = ASPIRIN = ASA

CHILD under 12 years	po	if possible, do not use (use Paracetamol)	Be careful: Asthma; G6PD deficiency; Gastric pain. Do not give: Children<12 years; Gastric ulcer; Dengue Fever; Gout. S-E: Gastric irritation; Bronchospasm. Risk of S-E increased by other Anti-inflammatories. A decreases diuretic effect of Spironolactone.
CHILD over 12 years	po	10-15 mg/kg QID	
ADULT	po	300-900 mg QID	
			Max 4 g/day

ADRENALINE 1:1,000

1 amp = 1 cc = 1 mg

Doses for **Anaphylactic shock, Severe Allergic Reactions:**

CHILD	< 6 months	im	0.05 cc
	6 months – 6 years	im	0.12 cc
	6 – 12 years	im	0.25 cc
CHILD > 12 years and ADULT		im	0.5 cc

- **im is better absorbed** than sc and is now the recommended route of injection.
- Repeat dose at 5-10 minutes intervals until BP and pulse are back to normal.

ALBENDAZOLE

CHILD <=2 years	po	<i>for Roundworms</i>	200 mg stat
ADULT and > 2 years	po		400 mg stat
CHILD <=2 years	po	<i>for Strongyloides</i>	200 mg OD x 3 days
ADULT and > 2 years	po		400 mg OD x 3 days

- Repeat dose after 3 weeks if large infestation.
- S-E:** Headache.

ALUMINIUM HYDROXIDE

CHILD	po	25 mg/kg TID or QID
ADULT	po	500 mg-1g TID or QID

Take between meals and/or at bedtime.

A. causes reduced absorption of Ciprofloxacin; Enalapril; Chloroquine; Digoxin; Doxycycline; Isoniazid; Norfloxacin; Ofloxacin; Phenytoin; Rifampicin; Tetracycline.

AMINOPHYLLINE

ADULT	po	100-300 mg TID or QID
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- Take after food.
- Oral Aminophylline is **not very effective** in controlling asthma. If possible, use steroid inhalers instead (plus salbutamol inhaler when patient is wheezy).

		Loading dose	Maintenance dose
CHILD	infusion	5 mg/kg over 30 minutes	1 mg/kg/hour
ADULT	infusion	250 mg over 30 minutes	0.5 mg/kg/hour

- Dilute in D5W or NSS.
- Do not give loading dose if patient already taking oral Aminophylline.

Be careful in: Cardiac disease; Hypertension; Epilepsy;

Hyperthyroidism; Peptic ulcer.

S-E: Tachycardia; Palpitations; Headache; Insomnia; Arrhythmias, Convulsions.

AMOXICILLIN

CHILD	po	10-25 mg/kg TID
ADULT	po	250 mg-1g TID

Be careful: patients with glandular fever can get severe rash. Not usually given for sore throat.

AMPICILLIN

CHILD	po	10-25mg/kg QID
ADULT	po	500mg-1g QID

- Take at least 30 minutes before food. Less than half dose is absorbed and absorption is worse if taken with food. **If available, prefer Amoxycillin oral.**
- Be careful:** see Amoxycillin.

CHILD	1 st week of life	im/iv	25 mg/kg BID	severe infections	50 mg/kg BID
	after 1 st week	im/iv	25 mg/kg QID		50 mg/kg QID
ADULT		im/iv	500 mg QID	im/iv	1-2 g QID

BENZATHINE PENICILLIN

CHILD	im	<i>streptococcal tonsillitis</i> <i>acute rheumatic fever</i>	25.000-50.000 IU/kg STAT (Max 1.2 million IU)
	im	<i>rheumatic fever prophylaxis</i>	25.000-50.000 IU/kg every 4 weeks (max 1.2 million IU/dose)
ADULT	im	<i>streptococcal tonsillitis</i> <i>acute rheumatic fever</i>	1.2 million IU STAT
	im	<i>rheumatic fever prophylaxis</i>	1.2 million IU every 4 weeks
	im	<i>early syphilis</i>	2.4 million IU STAT (in 2 injections sites)
	im	<i>syphilis > 1 year duration</i>	2.4 million IU weekly for 3 weeks (in 2 injection sites)

Be careful: Kidney functions abnormal.
S-E: Allergic reactions; Blood disorders.

BENZYL PENICILLIN

CHILD	1 st week of life	im/iv	25 mg/kg BID	severe infections (meningitis) im/iv	50 mg/kg BID
	1 st -4 th week of life	im/iv	25 mg/kg TID		50 mg/kg TID
	> 4 weeks of life	im/iv	25 mg/kg QID		50-75 mg/kg QID
ADULT		im/iv	600mg-1.2g QID		2.4 g QID

- **Be careful, S-E:** see Benzathine Penicillin.
- **30mg=50 000 IU.**

BUSCOPAN (HYOSCINE BUTYLBROMIDE)

CHILD	< 6 years	not recommended		
	> 6 years	po	not recommended	
		im / iv	0.5 mg/kg/dose	Max 20 mg/daily
ADULT		po	20 mg QID	
		im / iv	20 mg / dose	Max 40 mg/daily

Be careful in: Children; Old people; Hypertension; Diarrhoea.
S-E: Constipation; Urinary urgency and retention; Dry mouth.

CARBAMAZEPINE

		Start dose	Max dose
CHILD	po	2 mg/kg TID	10mg/kg TID
ADULT	po	100 mg BID	2 g

- Do not stop suddenly: decrease slowly: see Epilepsy chapter, page 75.

Be careful in: Heart disease.

S-E: Dizziness; Drowsiness; Confusion; Double vision; Low sodium; Low Red Blood Cells; Low Platelets; Low White Cells.

C. reduces effect of: Doxycycline; Steroids; Contr. Pill.

C. effect reduced by: Chloroquine and Mefloquine.

CEPHALEXIN

CHILD	po	10 mg/kg TID	severe infections	12.5-25 mg/kg QID
ADULT	po	500 mg TID		1 g QID

Do not give, S-E: see Ceftriaxone.

CEFTRIAXONE

CHILD	im / iv	25mg/kg OD	severe infections	50 mg/kg OD or BID
ADULT	im / iv im	1 g OD <i>uncomplicated STIs</i>		1-2g OD or BID 250 mg stat

- doses > 20 mg/kg only iv
- give iv by infusion or slowly over 2-4 min

Do not give: Neonates with jaundice.
S-E: Headache.

CHLORAMPHENICOL

CHILD	po	12.5 mg/kg QID
ADULT	po	500 mg QID

- Use only in serious cases (like meningitis, severe pneumonia).
- Reduce the dose as soon as patient is better, to decrease possibilities of toxicity.

Be careful: Neonates; G6PD deficiency.

Do not give: Pregnancy and Breast feeding.

Toxicity: Aplastic anaemia; Bone marrow suppression; Circulatory collapse.

CHILD	1 st week 2 –4 weeks > 4 weeks	iv/im	severe infections	25 mg/kg OD 25mg/kg BID 25 mg/kg QID	half the dose when patient is getting better
ADULT		iv/im		25 mg/kg QID (max 1g QID)	

CHLORPHENIRAMINE

CHILD < 1 year	not recommended		
1-2 years	po	1 mg BID	Max 3 mg/day
3-5 years	po	1 mg every 4-6 hours	Max 6 mg/day
6-12 years	po	2 mg every 4-6 hours	Max 12 mg/day
ADULT	po iv	4 mg every 4-6 hours 10-20 mg dose	Max 24 mg/day Max 40 mg/day

- give for Allergies, NOT for common cold.
 - after Anaphylactic shock, give for 2 days oral to prevent relapse.
- Be careful:** Prostatic hypertrophy; Urinary retention; Epilepsy.
S-E: Drowsiness; Headache; Urinary retention; Dry mouth; Palpitation; Confusion; Tinnitus.

CHLORPROMAZINE

<i>psychoses, severe anxiety, violent behaviour</i>		Start dose
ADULT	po	25mg TID or 75mg at night
	im	25-50 mg TID or QID

- Old people: half adult dose. Usually 10-25 mg OD or BID is enough for agitated states.
- Risk of contact allergy: do not touch crush tablets; do not touch with hands solution.
- Do not stop suddenly: decrease slowly.
- After im injections, patient should lie down for 30 minutes.

Be careful in: Heart and Lung disease; Acute infections; History of Jaundice; Old people.

Do not give: Pregnancy, Severe Kidney or Liver disease; Epilepsy.

S-E: Tremor; Abnormal movements; Restlessness; Drowsiness; Nightmares; Depression; Jaundice; Convulsions; Blurred vision; Difficulty in passing urine; Hypotension; Tachycardia; Respiratory depression; Anaemia.

C. effect increased by: Alcohol; Anti-inflammatories; Pentazocine.

CHLORPROPAMIDE

		Start dose	Max dose
ADULT	po	250 mg OD	500 mg OD
OLD PEOPLE	po	125 mg OD	500 mg OD

- Can not give with Glibenclamide (same group).
- Can give with Metformin.
- See **Diabetes chapter**, page 70.

Be careful: Old people can go in hypoglycaemia more easily.

Do not give: Breast-feeding.

S-E: Hypoglycaemia; Flushing after alcohol intake.

Hypoglycaemic effect Increased by: Alcohol; Cimetidine; Chloramphenicol; Cotrimoxazole; Propranolol.

Hypoglycaemic effect decreased by: Steroids; Hydrochlorothiazide; Furosemide; Contraceptive Pill.

CIMETIDINE

ADULT	po	400 mg BID x 4-6 weeks
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Be careful in: Liver and Kidney disease.

S-E: Diarrhoea, Nausea, Headache; Dizziness; Rash; Tiredness.

Do not give: Pregnancy

Do not give together with: Phenytoin and Aminophylline.

CIPROFLOXACIN

1. For Typhoid Fever and severe Bacteria Dysentery = 7.5 mg / kg BID for 5-10 days

CHILD		po	125 mg BID
ADULT:	< 40 kg	po	250 mg BID
	> 40 kg	po	500 mg BID

Be careful in: Epilepsy; G6PD deficiency.

S-E: Abdominal pain; Dizziness; Sleep disorders; Convulsions; Jaundice; Renal failure.

Reduced absorption by: Aluminium; Ferrous Sulphate.

2. For STIs: see also p.***

ADULT	po	for Gonorrhoea	500 mg stat
	po	for Chancroid	500 mg BID x 3 days

CLOXACILLIN

CHILD	po iv im	15 mg/kg QID	severe infections iv	1 st week	25-50mg/kg BID
				2-4 weeks	25-50 mg/kg TID
				> 4 weeks	25-50 mg/kg QID
ADULT		500mg QID		ADULT	1-2g QID

- Absorption is not very good: if possible take 1 hour before or 2 hours after meals

S-E: Jaundice; Haemolytic anaemia.

C. can reduce effect of Contr. Pill

CODEINE

CHILD	po	0.5 mg/kg every 4 hours	
ADULT	po	30-60 mg every 4 hours	Max 240 mg/da

- See Pain chapter, page 10.

Do not give, Be careful and S-E: see Pentazocine.

COTRIMOXAZOLE

CHILD:	up to 5 months	po	120 mg BID	double in severe infections
	6 months – 5years	po	240 mg BID	
	6-12 years	po	480 mg BID	
ADULT		po	960 mg BID	

for use in HIV patients, see AIDS Chapter, page 135.

Be careful in: Asthma; G6PD deficiency.

Do not give: Pregnancy, Blood disorders; Liver or Kidney failure.

S-E: Blood disorders (low platelets; low white counts): stop.

C. increases effect of: Chlorpropamide and Glibenclamide.

DEXAMETHASONE

slow iv/im 1 amp = 1cc = 4 mg

Doses for **Anaphylactic shock, severe Allergic reactions:**

CHILD < 8 kg	iv / im	0.25 cc
8-15 kg	iv / im	0.5 cc
> 15 kg	iv / im	1 cc
ADULT	iv / im	1-2 cc

DEXTROSE 50%

CHILD and ADULT	slow iv	1 ml / kg
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The solution is very irritant for veins: give via a large vein and large cannula.

DIAZEPAM

CHILD	po iv / pr	0.04 – 0.2 mg/kg BID or TID 0.2 – 0.3 mg/kg stat (Max 3mg/kg/day)
ADULT	po iv / pr	2-10 mg BID or TID 10-20 mg stat

- Do not give for long time.
 - See **Convulsions** chapter, page 15.
 - For alcohol withdrawal, see Chapter, page 161.
- Be careful in:** Respiratory diseases; Drug or alcohol abuse.

Do not use: Respiratory depression; asthma; Liver failure; Depression; Chronic psychosis.

Do not give with: Chlorpheniramine; Phenytoin.

DICLOFENAC

CHILD	po	1 mg / kg BID or TID	Max 50 mg/day
ADULT	po im	25-50 mg TID 75 mg OD	Max. 150 mg/day

- See Ibuprofen.

DIGOXIN

CHILD	po	0.005 mg/kg BD
ADULT	po	0.125 - 0.250 mg OD
OLD PEOPLE	po	0.0625 - 0.125 mg OD

- First dose: see **Heart Failure** chapter, page 66.
- Be careful:** Thyroid disease. Old people. Low potassium, (if given with Diuretic, prefer Spironolactone).

Too high dose (toxic effects): Nausea and Vomiting; Vision problems; Headache; Drowsiness; Confusion Depression.

D. effect increased by: Erythromycin; Quinine.

Risk toxic effects increased if given with drugs decreasing.

Potassium: Furosemide; Hydrochlorothiazide; Steroids; Propranolol.

DOXYCYCLINE

CHILD < 8 years	not recommended***	
CHILD > 8 years and ADULT	po	2 mg/kg BID or 4 mg/kg OD

D. absorption reduced by: Aluminium; Iron.

D. effect reduced by: Carbamazepine; Phenobarbital; Phenytoin.

*** Exception: see Scrub Typhus section, page 129.

S-E: Allergic reactions; Headache.

Do not give: Pregnancy 142; Children < 8 years.

ENALAPRIL

		Start dose	Max dose
ADULT	po	5 mg OD	40 mg OD
OLD PEOPLE	po	2.5 mg OD	40 mg OD

See **Hypertension** chapter, page 61.

Be careful: Using with other diuretics; Not normal kidney function.

Do not give: Pregnancy.

S-E: Severe Hypotension; Abnormal Kidney function; Dry cough.

E. absorption reduced by: Aluminium.

E. effect increased by: Alcohol; Nitrates; other anti-HBP drugs.

ERGOMETRINE

Incomplete abortion and post-partum haemorrhage:

ADULT	im or slow iv	0.2 mg stat
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- In PPH you can repeat the dose 2 more times if bleeding continues.
- iv works more quickly but should be given over 1 minute.
- see **Common Obstetric Problem** chapter, page 146.

Do not give: High Blood Pressure and Eclampsia (give Oxytocin); 1st and 2nd stage of Labour.

S-E: Rise in Blood Pressure; Nausea; Vomiting; Headache; Dizziness; Tinnitus; Abdominal Pain; Chest Pain; Palpitation; Tachycardia.

ERYTHROMYCIN

CHILD	10 mg / kg QID	severe infections	15-25 mg/kg QID
ADULT	250-500 mg QID		750mg-1g QID

You can use E. in patients allergic to Penicillins.

S-E: Diarrhoea; Rashes.

If possible do not give with: Aminophylline; Carbamazepine; Cimetidine; Digoxin.

ETHAMBUTOL

Use only for TB treatment together with other drugs (never alone):*

CHILD and ADULT	po	15-20 mg/kg OD
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*See **TB Chapter, page 50.**

- Test visual acuity before giving and at every follow-up visit.

Be careful: Reduce dose in kidney disease, old people.

Do not give: Poor vision, deaf.

S-E: Eye toxicity; Peripheral neuritis; Skin rash.

FERROUS SULPHATE

CHILD up to 5 kg	po	50 mg OD x 3 months
CHILD 5-9 kg	po	100 mg OD x 3 months
CHILD 10 kg and over ADULT	po	200 mg OD x 3 months

- Stool becomes black colour.
- S-E:** Gastric irritation; Constipation.

FS reduces absorption of: Ciprofloxacin; Doxycycline.

FS reduces effect of: Methyl dopa.

- After Hb is back to normal, 3 more months or therapy are needed to fill the iron stores in the body.
- If a breast-fed baby is anaemic: give Ferrous Sulphate and Folic Acid to the mother.

FLUCONAZOLE

For Treatment and Prophylaxis of Opportunistic Infections in HIV patients: see **AIDS chapter**, page 138-140.

FOLIC ACID

CHILD	po	1/4 tab OD x 3 months
ADULT	po	1 tab OD x 3 months

FUROSEMIDE

CHILD	po	<i>nephrotic syndrome</i>	1 mg/kg OD	Max 20 mg /day
	slow iv	<i>heart failure, hypertensive crisis</i>	1 mg/kg	
ADULT	po	<i>oedema</i>	20-80 mg daily	
	po	<i>nephrotic syndrome</i>	1 mg/kg OD	
	slow iv	<i>heart failure</i>	40-80 mg dose	

- See **Nephrotic Syndrome** and **Hypertension** chapters, page 103 and page 61.
- Often the cause of oliguria is dehydration: if patient is dry, give bolus of Normal Saline before Furosemide.

Be careful in: Hypotension; Liver failure.

S-E: Low sodium and low potassium; Hypotension; High glucose.

Do not give with: Indomethacin (increased risk of Kidney toxicity/Indomethacin decreases diuretic effect).

If possible, do not give with Gentamicin and Streptomycin (see Gentamicin).

F. effect decreased by **Contrac Pill**.

F. decreases effect of: Anti-diabetics.

Risk of low potassium increased if used with: Steroids.

GENTAMICIN

CHILD	1 st week	iv / im	5 mg / kg OD
	1 week – 10 years	iv / im	7.5 mg / kg OD
ADULT and CHILD > 10 years		iv / im	5- 6 mg / kg OD (Max360 mg)

- **Given OD decreases toxicity.**

Be careful: Old people; Kidney failure (reduce dose in severe Kidney failure).

S-E: Ear and kidney toxicity.

If possible, do not give with Furosemide. If you have to, give one drug in the morning and one in the evening.

GLIBENCLAMIDE

		Start dose	Max dose
ADULT	po	5 mg OD	15 mg OD
OLD PEOPLE	po	2.5 mg OD	15 mg OD

- Cannot give with Chlorpropamide (same group).
- Can give with Metformin.
- **S-E and Interactions:** under Chlorpropamide.

GRISEOFULVIN

CHILD	po	10-20 mg/kg OD
ADULT	po	500mg

- **Avoid pregnancy during and for one month after treatment.**
- **Men should not father children during and for 6 months after treatment.**
- **Take after meal.**

S-E: Headache; Dizziness; Blood disorders.

Do not give: Pregnancy; Severe liver disease.

G reduces effect of **Contraceptive Pill**.

HALOPERIDOL

psychoses, mania, violent behaviour

ADULT	po im	1.5-3 mg BID or TID 2-10 mg dose
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- Old people: half dose.
Be careful in: see Chlorpromazine.
Do not give: see Chlorpromazine.
S-E: See Chlorpromazine.
If possible do not give with Indomethacin (severe drowsiness).

short-term for severe anxiety

ADULT	po	0.5 mg BID
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intractable hiccup

ADULT	po	1.5 mg TID
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HYDRALAZINE

		Start dose	Max dose
ADULT	po	25mg BID	50 mg BID

- See **Hypertension Chapter**, page 61.
Do not give: Stroke; Renal disease; Pulse Rate>140/min.
S-E: Tachycardia; Nausea; Vomiting; Palpitations; Flushing;

Hypertensive crisis:

ADULT	iv	5mg Repeat every 20-30 minutes until diastolic < 110 mmHg	Max Dose 20 mg
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Hypotension; Headache; Dizziness.
When given iv: Rapid and severe drop in BP.
H effect increased by: Alcohol; other anti-HBP drugs.
H effect decreased by: Anti-inflammatory; Steroids; Contraceptive "Pill".

HYDROCHLOROTHIAZIDE

		Start dose	Max dose
ADULT	po	12.5 mg OD	50 mg OD

- See **Hypertension Chapter**, page 61.
S-E: Low potassium (not at low doses); High glucose.
Do not give: Severe renal and liver failure; Gout; Pregnancy.
Others: see **Furosemide**.

IBUPROFEN

CHILD	po	2.5-10 mg/kg TID or QID
ADULT	po	150-600 mg TID or QID

Be careful: Old people. Kidney function abnormal; Asthma.
Do not give: Pregnancy and breastfeeding; Patients allergic to ASA. Peptic ulcer.

S-E: Gastric irritation and bleeding; Bronchospasm; Headache; Dizziness; Haematuria; Oedema; Renal failure.

I. decreases effect of Anti-hypertensive drugs.

With Diuretics: I. increases risk of kidney toxicity.

With Steroids: I. increases risk of gastric ulcer.

INDOMETHACIN

CHILD	po	0.5-1 mg/kg TID or QID
ADULT	po	25-50 mg TID or QID

- See **Ibuprofen**.
Do not give with Haloperidol and Furosemide.

ISONIAZID

Use only for TB treatment together with other drugs (never alone):*

CHILD	po	5-10 mg/kg OD
ADULT	po	300 mg OD

*See TB Chapter, page 50.

Be careful: Liver and Kidney disease; Epilepsy; Psychosis; Alcoholism.

S-E: Peripheral neuropathy (to prevent give 10mg od vitamin B6); Eye toxicity; Liver toxicity; Convulsions; Psychosis.

I. increases effect of Carbamazepine and Phenytoin.

ISOSORBIDE MONONITRATE

		Start dose	Max dose
ADULT	po	10 mg BID	30 mg QID

Be careful: Hypothyroidism.

Do not give: Hypotension; Heart valve problems; Severe anaemia.

S-E: Severe Headache; Flushing; Hypotension; Tachycardia.

MEBENDAZOLE

CHILD > 2 years	po	100 mg BID x 3 days
ADULT		

Do not give: Pregnancy; Children < 2 years.

METFORMIN

		Start dose	Max dose
ADULT	po	500 mg TID	1 g TID

• See Diabetes Chapter, page 70.

• Can give with Glibenclamide or Chlorpropamide.

Do not give: Pregnancy; Breastfeeding; not normal Kidney functions; Heart failure; Alcoholism.

Hypoglycaemic effect increased by: Alcohol; Cimetidine; Propranolol.

Hypoglycaemic effect decreased by: Steroids; Hydrochlorothiazide; Furosemide; Contraceptive Pill.

METHYLDOPA

		Start dose	Max dose
ADULT	po	250 mg BID	3g daily
OLD PEOPLE	po	125 mg BID	2g daily

• See Hypertension Chapter, page 61.

Do not give: Depression; Active liver disease.

S-E: Nausea; Stomatitis; Dry mouth; Oedema; Sedation; Headache; Nightmares; Jaundice; Anaemia; Bone

Marrow depression.

M effect increased by: Alcohol; Propranolol; Other Anti-hypertensive.

M effect reduced by: Anti-inflammatories; Steroids; Iron; Contraceptive "Pill".

METOCLOPRAMIDE

CHILD	po / im / iv	0.12 mg/kg each dose (TID or QID)
ADULT	po / im / iv	10-15 mg each dose (TID or QID)

Be careful: Children and Old people.

S-E: Tremor; Abnormal movements; Restlessness; Drowsiness.

METRONIDAZOLE

CHILD first month	po / iv	7.5 mg / kg BID
>1 month	po / iv	7.5 mg / kg TID
ADULT	po / iv	500 mg TID
for Amoeba	po / iv	750 mg TID

Be careful: if Alcohol taken together can give bad reaction.
S-E: Unpleasant taste; Gastric irritation; Headache; Jaundice.
Increases effect of Phenytoin.

NICLOSAMIDE

CHILD and ADULT	po	30 mg/kg stat
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- Before Niclosamide, give Metoclopramide 10 mg po when patient wakes up.
- Chew the tablets before swallowing.

NORFLOXACIN

ADULT	po	400 mg BID
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- Used in UTIs not responding to Cotrimoxazole and Cephalexin.
Be careful, S-E and Reduced absorption: see Ciprofloxacin.

NYSTATIN

CHILD	to suck in mouth	100,000 IU QID
ADULT	to suck in mouth	100,000 IU QID
	pv	100,000 IU at night x 7 nights

OXYTOCINE

ADULT	<i>Incomplete Abortion</i>	iv	10-20 IU stat
	<i>Post Partum Haemorrhage</i>	iv / im	10 IU stat, then 20 IU in 500 cc D5W at 3cc/min. Reduce as haemorrhage slows.

- For induction of labour see SMRU Obstetrics guidelines.
- See **Common Obstetric Problems**, page 145.

S-E: Uterine spasms; Nausea; Vomiting, Arrhythmias.

PARACETAMOL (ACETAMINOPHEN)

CHILD	po	15 mg / kg QID	Max 2 g/day
	po	5 mg/kg QID if jaundice	
	im	10 mg/kg QID	
ADULT	po	500mg - 1 g QID	Max 4 g/day
	im	300 mg QID	

- It can also be given **4 hourly**, but respect Max. dose **Be careful:** Alcoholism; Liver failure.
S-E: Rare. Liver damage if over dosage.

PENICILLIN V (PHENOXYMETHYLPENICILLIN)

CHILD	po	7.5-15mg/kg QID
ADULT	po	250-500 mg QID

- For suspected streptococcal tonsillitis: give therapy **for 10 days** to prevent Rheumatic Fever.

Be careful, S-E: see Benzathine Penicillin.

PENTAZOCINE

CHILD	sc / im slow iv	0.5-1 mg/kg /dose	
ADULT	sc / im	30-60 mg/dose slow iv	Max 360 mg/day

- It can be repeated **every 3-4 hours**, but respect Max. dose.
Do not give: Acute Asthma Attack; Acute Alcoholism; Head injury; Meningitis; Brain haemorrhage Acute respiratory depression.
Be careful in: Hepatic failure; Convulsions.

S-E: Nausea and Vomiting; Constipation and Drowsiness; Respiratory depression; Hypotension.

PHENOBARBITAL (PHENOBARBITONE)

Epilepsy

		Start dose	Max dose
CHILD	po	5 mg/kg at night	8mg/kg
ADULT	po	60 mg at night	180 mg

- Do not stop suddenly: decrease slowly.
Be careful: Children and Old people. May cause sedation: tell patients who work with machinery or driving.
Do not give: Severe respiratory depression.
After iv loading dose: refer.

Generalised convulsions

(if diazepam can not control fitting)

		Loading dose
CHILD	infusion	10-20 mg/kg over 30m
ADULT	iv	10 mg/kg over 30 min

S-E: Drowsiness; Lethargy; Excitement in children; confusion in old people; Hypotension (especially iv); Rash; Blood disorders; Respiratory depression and arrest (especially fast iv).

Overdosage: Unsteady walk; Not clear speech.

P reduces effect of: Chloramphenicol, Doxycycline, Metronidazole; Steroids;

Contr. Pill; Aminophylline.

Prevention of convulsions in cerebral malaria

CHILD	not recommended	
ADULT	im	7.5 mg/kg stat

PHENYTOIN

<i>Epilepsy</i>		Start dose	Max dose
CHILD	po	2.5 mg/kg BID	
		Usual maintenance	
Neonates	po	5-8mg/kg/24hr divided in 2-3 doses	300 mg/24 hr
6 months-3 years	po	8-10 mg/kg/24hr divided in 2-3 doses	
4-6 years	po	7.5-9 mg/kg/24hr divided in 2-3 doses	
7-9 years	po	7-8 mg/kg/24 hr divided in 2-3 doses	
10-16 years	po	6-7 mg/kg/24 hr divided in 2-3 doses	
ADULT	po	150-300 mg/24 hr in 1 or 2 doses	
		Usual maintenance	
		200-500 mg/24 hr in 1 or 2 doses	500 mg/24 hr in 1 or 2 doses

- Do not stop suddenly: decrease slowly.
- Better with or after food.

Be careful: Hypotension; Heart failure; Liver failure (give smaller dose).

Do not give: Bradychardia.

S-E: **po** Mental confusion; Dizziness; Headache; Tremor; Insomnia, Depression, Swollen gums; Anaemia.

OVERDOSAGE: Not clear speech; Unsteady walk; Nystagmus; Not clear vision; Changed behaviour.

P effect increased by: Aspirin; Chloramphenicol; Cotrimoxa-zole; Metronidazole; Isoniazide; Cimetidine.

P reduces effect of: Doxycycline; Steroids; Contraceptive Pill; Aminophylline.

Generalised convulsions (if Diazepam cannot control fits)

	Loading dose	Maintenance	Max
CHILD and ADULT infusion	15 mg/kg over 1 hour	see po start dose	1.5 g

PRAZIQUANTEL

CHILD and ADULT	po	<i>for Taenia</i>	20 mg/kg stat
		<i>for Paragonimus</i>	25 mg/kg TID x 3 days

PREDNISOLONE

See **Asthma** and **Nephrotic Syndrome** Chapters, page 54 and page 104.

PRIMAQUINE

CHILD	po	0.25 mg/kg OD for 14 days 0.9 mg/kg once weekly for 8 weeks
ADULT	po	15 mg OD for 14 days 30mg once weekly for 8 weeks 45mg once weekly for 6 weeks

Be careful: G6PD deficiency; Rheumatoid arthritis.

S-E: Abdominal pain; Haemolytic anaemia especially in G6PD deficiency.

Do not use: Pregnancy.

Note: weekly treatment is safe also in G6PD-deficiency.

PROCAINE PENICILLIN (PENICILLIN G PROCAINE) 1mg=1,000 IU

CHILD	deep im	25-50 mg/kg OD or BID
ADULT	deep im	600mg-2.4g OD or BID

- Not for iv.

See under Benzathine Penicillin.

PROPRANOLOL

			Start dose	Max dose
ADULT	po	<i>Hypertension</i>	40 mg BID	160mg BID
	po	<i>Angina</i>	40 mg BID or TID	120 mg BID
	po	<i>Arrhythmias</i> <i>Thyrotoxicosis</i>	10-40 mg TID or QID	
	po	<i>Anxiety with palpitations,</i> <i>Tremor</i>	40 mg OD	40 mg TID

Do not give: Asthma; Obstructive airways disease; Bradycardia; Hypotension.

Be careful in: Pregnancy and breastfeeding; Liver and Kidney disease (give smaller dose); Diabetes

S-E: Bradycardia; Heart failure; Hypotension, Bronchospasm; Sleep disturbances; Cold hands and feet.

Do not give with Aminophylline.

P effect reduced by: Anti inflammatories; Rifampicin; Steroids; Contraceptive "Pill".

P increases effect of: Anti-diabetics.

PYRANTEL PAMOATE

CHILD and ADULT	po	<i>for Roundworms</i>	10 mg/kg stat
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Can give to children < 2 years.

Do not give: Pregnancy.

PYRAZINAMIDE

Use only for TB treatment together with other drugs (never alone):*

CHILD	po	35 mg/kg OD
ADULT < 50 kg	po	1500 mg OD
> 50 kg	po	2000 mg OD

* See **TB Chapter, page 50.**

Be Careful: Liver disease; Diabetes; Gout.

Do not give: Jaundice.

S-E: Liver toxicity; Joint pain; Nausea; Vomiting. Skin rash.

RIFAMPICIN

Use only for TB treatment together with other drugs (never alone)*:

CHILD	po	10 mg/kg OD
ADULT < 50 kg > 50 kg	po	450 mg OD
	po	600 mg OD

* See **TB Chapter, page 50.**

R gives an orange colour to body fluids urine, sweat and tears.

Be careful: Liver disease.

Do not give: Jaundice

S-E: Liver toxicity; Nausea; Vomiting; Diarrhoea, skin rash.

Decreased absorption by Aluminium.

R decreases effect of: Chlorpropamide; Phenytoin; Propranolol; Steroids; Contraceptive "Pill"; Aminophylline; Cimetidine.

SALBUTAMOL

CHILD	po	0.1mg/kg QID
	resp solution 5mg/ml, 0.5%	2.5 – 5 mg / dose*
	inhaler 1 puff=100 mcg	1-2 puffs / dose*
	im / sc	0.01 - 0.02mg/kg every 4-6 hrs

- to know how many doses to give in 24 hours, see **Asthma Chapter, page 54.**
- **oral is less effective with more side effects:** if available, give inhaler / nebuliser.

ADULT	po	2 - 4 mg QID
	resp solution 5mg/ml, 0.5%	2.5 – 5 mg / dose*
	inhaler 1 puff=100 mcg	1 - 2 puffs / dose*
	im / sc	0.5 mg every 4-6 hours
	very slow iv	0.250 mg repeated if necessary

- for **acute asthma** inhaler via spacer or nebuliser is better than iv See **Asthma Chapter, page 54.**

Be careful in: Hyperthyroidism; Arrhythmias; Hypertension; Diabetes.

S-E: Fine tremor; Nervous tension; Headache; Arrhythmias; Palpitations; Tachycardia; Sleep problems in children; Behaviour changes in children.

SODIUM VALPROATE

for epilepsy		Start dose	Max dose
CHILD	po	5 mg/kg BID or TID	1g
ADULT	po	200 mg TID	3 g daily

- If possible monitor liver functions.

- Do not stop suddenly: decrease slowly.

Be careful in: Children < 3 years.

Do not give: Liver active disease.

S-E: Gastric irritation; Nausea; Ataxia; Tremor; Weight gain; Low platelets; Oedema; Liver toxicity especially in < 3 years; Sedation; Confusion.

SV effect increased by: Aspirin **and** **decreased by:** Chloroquine; Mefloquine.

SPIRONOLACTONE

CHILD	po	nephrotic syndrome	3 mg/kg OD with Frusemide
ADULT	po	nephrotic syndrome	3 mg/kg OD with Frusemide
	po	ascites	100-200 mg OD up to 400 mg
	po	heart failure	25 mg OD with Frusemide/ Enalapril

- See Nephrotic Syndrome, Heart failure chapters, page 103 and page 67.
- Do not give:** Pregnancy and breastfeeding; High Potassium.
Be careful: Old people; liver and renal diseases.
S-E: Nausea; Impotence; Gynaecomastia; Menstrual irregularities; Lethargy; Headache; High potassium.
Risk of high Potassium increased with Indomethacin.
Diuretic effect decreased by Aspirin and Contr. Pill.
Diuretic effect increased by Digoxin.

STREPTOMYCIN

Use only for TB treatment together with other drugs (never alone)*:

CHILD			im	15 mg/kg OD
ADULT	< 45 years	≥ 50 kg	im	1 g OD
		< 50 kg	im	750 mg OD
	45-60 years	≥ 37 kg	im	750 mg OD
		< 37 kg	im	500 mg OD
	> 60 years		im	500 mg OD

*See TB Chapter, page 50.

- If possible do not give together with Furosemide (see Gentamicin).

Be careful: Children and elderly; Kidney disease; deaf; sight poor.
S-E: Ear toxicity (also of the foetus); Kidney toxicity (also of the foetus); Skin rash.

TETRACYCLINE

CHILD < 8 years	not recommended		
CHILD > 8 years and ADULT	po	250-500 mg QID	

T can become toxic if not stored properly: if available, doxycycline is preferable.

S-E: Allergic reactions; Headache.

Do not give: Pregnancy***; Children < 8 years.

T. absorption reduced by: Aluminium and Iron.

TRAMADOL

CHILD	po	not recommended	Be careful. Do not give and S-E: see Pentazocine, BUT
ADULT	po	50-100 mg every 4-6 hours	

less respiratory depression; less constipation; less addiction .

VITAMIN A

<i>Treatment dose:</i>		Day 1	Day 2	Day 8
CHILD < 6 months	po	50,000 IU stat	50,000 IU stat	50,000 IU stat
CHILD 6 months-1 year or < 8 kg	po	100,000 IU stat	100,000 IU stat	100,000 IU stat
CHILD > 1 year or > 8 kg	po	200,000 IU stat	200,000 IU stat	200,000 IU stat
WOMEN Reproductive age	po	10,000 IU OD x 2 weeks or 25,000 IU once/ week 8 weeks		

Prevention dose:

NEW BORN	po	50,000 IU at birth
CHILD 6 months-1 year or < 8 kg	po	100,000 IU every 4-6 months
CHILD > 1 year or > 8 kg	po	200,000 IU every 4-6 months
MOTHERS	po	200,000 IU at delivery

- Before giving prevention dose check if one has been given in the last 1 month.

- To give dose smaller than 200,000 IU using a 200,000 IU capsule, see **Vit A Chapter, page 117.**

Do NOT give in PREGNANCY.

VITAMIN B1 (THIAMINE)

Treatment:

INFANTS	im 50 mg TID x 1 day then 10 mg PO x 6 weeks Treat the Mother: see Adult – mild deficiency
ADULT – mild deficiency*	po 100 mg OD x 7 days then po 10 mg OD x 6 weeks
ADULT –severe deficiency*	im 100 mg TID x 1 day then po 100 mg OD x 7 days then po 10 mg OD x 6 weeks

- See Vit B1 deficiency Chapter, page 118.

- Tablets not to be taken when chewing Betel-nut: this inactivates the Vitamin B1.

Prevention in pregnant women and their babies:

PREGNANT WOMEN	po	100 mg OD during pregnancy and breastfeeding (up to 6 months)
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VITAMIN B6 (PYRIDOXINE)

Prophylaxis of neuropathy when taking Isoniazid

ADULT and CHILD	po	10 mg OD
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- Higher dose reduces action of Isoniazid
see TB chapter, page 50.

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