Standard Treatment for Common Illnesses of Children in Papua New Guinea

A MANUAL FOR
NURSES, COMMUNITY HEALTH WORKERS,
HEALTH EXTENSION OFFICERS, AND DOCTORS

Ninth Edition
2011

TALK WITH THE MOTHER AND IF POSSIBLE THE FATHER

Always:

- Discuss the child's illness and treatment with the parents
- Discuss good nutrition
- Discuss family planning
- Ask the mother to always bring the Child Health Record Book whenever the child comes to a health centre or hospital.

IMMUNISATION

Use every opportunity to immunise every child who is due or overdue for vaccines. The only exception is in the case of a child with a fever above 38˚C who should not be given Pentavalent (Triple Antigen, Hepatitis B and Hib) vaccines. Measles vaccine should be given even if the child has a fever or is sick.

SHORTAGE OF MEDICINES

If you run out of any of the medicines in this book, contact the CEO of your Provincial Health Authority / Provincial Health Advisor urgently. They will try to get them for you or tell you what to use instead.

ON ADMISSION

- Weigh every child
- Record the weight and age
- Mark the weight on the weight chart
- Treat any malnutrition
- Immunise the child and the other members of the family if they are due or overdue for immunisation.

POSSIBLE DEVELOPMENTS DURING THE LIFE OF THIS EDITION

Health Department policies are updated as new knowledge, new medicines and new vaccines become available. It is almost inevitable

that new policies will be introduced during the life of the present edition of this handbook.

PNEUMOCOCCAL CONJUGATE VACCINE

Streptococcus pneumonia (pneumococcus) is one of the bacteria that commonly cause pneumonia and meningitis in young children. There is a good vaccine against pneumococcus, and the pneumococcal vaccination programme in many countries has been very successful. The vaccine can be given with at the same time as the Pentavalent vaccine (see below). However, the pneumococcal vaccine is expensive compared to other vaccines currently used in PNG, and before the Health Department introduces it we must be sure that the majority of children will be reached through the vaccination program, and the vaccine is delivered in good condition.

HAEMOPHILUS INFLUENZAE TYPE B (Hib) VACCINE (PENTAVALENT)

We must make every effort to improve the Haemophilus vaccine coverage, which is given as Pentavalent (consisting of Triple Antigen (DTP), hepatitis and Hib vaccines), by vaccinating infants at every opportunity.

MEASLES VACCINE BOOSTER DOSE

Everything possible must be done to increase the coverage of measles vaccine. Currently the schedule in PNG is to give a dose at 6 months and then another at 9 months. These are the primary doses, and it is essential to achieve high coverage with these (90% of all children) if measles epidemics are to be avoided. Some countries have further improved the control of measles by adding an additional dose at the time of school entry (about 5 years). This may be necessary in the near future in PNG, but until then we should make every effort to improve measles vaccine coverage, by vaccinating infants at every opportunity.

Standard Treatment for Common Illnesses of Children in Papua New Guinea

A MANUAL FOR NURSES,
COMMUNITY HEALTH WORKERS,
HEALTH EXTENSION OFFICERS AND DOCTORS

Ninth Edition
2011

Published with Support from AusAID

HOW TO GET THIS BOOK

Health workers in PNG may obtain copies of this book from their *Provincial Health Advisor*, *CEO of Provincial Health Authority,* from their Provincial Paediatricians or from the Paediatric Society of Papua New Guinea (address at the back of the book).

DIFFERENT TREATMENTS

The treatment regimens in this book are simple, safe and effective. They are appropriate for use in most health facilities in PNG, including hospitals. It is recognized, however, that doctors sometimes may use different treatments from those outlined in this book, depending on individual circumstances of the patient and availability of facilities and medications.

WHEN TO USE THIS BOOK

This handbook should be used whenever health workers in PNG see sick children. It is important to check your diagnosis and to carefully follow the treatment steps in the book. Always check the drug doses in the drug tables. Do not rely on memory, as mistakes are easily made.

This handbook replaces all previous editions. When you receive this handbook your old handbook should be put away.

Supervisors and in-service tutors should go through the sections of this book whenever they are teaching health staff on childhood diseases.

HOW TO USE THIS BOOK

- A sick child may have more than one problem. Always use the *Check List for all Sick Children* or the *Check List for Infants < 2 months* to avoid missing a problem which has not been noticed by the parents.

- Use the Contents page to look up the diseases or conditions that the child has. Go to those sections of the book and decide on the severity of the problems and what treatments are needed.

- Always check drug doses in the Drug Doses Tables.

CHANGES IN THIS EDITION

- The addition of 3 more step to the Child Health Check list for all Sick Children
- Minor changes to the Check list for Infants < 2 Months
- Minor changes to the asthma section
- Changes to Babies Born Before Arrival (BBA) section
- Additions to Babies Less than 2.2Kg Weight section
- Additions to Babies-Neonatal Infections section
- Additions to Babies-Drug Doses table
- Addition of Flow Chart and changes to diarrhoea section, addition of Cholera
- Addition of Pentavalent (DTP-HepB-Hib) vaccine to the immunization section
- Addition of Flow Chart to HIV infection section
- Addition of Flow Chart and New Regimen for Malaria treatment
- Changes to section on Meningitis or Severe Sepsis
- Addition of Flow Chart and changes to Pneumonia section
- Minor changes to Poisoning section
- Updated section on Pigbel
- Addition of a Rheumatic Heart Disease Section
- Minor changes to Skin Diseases section
- Minor changes to Snake Bite section
- Addition of New TB Regimen to the TB section
- Additions to Drug Doses table
- Addition to the IV and Oral Fluid tables

Note: In general, restrict the use of injections to very sick children

Most sick children can take oral medications, and these are effective. Drugs should be given intravenously or intramuscularly only when the child is very sick and unable to take any oral medicines. When the child improves it is best to give oral treatment (except for very young children with meningitis p 89). This policy is kinder for the children, but it is also less expensive, and will help to reduce the risk of HIV infection from contaminated syringes. It is important though to make sure that the oral medications are taken properly (observe the child if you can, or instruct the parent to observe the child closely when taking medications).

FOREWORD

9th Edition

PAEDIATRIC STANDARD TREATMENT BOOK
NEW EDITION 2011

The Papua New Guinea Child Health Plan which was launched in 2010 and which is in line with the National Vision 2050 Plan is a remarkable document and has been adopted by Papua New Guinea Child Health services to address the welfare of children and to ensure that appropriate health services for children are provided. We all hope that the years of childhood are a time in which all children are healthy, protected from harm and surrounded by loving and nurturing adults who help them grow and develop to their full potential.

Papua New Guinea welcomes almost 150,000 more children into the world each year. These births are a joyful experience for the families into which they occur, an experience of greatest blessings. But they also represent an obligation to all responsible parents and the State, to ensure that their rights to are fulfilled respected and protected. In protecting the rights of young children to good health, we have to pursue cost effective treatment regimens as prescribed in this revised paediatric standard treatment manual.

Let there be a warm welcome for this 9th Edition of the Paediatric Standard Treatment Manual. The earlier editions were most valuable and have been extensively used by health workers in Papua New Guinea. Since the last edition much more information has become available. This edition of the Paediatric

Standard Treatment Manual has taken into account new policies, updated treatment regimens and new developments.

I commend the efforts of the Paediatric Society of Papua New Guinea in updating this treatment manual and request full adherence and compliance to the standard treatment regimens on the part of all health workers in Papua New Guinea.

Dr Clement Malau
Secretary

Table of Contents

CHECKLIST FOR SICK CHILDREN: 2 MTHS- 5 YRS

Greet the mother then ask her what is wrong with her child

STEP 1 ➔➔	Is the child TOO SICK? Check for DANGER signs.	p.14
⬇⬇		
STEP 2 ➔➔	Does the child have COUGH or DIFFICULT BREATHING? Check for Fast breathing and chest indrawings.	p. 105
⬇⬇		
STEP 3 ➔➔	Does the child have DIARRHOEA ? Check for signs of Dehydration.	p. 44
⬇⬇		
STEP 4 ➔➔	Does the child have FEVER? Look for signs of malaria, meningitis and other infections.	p. 57, 67,88
⬇⬇		
STEP 5 ➔➔	Does the child have MEASLES now or had it in the last 3 months? Look for signs of measles.	p. 87
⬇⬇		

STEP 6 ➔➔	Does the child have EAR PAIN OR DISCHARGE? Look for signs of otitis media or ear discharge	p. 97, 98
↓↓		
STEP 7 ➔➔	Check all children for PALLOR. Check of the Palmer or conjuntiva for pallor.	p. 16
↓↓		
STEP 8 ➔➔	Check if the child is MALNOURISHED. Plot the weight on the WFA curve in the Clinic Book.	p. 75
↓↓		
STEP 9 ➔➔	Assess FEEDING if age < 2 YEARS. Check for ANAEMIA / MALNUTRITION for Feeding problems?	p. 16, 75 44, 105
↓↓		
STEP ➔➔	**10** Assess BREAST FEEDING if aged less than 6 months. Ask about EXCLUSIVE BREAST FEEDING: check attachment / positioning	p. 32
↓↓		
STEP ➔➔	**11** Does the child have DIARRHOEA and or COUGH for more than 2 WEEKS? (Think about possible HIV infection).	p.58
↓↓		
STEP ➔➔	**12** Does the child need IMMUNIZATION? Check immunization record in the clinic book	p. 63, 64
STEP ➔➔	**13** Ask are there any other problems? Always discuss with parents the problems that you have found, the treatment that you will give and what they should do to help their child	

CHECKLIST FOR INFANTS: LESS THAN 2 MONTHS

Follow each of the 8 steps for every infant <2 months
Greet the mother, and ask her what is wrong with her baby

STEP 1 ➔➔	IS THE INFANT TOO SICK? Assess for DANGER signs: ▪▪ Unable to suck or feed ▪▪ Respiratory rate more than 60 ▪▪ Respiratory Rate less than 20 (or periods of apnoea) ▪▪ Severe chest in-drawing ▪▪ Central cyanosis ▪▪ Skin of arms and legs very cold Give oxygen, antibiotics, fluids, and discuss with a doctor	p. 14, 23, 26
⬇⬇		
STEP 2 →	ASK ABOUT FEVER Look for signs of bacterial infection or malaria	p. 57
⬇⬇		
STEP 3 ➔➔	LOOK FOR JAUNDICE Look for yellow eyes and yellow feet	See Paeds for doctors in PNG, p.177
⬇⬇		
STEP 4 ➔➔	ASSESS BABY'S WEIGHT Weigh the baby and assess the growth curve	See weight chart centre p. 80,81
⬇⬇		
STEP 5 ➔➔	ASK ABOUT BABY'S FEEDING Check feeding pattern: emphasize exclusive breast feeding	p. 32
⬇⬇		
STEP 6..➔➔	CHECK FOR MALFORMATIONS Check mouth for cleft, feet for clubbing, genitalia and anus	See Paeds for doctors in PNG, p.85
⬇⬇		
STEP 7 ➔➔	ASK ABOUT IMMUNISATIONS Check the immunisation record and give vaccines due	p. 63, 64
⬇⬇		
STEP 8➔➔	ASK ABOUT FAMILY PLANNING Discuss options for contraception if parents interested	p. 83

Always discuss with mother/parents the problems that you have found, the treatment that you will give and what they should do.

PAEDIATRIC RULES

1. **Immunise** Always check the health record book and immunise if the child is due for it.
   - There is no contra-indication to giving measles vaccine.
   - Pentavalent and hepatitis B vaccines should not be given if the child has a fever above 38ºC. They should be given when the temperature has settled.
   - Check the child's brothers and sisters and immunise them if their vaccines are not up to date.
   - Always immunize a child who is due for vaccinations even if he is the only one attending the clinic. Never fail to immunize a child just to save vaccines.
   - If the mother is pregnant she needs tetanus toxoid. Check that she is going to antenatal clinic
   - Give vitamin A supplementation doses to all children at 6 months and one year of age and to others aged 1-4 years as appropriate.

2. **Admit** children who have any of the following:
   - Severe chest in-drawing
   - Severe dehydration
   - Convulsion with fever
   - Fever and not able to feed
   - Drowsiness or confusion
   - Abdominal pain and severe vomiting
   - Oedema (swelling)
   - Weight less than 60% line, and flat or falling weight curve
   - MUAC less than 12.5cm
   - Sudden onset of paralysis
   - Swelling of limb or joint
   - Under 6 months with whooping cough
   - Stridor (noisy breathing)
   - Snake bite

- Swallowed poison
- Passing blood in the urine
- Vomiting blood or passing a lot of blood in the stool
- History of unconsciousness after head injury
- Suspicious injuries that do not fit the history given
- Neonates with any sign of serious bacterial infection

3. **Weigh** Always weigh the child. Plot the weight on the weight chart in the health record book. Give the correct dose of medicine for this weight.

4. **Refer** to hospital:
   Urgent referral for babies with:
   - DANGER signs
   - Imperforate anus
   - Bile stained vomiting
   - Frequent vomiting and lots of saliva in the first few hours of life - Meningitis
   - Severe jaundice
   - Sepsis who are not improving after 2 days treatment
   - Ambiguous genitalia (where you are not sure whether the baby is a boy or a girl)

   Urgent referral for children with
   - DANGER signs
   - Conjunctivitis who are not improving after 2 days treatment
   - Meningitis who are not improving after 2 days treatment
   - Coma
   - Fever, tenderness and swelling of a limb or a joint that does not improve after 2 days treatment
   - Blood in the urine, who do not improve after 2 days treatment - Kwashiorkor
   - Distended, tender abdomen
   - Sudden onset of paralysis

- Polyuria (passing a lot of urine), dehydration and sweet smelling breath (they may have diabetes)
- Cholera

Non-urgent but important referral for children with

- Slow development or who are poorly responsive and who have an umbilical hernia.
- Persistent heart murmur
- Frequent asthma
- Malnutrition that does do not respond to treatment
- Any child not responding to standard treatment

5. **Use oral medications where possible.** Avoid giving injections unless the child is moderately or severely sick. Always use a new needle and syringe when giving injections. Contaminated needles may transmit HIV and other serious infections.

   Intramuscular injections to children less than 2 years of age should be given in the upper and outer part of the thigh.

6. Do not give single doses of antibiotics.
   Do not give single doses of antimalarials for fever

ANAEMIA

Anaemia is present if the haemoglobin is less than 10g/dL.

1. Usually treat as an outpatient.
   Admit to hospital if the child:
   - looks very sick
   - or looks very pale
   - or has oedema
   - or feels dizzy when standing up

2. Whenever possible do:
   - haemoglobin - RDT for malaria.

TREATMENT

1. Antimalarials

Treatment — antimalarial course (see p. 67)

Prophylaxis — give antimalarials once a week for 3 months (see p.74), if possible. See **Medicine for Mothers to Take Home** (p.87).

2. Hookworm Treatment (inpatients and outpatients).

Use Albendazole months.
- crushed up for children >6
- older children can chew the tablet.

Weight	**Dose**	**No Oedema**	**Oedema**
5 - 9.9 kg	1 tab	Stat Dose	Daily for 3 days
10kg or more	2 tab	Stat Dose	Daily for 3 days

3. Folic Acid

1 tablet each week for 3 months (same day as malaria prophylaxis).
Supply parents with 12 tablets (see p. 87).

4. Iron

Wherever possible, iron should be given orally.
Give the iron in the form of **Fefol** tablets to older children.

Weight	5-9.9 Kg	10-19.9Kg	20-39.9Kg	40-49.9Kg
Fefol tab	¼	½	1	1 ½

Give the oral iron tablets every day for 4 weeks, then check the Hb again.

Give ferrous fumarate suspension to infants (p. 144).

Note: Children with recurrent or persistent anaemia should be referred to hospital for investigation. Some may have thalassaemia, and children with this condition **should not be given repeated doses of iron.**

5. Diet

Encourage the mother to give dark green leafy vegetables, meat, fish, peanuts and beans and fruit rich in vitamin C (such as paw-paw, mango, orange).

6. Blood Transfusion

(i) Transfuse any child with a haemoglobin less than 3g %.

(ii) Transfuse a child with a haemoglobin between 3.0 and 6.0g% if they have any of the following:

- severe infection (severe pneumonia, severe acute malaria, meningitis, osteomyelitis or TB)
- heart failure (big liver and pulse rate over 160 per minute)
- kwashiorkor.

Blood Transfusion:

Weight	Volume Packed Cells	Rate of Transfusion Drops/min***	Dose of Frusemide (IV)
3 - 5.9 kg	100*	5	½ (0.5) ml
6 - 9.9 kg	150*	7	¾ (0.75) ml
10 - 14.9 kg	250*	15	1ml

15 - 19.9 kg	400**	20	1½ (1.5) ml
20 - 29.9 kg	500**	25	2ml

* **Crossmatch 1 unit of packed cells**

** **Crossmatch 2 units of packed cells**

*** 5 drops/min is 20 ml/hr. 7 drops/min is 28 ml/hr.
If using a 100ml paediatric burette: 1 drop/min=1ml/hour.

REMEMBER:
EVEN IF YOU GIVE A BLOOD TRANSFUSION, YOU MUST STILL GIVE ANTIMALARIALS, ALBENDAZOLE, FOLIC ACID AND IRON

Note on blood transfusion:

1. Give frusemide (Lasix) IM or IV at the beginning of the transfusion.

2. Only use blood that has been properly grouped and cross-matched.

3. Make certain the **correct** bag of blood is given to the patient.

4. When giving blood to children less than 10kg use a measuring burette (Medical Stores Catalogue No. 5277).

5. Only remove a bag of blood from Blood Bank refrigerator when you can start transfusing it immediately.

6. Never transfuse blood that has been out of the refrigerator for more than 6 hours.

7. All patients receiving blood transfusion should receive antimalarials (see p. 72).

8. If the patient develops fever, skin rash, or becomes ill then:
   - Stop the blood transfusion
   - Give promethazine IM
   - Call a medical officer

FOLLOW ALL THESE INSTRUCTIONS WHEN GIVING A BLOOD TRANSFUSION.

THE PATIENT MAY DIE IF THE TRANSFUSION IS GIVEN INCORRECTLY

ASTHMA

Wheezing in a child over 18 months of age is usually due to asthma. Children younger than 18 months of age can have asthma, especially if the child has had recurrent wheeze. If the child is wheezing and less than 12 months of age, treat for bronchiolitis (See p. 103).

TREATMENT OF MILD ASTHMA

a. Salbutamol (Ventolin)

Use a Metered Dose Inhaler ("puffer") and a spacing device. Children less than about 7 years of age cannot coordinate breathing with a puffer so a "spacing device" is required. This can be bought from a pharmacy or can be made from a 750ml cordial bottle or a 500ml IV fluid bottle with a hole in the bottom for the puffer. Give 2 puffs of salbutamol (Ventolin) 4 times a day.

If you don't have a "puffer" use Salbutamol tablets TAB 4mg: Give 4 times a day

Weight	6-14.9kg	15-29.9kg	30kg or more
Dose	¼ tab	½ tab	1 tab

TREATMENT OF SEVERE ASTHMA

a. **Oxygen** ½ -2 L/minute by nasal prongs or by nasal catheter, or 4-6 litres / min by face mask in older children.

b. **Nebulised Salbutamol Respirator Solution**

Weight	**Amount of Solution**	**Amount of Normal Saline**
Less than 9kg	¼ ml (0.25ml)	1¾ ml (1.75ml)
9kg or more	½ ml (0.5ml)	1½ ml (1.5ml)

Give this through the face-mask every three hours.

Foot operated nebulisers are available through your Provincial Health Office and Area Medical Stores.

A good alternative is to use an MDI with spacer (see **Mild Asthma** p. 20). Give 4-6 puffs every 2-3 hours in severe asthma. These doses of nebulised or "puffer" salbutamol can be given every 2 hours or up to every hour if the patient gets severely distressed before the next third hourly dose is due.

If nebulised salbutamol (or a salbutamol puffer) is not available, give salbutamol (Ventolin) tabs 4 times per day (same dose as for **Mild Asthma** (see p. 20).

c. **Prednisolone** (5mg tabs). Give daily for 3-5 days

Weight (kg)	Dose (Tabs)	Weight (kg)	Dose (Tabs)
3 - 5.9	1 ½	20 - 29.9	7
6 - 9.9	2 ½	30 - 39.9	8
10 - 14.9	4	40 - 49.9	9
15 - 19.9	6	50 or more	10

d. If the child is too sick to take tablets give intravenous or intramuscular **Hydrocortisone** every 6 hours.

Weight (kg)	Dose	Weight (kg)	Dose
5 - 9.9	25 mg	20 – 29.9	75 mg
10 -19.9	50 mg	30 or more	100 mg

e. I.V.fluid (Hartman's solution or 0.45% NaCl +5% dextrose) Give this if the child is too sick to drink

Weight	Mls/hr	Drops/minute
6 - 9.9 kg	25ml/hour	7 drops/minute
10 - 14.9 kg	50ml/hour	13 drops/minute
15kg or more	75ml/hour	20 drops/minute

Use a burette if you have one.

If the child is not improving after giving salbutamol and prednisolone (or hydrocortisone), or if you do not have salbutamol, give:

f. **Aminophylline** intravenously: 250mg/10ml Ampoule.
Do NOT use 0.5gm/2ml Ampoule
Every 6 hours put the dose of aminophylline into the burette and add 4.3% dextrose in 0.18% saline up to the hourly maintenance amount (see **e** above). Run this over one hour, then continue the dextrose saline at maintenance rate. If you do not have a burette, inject the aminophylline intravenously **slowly** over **at least 15 minutes** every 6 hours.
The dose is 0.2ml/kg (5mg/kg):

Weight (kg)	6-9.9	10-14.9	15-19.9	20-29.9	30-49.9
Dose (ml)	1½ml	2ml	3ml	4ml	6ml

Remember: **IV Aminophylline is dangerous**

- **Do not give IV aminophylline if the child has already had aminophylline in the last 4 hours.**
- weigh the child carefully and give the right dose **slowly**.
- stop giving aminophylline if the child gets a headache or starts vomiting.

g. Benzylpenicillin, (Crystalline)

If the temperature is more than 38°C give IV every 6 hours while giving IV fluids. (see p.147)

When the child improves:
Stop the IV fluids and change to:

- Salbutamol by inhaler with spacer (2 puffs every 4-6 hours) or oral salbutamol (see p. 148).
- Continue this until the chest is free of wheeze. If you were giving benzyl penicillin, change to **amoxycillin oral TDS** for 5 days (see p.140).

If the child is very sick or does not start to improve after 12 hours of treatment, send him to hospital.

Children who have asthma attacks frequently (e.g. once a month for more than 6 months) should be referred to a paediatrician to assess the need for preventative treatment.

BABIES – BORN BEFORE ARRIVAL (BBA)

TREATMENT

a. **Vitamin K** (Phytomenadione)
1 ampoule (1mg/0.5ml **or** 1mg/ml) IM once
Do **NOT** use 10mg/ml Ampoule

b. **1% Acriflavine in spirit or Gentian Violet** to cord daily.
c. **Oxytetracycline eye ointment** to both eyes once.
d. **Give Hep B vaccine** if temp is less than 38^0C
e. **Tetanus immunoglobulin** 60 units IM once.
Use 0.5ml of the 250 unit ampoule. It is not necessary to give tetanus immunoglobulin if the mother has had two injections of tetanus toxoid, at least one of them during the pregnancy.
f. **Antibiotics** if there are any signs of infection:

- Fever (axillary temp *above* 37.2°C)
- Hypothermia (temp *below* 35.5°C) OR very cold skin of arms and legs
- Not able to suck
- Severe abdominal distension
- Fitting
- Skin pustules
- Infected cord
- Respiratory rate >60
- Apnoea (stopping breathing for more than 10 seconds)
- Severe chest indrawing
- Cyanosis of tongue
- Membranes ruptured more than 12 hours
- Maternal fever
- Offensive liquor

Give ampicillin (or crystapen or amoxycillin) plus gentamicin. See **Babies – Neonatal infections (p. 26)**

g. **Oxygen by nasal catheter** to babies with respiratory rate >60, severe chest indrawing, apnoea, cyanosis, hypothermia or very cold skin of arms and legs.
h. Give Vitamin A (200,000 units) stat to the mother

BABIES LESS THAN 2.2KG WEIGHT

These babies need special care.

a. **Keep the baby warm -** Small babies get cold easily, particularly in the highlands. Try to keep the baby well wrapped up in a warm room, lying cuddled up to the mother. If the baby is too sick to be with the mother, it may be necessary to keep the baby warm with well-covered hot water bottles, but be very careful not to burn the baby.

b. **Start breast-feeds within half to 1 hour of birth. As much as possible use only breast milk (see p. 32). Use expressed breast milk by cup if the baby cannot suck well.** Use a nasogastric tube for babies less than 1.5kg and for those who are sick. Babies should be suckled on the breast before cup or tube feeds are given. **Sugar milk may be given to infants in special cases, eg. HIV positive mothers who wish to give replacement feeds.**

When the baby is sucking well from the breast and is gaining weight above 1.8Kg, gradually reduce the cup feeds.

Amount of milk to give every 3 hours*								
Birth Weight	**Day of Life**							
(KG)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8 or more**
1.0 – 1.49	8	10	15	20	25	30	30	35
1.5 – 1.99	10	15	20	25	30	40	45	50
2.0 – 2.49	15	20	30	35	40	50	55	65
2.5 – 2.99	20	25	35	40	50	60	70	75
3.0 – 3.49	20	30	40	50	60	70	70	75
3.5 – 3.99	25	35	45	60	70	80	80	80

*** Note:** Babies less than 1.5kg on nasogastric feeding should be fed *smaller* amounts every hour or two hours to give the same total daily amount.

BABIES LESS THAN 2.2KG WEIGHT (continued)

When you are tube feeding:

- change the nasogastric tube twice a week
- do not bottle feed
- weigh the baby every day. Satisfactory weight gain is 20g per day or 100-150g per week.

c. **Give every small baby 1ml multiple vitamin liquid** each day.

d. Give **zinc** while the baby is in hospital/health centre (p. 30)

BABIES – NEONATAL INFECTIONS

A neonate is a baby less than 4 weeks old. Infection in neonates may not be as obvious as infection in older children. Think of infection in any neonate with any of these signs:

- fever (axillary temp *above* 37.3°C)
- hypothermia (temp *below* 35.5°C) OR very cold skin of arms and legs
- not able to suck
- severe abdominal distension
- vomiting out all feeds
- fitting
- skin pustules
- jaundice
- infected cord
- respiratory rate >60
- apnoea (stopping breathing for more than 10 seconds)
- severe chest indrawing
- cyanosis of tongue or gums
- membranes ruptured more than 12 hours

- maternal fever
- offensive liquor

TREATMENT

a. All babies with suspected infection should receive:
   (i) Ampicillin OR penicillin (crystapen) IV or IM, *plus*
   (ii) Gentamicin IVI or IM, *plus*
   (iii) Test for Malaria and treat if positive (see Babies Drug Doses in
   tables on page 28 and Malaria section page 67)

Notes:

- If there is no gentamicin, give chloramphenicol.
- There are special dilutions for gentamicin and special doses for chloramphenicol for babies (see Babies **Drug doses** in the tables on pages 28-31)
- Severe neonatal infection should be treated with antibiotics for at least 10 days.
- PR, IMI or IV artesuante should only be given to babies who are too sick to take oral amodiaquine. These babies should have nasogastric feeding or an IV drip.

b. Do a lumbar puncture if you are able to. If the CSF is cloudy, give ceftriaxone. If you think the baby has meningitis but you are unable to get CSF or CSF is blood stained, give ceftriaxone and refer the baby

Refer to hospital any baby who:

- is not improving after 2 days of treatment
- has meningitis
- is severely jaundiced (deep yellow or orange colour)

PREVENTION

Many neonatal infections can be prevented by:

- Ensuring good basic hygiene and cleanliness at the delivery of the baby.
- Special attention to cord care: (Gentian violet or 1% acriflavine in spirit application daily after clamping and cutting the cord).
- Breast feeding.
- Giving antibiotics to babies whose mothers have fever during labour, or babies born after prolonged rupture of membranes (more than 12 hours). If these babies show no signs of sepsis after 3 days the antibiotics can be stopped
- Staff washing their hands between contact with patients

BABIES – DRUG DOSES: FOR BABIES LESS THAN 4 WEEKS OF AGE

WEIGHT OF BABY (KILOGRAMS)		**1.0-1.49**	**1.5-1.99**	**2.0-2.49**	**2.5-2.99**	**3.0-3.49**	**3.5-3.99**
Amodiaquine (infant camoquin) Daily for 3 days	Oral 100mg tabs	—	—	¼	¼	¼	½
Amoxycillin or ampicillin injection 250mg vials Add 1ml sterile water. IM or IV (30mg / kg / dose) - less than 7 days old – give twice a day - more than 7 days old - give 4 times a day	IM	¼	¼	¼	½	½	½
Ceftriaxone sodium injection 1 gram Add 10ml of sterile water – IM or IV (50mg/kg/dose, use for severe infections only) - less than 7 days old – give daily - more than 7 days old – give twice a day	IM/IV ml ml	 0.5 0.8	 0.8 1.0	 1.0 1.2	 1.2 1.5	 1.5 1.8	 1.8 2.0
Chloramphenicol injection 1gram Add 4ml sterile water (25mg / kg / dose) - Less than 7 days old - More than 7 days old	IM	¼ Every 2nd day Once daily dose	¼	¼ Once daily dose Twice daily dose	½	½	½
Flucloxacillin injection 250mg Add 1½ ml sterile water. IM or IV (25mg / kg / dose) - less than 7 days old - give twice a day - more than 7 days old - give 4 times a day	IM	¼	¼	¼	½	½	½
Diazepam. Amp 10mg / 2ml. Mix with 2 ml sterile water. Give slowey IV or rectally (p.36) (0.25mg/kg/dose)	IM	To stop convulsions use paraldehyde		¼	¼	½	½

WEIGHT OF BABY (KILOGRAMS)		**1.0-1.49**	**1.5-1.99**	**2.0-2.49**	**2.5-2.99**	**3.0-3.49**	**3.5-3.99**
Digoxin (lanoxin) elixir 50 microgm/ml oral Every 6 hours for 3 doses, then once daily (maintenance dose 10 microgram/kg daily)	Oral	¼	¼	½	¾	1	1
Gentamicin Amp 20mg / 2ml. IM once daily (NOT 80mg / 2ml)	IM / IV						
<1week: 3mg / kg / dose		½	¾	1			
>1 week: 7.5mg / kg / dose		¾	1	1½			
<1 week: 5mg / kg / dose					1½	1 ¾	2
> 1 week: 7.5mg / kg / dose					1¾	2	2½
Naloxone (Narcan) Amp 0.4mg / ml. Inject under the tongue, IM or IV (0.1mg/kg)	IM / IV	¼	¼	½	½	¾	1
***Nevirapine** 2mg/kg stat dose Infant suspension or *need to break* 200mg tabs. Single dose to baby after delivery. The mother must also have a single dose of 200mg while in labour.	Oral	3mg	4mg	5mg	6mg	7mg	8mg
***AZT (Zidovidine)** 4mg/kg/bd Give twice daily for 28 days	Oral	5mg	8mg	10mg	12mg	14mg	16mg
Paraldehyde amp 5ml IM (0.2ml/kg) Use only glass syringe	IM	¼	¼	½	½	½	¾

- For HIV prophylaxis

WEIGHT OF BABY (KILOGRAMS)		**1.0-1.49**	**1.5-1.99**	**2.0-2.49**	**2.5-2.99**	**3.0-3.49**	**3.5-3.99**
Penicillin Benzyl (crystalline) – Vial 1,000,000 Units (add 2ml sterile water) IM or IV 3 times daily (50,000 units / kg / dose)	IM / IV	¼	¼	¼	½	½	½
Benzathine Vial 2,400,000 Units (add 5ml sterile water) IM Once only	IM / IV	½	½	½	1	1	1
Phenobarbitone Amp 200mg/ml Diluted (add 4ml sterile water) IM Loading Dose (first dose only)	IM	½	¾	1	1¼	1½	1¾
Tablets (30mg) Daily dose	Oral	¼	¼	½	½	½	¾
Zinc (for low birth weight babies while in hospital). Give a daily dose.	Oral	5mg			10mg		
IV fluids Number of **ml/hour** of 4.3% dextrose + 0.18% NaCl. Use a paediatric 100ml burette if possible. Small babies need more than 4.3% dextrose. To make up 10% dextrose add 10ml 50% dextrose to 90ml of 4.3% dextrose in a burette. Most babies on IV fluids can still have some breast milk, even if only 2-3 ml per hour.	IV	2	4	6	7	8	10

Note: All newborn babies should be given:

- Vitamin K, phytomenadione (Konakion) 1mg IM
- Oxytetracycline eye ointment to both eyes
- Hepatitis B vaccine
- BCG vaccine at or soon after birth.
- For treatment of meningitis suggest strictly use 50mg/Kg of ceftriaxone per dose for all weight groups

BREAST FEEDING

Breast feeding is best.

It is safe, simple, readily available and cheap.

It contains all the nutrients that the baby needs to grow.

It reduces the risk of diarrhea, pneumonia, malnutrition and diseases.

GENERAL

- Breast feeding should begin as soon as possible after delivery.
- The easiest and best schedule is ‘on-demand’ breast feeding.
- Infants who cannot demand feed (such as low birth weight or babies) should be fed every 2-3 hours.
- Infants who cannot suck on the breast (e.g. very premature bab should be given expressed breast milk (EBM) by cup or by nasogastric tube (refer to section on **babies weighing less tha kg**, p. 24)
- **All babies should be exclusively breast fed for the first 6 m** *Exclusively means that no other foods or drinks, not even wate should be given.*
- Breast feeding should continue for as long as is possible or acceptable to the mother.
- Breast feeding policies should be supported and upheld whene and wherever possible.
- The first yellow milk a mother makes (colostrum) ***should*** be g to the baby. It should *not* be thrown away. It contains importa infective substances that are part of the baby's defense against infection.

Bottles with teats and baby cups with spouts should *never* be use health care facility, and their use should not be encouraged anyw else. They are very difficult to sterilize and often result in seriou infections such as diarrhea, and malnutrition.

Contents

BREAST FEEDING (continued)

FAILURE TO BREAST FEED

1. **Check the baby for underlying causes**

   For example

   - premature or low birth weight
   - birth trauma
   - infections
   - congenital abnormalities eg cleft lip / palate

   Treat the underlying cause if possible

2. **Check the mother for any problems**

   For example

   - Maternal illness
   - Breast problems; cracked, flat, inverted nipples
   - Primiparous mother
   - Adopting mother, never previously lactated

   Treat the underlying cause if possible or refer to a midwife, child health nurse, paediatrician or obstetrician

PROBLEMS WITH "INADEQUATE" MILK SUPPLY

1. Check to see whether baby is sucking frequently and adequately 2. Check to see if the breast milk supply of the mother really is inadequate. If it is: Give the mother:

Metoclopramide (Maxalon) 10mg oral TDS
(this is the first choice if it is available)

OR

Chlorpromazine (Largactil) 25mg oral TDS

Continue until an adequate milk supply is established (usually within one week). Mothers given chlorpromazine should be warned that it may make them sleepy.

3. Once the mother begins taking Maxalon or Largactil, it is essential that she is encouraged to suckle the baby **as often as possible** even if there is no breast milk to start with.

REMEMBER, BREAST MILK IS BEST FOR BABIES. IT REDUCES THE RISK OF INFECTION AND MALNUTRITION

See page 59 for breast feeding by HIV positive mother

BURNS AND SCALDS

FIRST AID. As a first aid treatment, immediately immersing the burnt area in water will reduce the severity of the burn.

a. Give **pethidine IM** every 6 hours for severe pain (see p.147).
b. Give **tetanus toxoid** ½ml IM.
c. Give **extra fluids**
If the burn is more than 10% (one tenth) of the body area, give **intravenous fluids**. Start with 0.9% sodium chloride (normal saline) in the Health Centre.

Weight (kg)	**Quickly**	**Later Fluid** (drip rate*)
3 - 5.9	100 ml	25 ml/hour (7 drops/min)
6 - 9.9	150 ml	50 ml/hour (13 drops/min)
10 - 14.9	250 ml	75 ml/hour (20 drops/min)
15 -19.9	350 ml	100 ml/hour (25 drops/min)
20 - 29.9	500 ml	100 ml/hour (25 drops/min)
30 – 50	700 ml	150 ml/hour (40 drops/min)

* This is the drip rate when using an adult giving set.
When using a paediatric burette 1 drop/min = 1ml/hour

d. **Refer** urgently to hospital any child who has burns to more than 10% of their body area.
e. **Clean and dress the burn**
If there is no pus or inflammation:
- Do not give antibiotics

- Clean with antiseptic solution, e.g. chlorhexidine (Savlon) or sterile Normal Saline, then either
- Apply an antiseptic dressing to the burnt area and change the dressing every 3 days

OR

- Apply silver sulphadiazine cream to the burnt area each day.

If there *is* dirt or pus in the burn:

- Clean away dirt and dead tissue with antiseptic solution e.g. chlorhexidine (Savlon) or sterile Normal Saline.
- Apply an antiseptic dressing to the burnt area, and change it once or twice a day.
- Give benzyl penicillin (Crystapen) IM or IV 4 times a day until the inflammation goes away (p.147), then Amoxycillin orally TDS for 5 days (see p.140).
- When the burnt area is clean, change the dressing every 3 days

OR

- Apply silver sulphadiazine cream daily.

Estimating Burn Area in Young Children		
	% Area of body	
Part of body affected	Front	Back
Arm (each)	3.5%	3.5%
Leg (each)	7%	7%
Chest	7%	7%
Abdomen	7%	7%
Head	14%	14%

REFER URGENTLY TO HOSPITAL

CHILDREN WHO HAVE BURNS TO MORE THAN 10% OF THE BODY AREA

CHILD ABUSE

Classification

- Non-accidental injury: any soft tissue or bony injury that is not the result of an accident
- Sexual abuse: any use of a child by an adult for sexual stimulation
- Emotional abuse: undermining a child's self esteem
- Neglect: failing to provide adequate care and a safe environment for a child

Diagnosis of child abuse

- Be aware that child abuse is more common than we like to think and that it presents in many different ways
- Be alert to any inconsistencies in the history relating to an injury
- Make a careful examination of the whole child, not just of the presenting injury
- Be aware of very suggestive injuries: lower limb fractures in a child who is too young to walk, peri-orbital haematoma, unusual burn marks, multiple bruises on the back or buttocks.

What to do if you suspect a child is being maltreated or neglected in any way

- Refer all cases of suspected abuse to the hospital for further assessment.
- Under the *Lukautim Pikinini Act* health workers now have a duty to report all cases of suspected or proven abuse to their Provincial Welfare Departments.
- If you think a child is in danger of further abuse or injury you should admit the child, inform the Welfare Officer as soon as possible and ask for a protective order.
- Treat any physical injuries or sexually transmitted infections

REMEMBER: THE SAFETY, HEALTH AND WELL BEING OF THE CHILD IS OF PRIME IMPORTANCE.

CHILD ABUSE IS EVERYBODY'S BUSINESS. NO-ONE, INCLUDING THE PARENTS, HAS THE RIGHT TO HURT A CHILD IN ANY WAY.

CHILD ABUSE continued SEXUAL ABUSE OF CHILDREN

Sexual abuse of children is defined as the use of children by adults for sexual pleasure. It covers a range of conditions, with rape being at the severe end of the range.

Sometimes, for example following a rape, the diagnosis is obvious, but many times, particularly when the abuse is chronic the diagnosis may not be obvious.

Think of sexual abuse when you see children presenting with changes in behavior or unexplained symptoms of headache or abdominal pain.

Always examine the child carefully, and make sure that you have another staff member with you during the examination.

Look for:

- Signs of sexually transmitted diseases
- Damage to the genitalia or anus
- Abnormal slackness of the anal sphincter.

In all cases of confirmed sexual abuse:

- Explain to the care giver and the child what you are doing and why.
- Take blood samples for HIV testing and VDRL testing
- Take appropriate swabs for examination and culture if facilities are available
- Treat for Sexually Transmitted Diseases (page 114)
- Consider providing a course of prophylactic Antiretroviral treatment
- Make good records both in the Child's Health Record Book and in a separate health facility record

- Report the case to the Police and other relevant authority such as the Child Welfare Department. (Sexual abuse is a mandatorily reportable condition)
- Make every effort to follow up on the child's condition

CHILD ABUSE continued RAPE

Children who have suffered rape should almost always be admitted. They need a very careful examination which might only be possible under an anaesthetic, and they may need surgical treatment in addition to vaginal and/or anal swabs being taken. Their clothing should not be washed, but should be kept in a plastic bag for possible forensic use.

Child Abuse- of any kind and particularly child sexual abuse is an unpleasant matter to deal with. The natural response is to be shocked but not to get involved in trying to deal properly with the situation. Remember that if the Health Worker doesn't do the right thing, the child – and perhaps other children - will probably be abused again. It is possible to take appropriated action (eg in reporting the matter) as a group rather than as an individual if there are possibilities of confrontation.

AS FOR ALL CASES OF SEXUAL ABUSE BASELINE BLOOD SPECIMENS FOR HIV AND VDRL TESTING SHOULD BE TAKEN, THE CHILD SHOULD RECEIVE TREATMENT FOR SEXUALLY TRANSMITTED DISEASES WITH AMOXYCILLIN, AUGMENTIN, PROBENECID AND AZITHROMYCIN, AND ANTIRETROVIRAL PROPHYLAXIS SHOULD BE GIVEN.

COLDS AND URTI
(Upper Respiratory Tract Infection, Simple Cough)

1. Examine the child carefully.
2. Treat as an outpatient.

3. Explain to the parents that they should come back if the child becomes short of breath.
4. Explain to the parents that the cough gets rid of rubbish from the chest and throat.

TREATMENT

1. **If no fever is present**, reassure the parents and take time to explain why the child is coughing.

2. **If fever is present**
   Test for malaria and if positive treat accordingly p. 67
   If otitis media is present treat as on p. 97.
   If pus is present on the tonsils treat as on p. 66.

3. **Immunisation**
   Immunisation should be given if the child is due for it.
   Measles vaccine should always be given even if there is a high temperature. If the temperature is above 38°C, the pentavalent (triple antigen, Hib and hepatitis B) vaccines should be delayed until the temperature falls.

Note: Antibiotics must not be used for the treatment of colds. "Strong cough", "big cough" or "productive cough" are not indications for antibiotics unless fast breathing or another condition is also present.

TEACH PARENTS THE WARNING SIGNS OF PNEUMONIA: FAST BREATHING AND CHEST INDRAWING

Use a Flip Chart if you have one

CONJUNCTIVITIS

1. **Mild conjunctivitis**
   (a) Treat as outpatient. Show the mother how to wash the eyes with breast milk or water and how to apply eye ointment to the eyes, tell the mother to wash the eyes and apply eye ointment 4 times a day for 5 days.
   (b) Give the mother a tube of:
   •• Oxytetracycline eye ointment, OR ••
   Compound antibiotic eye ointment, OR
   •• Chloramphenicol eye ointment.

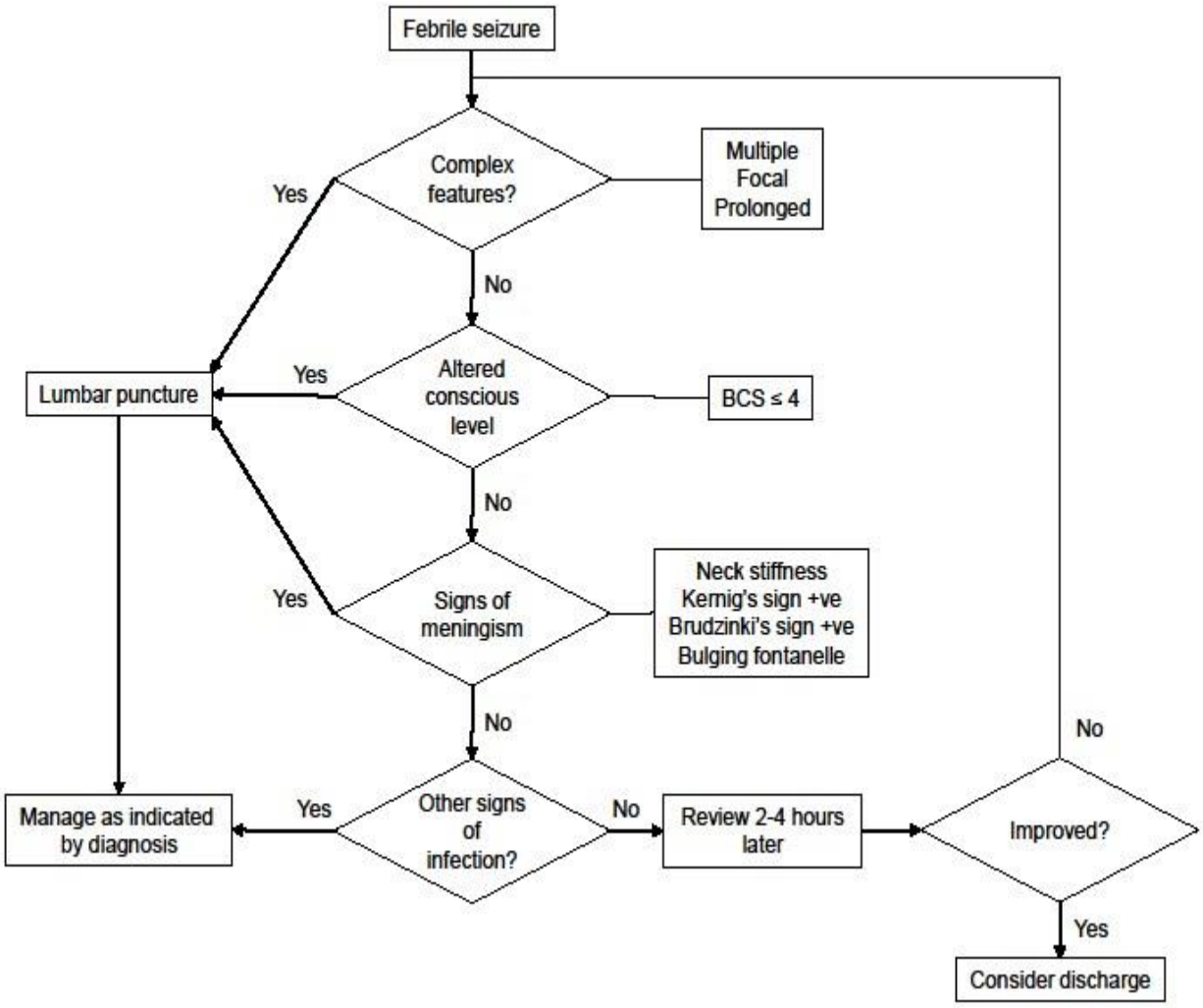
2. **Severe conjunctivitis** (a lot of pus or redness and swelling of the eyelids)
   (a) Admit to hospital or health centre (b) Wash the eyes, and put in: •• Oxytetracycline eye ointment, or •• Compound antibiotic eye ointment, or •• Chloramphenicol eye ointment. 4 times a day for 5 days.

3. **Severe conjunctivitis in babies** (a lot of pus or redness and swelling of the eyelids): during the first 2 weeks of life *may be* due to an **STI** (p. 114).
   (a) Wash the eyes with breast milk or water to clear as much pus as possible.
   (b) Oxytetracycline eye ointment 4 times a day for 5 days.
   (c) Benzylpenicillin (crystalline) *plus* gentamicin
   Benzylpenicillin: add 2ml sterile water to 1,000,000u vial. • 2.4 kg or less: ¼ ml • 2.5 kg or more: ½ ml
   Give Benzylpenicillin IM 3 times a day for 5 days (p. 30)
   Gentamicin daily dose: see Babies: Drug Doses (p.28)
   (d) Treat the mother and father and contacts for **STIs.**

REFER ANY PATIENT TO HOSPITAL IF CONJUNCTIVITIS DOES NOT IMPROVE AFTER 2 DAYS TREATMENT.

CONVULSIONS

Flow diagram for febrile fits in infants and young children



a. Make sure the airway is clear and the child is able to breath:

- Place the child on his side
- Suck out secretions
- Give oxygen during the fit
- Check the blood sugar if you can
- If the blood sugar is low, or if the child is malnourished give 1ml/kg 50% dextrose or 5ml/kg 10% dextrose IV (or by NG tube when the fit has been stopped).

b. Stop the convulsion:

i) Use IM paraldehyde, IV diazepam, or rectal diazepam (10mg/2ml)

Weight (kg)	Paraldehyde Dose (ml IM)	Diazepam Dose	
		IV (ml)	Rectal* (ml)
3 – 5.9	1	¼	¼
6 – 9.9	1½	½	½
10 – 4.9	2½	½	1
15 – 19.9	3	¾	1½
20 – 29.9	4	1	2
30 kg or more:	5	2	2

* For rectal diazepam use either:

- A Mantoux syringe (without the needle) inserted into the rectum, or
- A 5ml syringe. Mix the required dose of diazepam with 5mls of water in the syringe and put it into the rectum through a feeding tube.

* If giving IV diazepam, give a single dose only.

ii) If the child is still convulsing after 10 minutes:
Give the drug which you have not used if it is available (paraldehyde or diazepam), or repeat the first dose if the other is not available

iii) If the convulsions continue after another 10 minutes:-
Give a loading (starting) dose of phenobarbitone as shown in the table. It is best to give this dose IM if possible.

Loading (Starting) Dose of Phenobarbitone 200mg/ml Ampoule or 30mg Tab			
3 - 5.9 kg	¼ ml IM or 2 tabs	15 — 19.9 kg	1ml IM or 6 tabs
6 - 9.9 kg	½ ml IM or 3 tabs	20 — 29.9 kg	1ml IM or 7 tabs
10 - 14.9 kg	¾ ml IM or 5 tabs	30 kg or more	1ml IM or 7 tabs

c. Reduce temperature if febrile (see Fever p. 57).

d. Treat initially for severe malaria, stop if test negative (see p. 67)

e. If the child has fever and stiff neck or reduced consciousness, do a lumbar puncture if you can

- If CSF is clear - treat for cerebral malaria (see p. 68). Repeat lumbar puncture if no improvement in 24 hours.
- If CSF cloudy, blood stained or you cannot get CSF - treat for cerebral malaria (see p. 68) and meningitis (see p. 88).

For children with a single febrile convulsion who has normal conscious state and no neck stiffness, there is no need for a LP. Observe closely for 4 hours.

f. For children with epilepsy:

- **Epilepsy is frequent convulsions *without* fever**
- Give phenobarbitone if the child is less than 5 years and phenytoin if more than 5 years. The daily maintenance doses are shown in the table.
- Continue these until there have been no convulsions for at least 18 months.
- When stopping these drugs, slowly reduce the dose over a period of at least 2 months.

Daily Maintenance Doses of Anticonvulsants		
Weight (kg)	**Phenobarbitone** 30mg Tab.	**Phenytoin** 30 mg capsules or tablets (NOT 100mg cap / tab)
3 - 5.9	½ tab	1 capsule

6 - 9.9	1 tab	2 capsules
10 - 14.9	2 tabs	2 capsules
15 - 19.9	3 tabs	3 capsules
20 - 29.9	4 tabs	4 capsules
30 kg or more	5 tabs	5 capsules

DIARRHOEA

DIARRHOEA DIAGNOSIS AND MANAGEMENT SUMMARY

ASSESS SIGNS	CLASSIFY	ACTION
Two of these signs: • Drowsy or unconscious • Sunken eyes • Unable to drink or drinks poorly • Skin pinch goes back very slowly YES	**SEVERE DEHYDRATION** **SEVERE DIARRHOEA**	• Admit or refer for treatment URGENTLY • Rehydrate with intravenous HSD
Two of these signs: • Restless or irritable • Sunken eyes • Thirsty, drinking eagerly • Skin pinch goes back slowly YES	**SOME DEHYDRATION** **MODERATE DIARRHOEA**	• Treat under supervision • Rehydrate with ORS • Advise mother when to return immediately • Follow up in 2 days if not improving.
• Not enough signs to classify as severe dehydration or some dehydration YES	**NO SIGNS OF DEHYDRATION** **MILD DIARRHOEA**	• Advise mother to give extra fluids and continue feeding • Advise mother when to come back immediately • Follow up in 5 days if not improving

• Diarrhoea lasted more than 7 days • Assess for signs of dehydration YES	PERSISTENT DIARRHOEA	• Treat any dehydration as appropriate for severity. • Treat the persistent diarrhoea. • Diarrhoea persist or recurs, refer for assessment.
• If there is blood or mucus in the stool • Assess for signs of dehydration YES	DYSENTERY	• Treat any dehydration • Treat the dysentery. • Refer young Babies with blood

NOTES:

Contents

DIARRHOEA –SEVERE
(WITH SIGNS OF SEVERE DEHYDRATION)

Use the table on page 44 to decide if the child has signs of severe dehydration

TREATMENT

Fluids
Give IV Half Strength Darrow's (HSD):

Step 1: Give **fast** IV fluid:

Weight (kg)	3-5.9	6-9.9	10-14.9	15-19.9	20-29.9	30-49.9
No. of mls	100ml	150ml	250ml	350ml	500ml	700ml

Step 2: Review the child immediately after Step 1 and repeat the fast IV fluid if signs of severe dehydration are still present.

Step 3: When improved, give slower IV fluid:

Weight (kg)	3-5.9	6-9.9	10-14.9	15-29.9	30-49.9
Mls / hr	25ml	50ml	75ml	100ml	150ml
Drops / min	7 drops	13 drops	20 drops	25 drops	40 drops

Do NOT use a measuring burette:

- Mark on the IV flask the level for each hour
- Then every hour check that the fluid has fallen to the level of the mark

Encourage the child to drink (unless the abdomen is markedly distended)

Step 4: Review the patient every hour and **repeat** fast IV fluid each time if still dehydrated

Step 5: Stop IV fluids and give Oral Rehydration Solution, 1 cup every 3 hours when the child is:

- Drinking well

Contents

- Not vomiting
- No longer dehydrated

Note: If you cannot get a drip in to give intravenous fluids, give Oral Rehydration Solution (ORS) or Half Strength Darrows (HSD) by nasogastric drip. Make sure the tube is in the stomach and splint the child's elbows.

Weight (kg)	3-5.9	6-9.9	10-14.9	15-19.9	20-29.9	30-49.9
Mls / hr	100ml	150ml	250ml	350ml	500ml	700ml

If hydration is not improved after 3 hours reattempt IV therapy.

OTHER TREATMENT:

a. **Food**
Continue breast feeding and start solid food as soon as the child can eat.

b. **Antimalarials**
If the child is febrile test for malaria and treat if positive (see p. 67). If child is afebrile, do RDT and treat accordingly.

c. **Zinc tablet 20mg**
Give zinc tablets daily for 10 days

Weight (kg)	5-9.9kg	10kg or more
No of Tab	1/2 tab	1 tab

d. **Antibiotics are not required for most severe diarrhoea** Give antibiotics only if the child:
- looks *very* sick (fever, shock and weakness may be due to septicaemia) OR
- has fever and blood or pus in the stool OR has fever and severe abdominal distension

Add 4ml sterile water to 1 gram vial of **chloramphenicol**.

Weight (kg)	**No. of mls**
3 - 4.9kg	½ml
5 - 6.9kg	¾ml
7 - 9.9kg	1ml
10 -14.9kg	1½ml

Weight (kg)	**No. of mls**
15 - 19.9kg	2ml
20 - 29.9kg	2½ml
30 - 49.9kg	3ml
Adult	4ml

Change to **oral chloramphenicol** when the child has no fever and looks well. Give every 6 hours for 5 days (see p. 142).

e. **Tinidazole** (see p. 148 for dosage)
Give orally as a stat dose if the child has:

- Severe malnutrition (kwashiorkor or marasmus)
- Persistent diarrhoea (more than one week) Give tinidazole daily for 3 days if:
- Blood is present in the stool, (see **dysentery**) p.54)

f. **Albendazole** (must be crushed or chewed)

- No oedema - once
- Oedema present – daily for 3 days

Weight (kg)	5-9.9kg	10kg or more
No of Tab	1 tab	2 tab

ALWAYS CHECK THE CHILD WITH DIARRHOEA CAREFULLY FOR SIGNS OF OTHER ILLNESSES. PNEUMONIA, MENINGITIS MALNUTRITION OR ANOTHER CONDITION MAY ALSO BE PRESENT.

DIARRHOEA –□ MODERATE
(WITH SOME DEHYDRATION)

Diarrhoea is serious if there are signs of dehydration. Use the table on p. 44 to decide whether there is **some dehydration** or **severe dehydration** present in the child.

If the child has signs of some dehydration:

- Keep the child under observation until the signs are no longer present. This may mean admitting the child.
- Examine for other illness (e.g., otitis media, pneumonia) and treat if present.
- Weigh the child and record the weight
- Encourage the mother to breast feed and give food to the child.

TREATMENT

1. **Fluids**

a) **Give ORS** -

Give the mother a large cupful of ORS for the child every hour. Give more than this if the child will drink it. Show the mother how to give the ORS with a teaspoon in infants.

Important rules when using Oral Rehydration Solution (ORS)

- Reassess the child every 3-4 hours (use table on p.43) ○ If the child is no longer dehydrated change to treatment for mild diarrhoea
  - If signs of moderate diarrhea with **some dehydration** are still present continue ORS and continue to give some food.
  - If signs of **severe dehydration** have appeared, change to IV halfstrength Darrow's solution (p. 45)
- Encourage the mother to continue breast feeding.
- If the child vomits: wait 10 minutes and give the ORS more slowly
- if the child vomits repeatedly: give IV HSD as for severe diarrhoea
- If the child's eyelids become puffy: stop ORS and review child after 3 hours.

How to make oral rehydration solution:

- Mix the ORS powder according to the instructions until the powder dissolves.
- Throw away any solution that is left over after 24 hours. - Wash the utensil very well before using it again.

OTHER TREATMENT:

a. **Food**

Continue breast feeding and start solid food as soon as the child can eat.

b. **Antimalarials**

If the child has a fever, do RDT and treat accordingly.

c. **Zinc tablet 20mg**

Give zinc tablets daily for 10 days

Weight (kg)	5-9.9kg	10kg or more
No of Tab	1/2 tab	1 tab

DIARRHOEA – MILD
(NO SIGNS OF DEHYDRATION)

If a child has diarrhoea (and/or vomiting) always look for signs of dehydration:

- irritability or lethargy
- dry mouth and tongue

- sunken eyes
- absent tears
- thirsty, drinking eagerly

- skin pinch goes back slowly
- fast pulse or cold limbs
- not able to drink, drinking poorly

If the child has **no signs of dehydration:**

a. Weigh the child carefully.
b. Examine for other illnesses (e.g., meningitis, otitis media) and treat if present. If child has fever, do a rapid-diagnostic-test (RDT) and treat for malaria accordingly.
c. Mix ORS in front of the mother and explain how to do this. Give a cup of ORS for the child to drink:
   Send home after step 3 if he drinks one cup of ORS
d. Teach the mother or father to:
   i. Give the child **more fluids more often** to prevent dehydration:
      - Any locally available home fluid should be used:
        - Thin soups from boiled vegetables are good e.g. rice-water, sweet potato-water, banana-water
        - Boiled water that has cooled or cold tea - Kulau
      - Give as much of these fluids as the child will drink, **after every watery stool.**
      - Continue giving the fluids till the diarrhoea stops

Note: Only give the mother ORS packets to mix at home if you are very sure that she can do this properly and understands how to use them.

   ii. Give the child **plenty of food** to prevent undernutrition:
      - Continue to breast feed frequently.
      - Give fresh fruit or mashed banana to provide potassium.

- Give freshly prepared foods. Rice, sweet potato or taro mixed with vegetable and meat or fish are good. Cook and mash or grind food well.
- Encourage the child to eat, offer food at least 6 times a day.
- After the diarrhoea stops, give an extra meal each day for two weeks.

iii. Bring the child back to the health worker in 2 days or sooner if any of the following happen:
- many watery stools
- repeated vomiting
- marked thirst
- eating or drinking poorly
- fever
- blood in stool

PATIENTS WITH DIARRHOEA NEED TO DRINK MORE FLUID MORE OFTEN

REMEMBER TO DISCUSS WITH THE PARENTS, IMPORTANT WAYS TO PREVENT DIARRHOEA, ESPECIALLY HAND WASHING AND THE USE OF PROPER TOILETS

(Use a Flip Chart if you have one)

DIARRHOEA – LASTING MORE THAN 7 DAYS
(PERSISTENT DIARRHOEA)

Admit to hospital or health center.

TREATMENT:

a. Fluids – check for signs of dehydration and treat as appropriate
b. Encourage extra food
c. Look for signs of **malnutrition** and treat if present (p. 75)
d. If no RDT, very sick and febrile treat for **severe malaria.** **I**f not sick and febrile do RDT and treat accordingly.
e. Tinidazole (500mg tablet) Give a single dose orally

Weight (kg)	**No of tab.**	**Weight (kg)**	**No of tab.**
3 – 5.9	¼ tab	20-29.9	2tab
6 – 9.9	½ tab	30-39.9	3tab
10 – 14.9	1 tab	40kg or more	4tab
15 – 19.9	1½ tab		

Repeat dose only if first dose vomited.
(Use **metronidazole** if tinidazole is not available (see p. 146).

f. Albendazole (must be crushed or chewed) •• No oedema: once only
•• Oedema present: daily for 3 days

Weight	5-9.9kg	10kg or more
No of Tab	1 tab	2 tab

g. **Zinc tablets**
Give zinc 20mg tablets daily for 10 days

Weight (kg)	5-9.9kg	10kg or more
No of Tab	1/2 tab	1 tab

h. Check for lactose intolerance

If the area around the anus is red and inflamed.

- Reduce the amount and frequency of breast feeds for 2 days.
- Keep mother's breasts expressed.
- Give **lactose-free milk** at least 6 times a day if available

Weight	3-5.9kg	6-9.9kg	10-14.9kg
No of mls	120ml	240ml	300ml

- If you do not have any lactose-free milk, give Oral Rehydration Solution (ORS) or other clear fluids e.g. rice water, coconut water.
- Give extra food.

DIARRHOEA WITH BLOOD - DYSENTERY

- Treat as for diarrhoea (see pages 44-53).
- Treat the cause of the bleeding.
- If only small specks of blood are present and the child is not very sick, no special treatment is required but the child should be observed carefully.
- If the child has one of the following: - Malnutrition.
  - Blood and mucus mixed throughout the stool.
  - Looks very sick.
  - Small amounts of blood in the stool for more than 3 days. - Large amounts of blood in the stool.
- If the child has blood and in stool and abdominal pain associated with or without distension:
  -possible intussusception, need urgent admission and or referral

Treat the child with:

a. **Ciprofloxacin**

- Dose: 10-15mg/kg orally twice daily for 5 days (see p. 138).

b **Amoxycillin and Gentamycin ivi** if child very sick or Ceftriaxone at 50mg/kg twice daily and refer asap

c.**Tinidazole**

- Give orally once daily for 3 days (see p. 148).

d. **Albendazole** (see p. 140).

e. **Antimalarials** (if RDT positive p. 67).

e. **Zinc tablets 20mg**

Give daily until diarrhoea stops or for 5 days

Weight (kg)	5-9.9kg	10kg or more
No of Tab	1/2 tab	1 tab

DIARRHOEA DUE TO CHOLERA

Cholera is a diarrhoeal disease caused by infection of the intestine with the bacterium *Vibrio cholerae*. About 20% of those who are infected develop acute, watery diarrhoea. 20% of these develop severe watery diarrhoea with vomiting. If these patients are not promptly and adequately treated, the loss of such large amounts of fluid and salts can lead to severe dehydration and death within hours.

Rehydration and replacement of electrolytes is the most important part of cholera treatment.

- The patient should receive different rehydration therapy (oral or intravenous fluids) depending on the dehydration severity.
- Use Hartmann's solution or Normal Saline for IV therapy.
- Oral rehydration solution (ORS) should be used during and after IV therapy.

Degree of dehydration	**Signs**	**Treatment**
Severe	Lethargic, unconscious, Very sunken eyes Floppy Drinks poorly, unable to drink Skin pinch goes back very slowly Mouth very dry No tears	IV therapy + Antibiotics + ORS + Zinc + Very close monitoring
Mild	Restless and irritable Dry mouth Thirsty, drinks eagerly Skin pinch goes back slowly No tears	ORS + Zinc Very close monitoring
No dehydration	None of the above signs	ORS at home + Zinc

If IV fluid not possible give ORS by nasogastric tube.

Monitoring of the patient is crucial during treatment

Regularly monitor patients for the following:

- state of consciousness
- pulse
- dehydration signs (above)
- number and appearance of stools
- respiratory rhythm
- temperature: hypothermia common in cholera – if the temperature is high there may be additional condition, e.g. malaria
- urine (present or not)

Antibiotic

- Give azithromycin 20mg/kg stat (p.138)

Confirmation and notification of an outbreak

Laboratory confirmation of the first 10-20 cases is essential to ascertain that this is a cholera outbreak. Take stool samples before giving antibiotics to the patient. Cholera is a disease that must be notified in order to control it. Urgently notify the Provincial Disease Control Officer if you suspect a case of cholera.

FEVER

The common causes of fever in children are:

- upper respiratory tract infection
- pneumonia
- malaria
- meningitis
- otitis media
- diarrhoea
- measles
- abscess
- urinary infection

Take a history and do a physical examination to find the cause of fever in your patient

Collect urine for microscopy, see Paediatrics for Doctors in PNG, p. 378.

TREATMENT:

a. Treat the cause of the fever
b. If very sick give antimalarials**:** if not very ill do RDT and treat accordingly OR if no RDT available treat if fever persists (see p.67).
c. Paracetamol to reduce fever if temperature over 38º C. Do not give paracetamol in infants less than 3 months of age.

Over 3 months of age:

Under 10kg:	2½ml	4 times a day
10kg - 19.9kg:	5ml	4 times a day
20kg - 29.9kg:	7½ml	4 times a day
30kg or more:	10ml	4 times a day

Paracetamol can also be given as a suppository (see drug doses section). If paracetamol is not available do NOT use aspirin in children less than 10 years old for fever reduction.

d. Give extra fluids.
e. Cool sponge if the temperature is over 38º C.

FIND THE CAUSE OF THE FEVER.
ALWAYS TREAT THIS CAUSE.

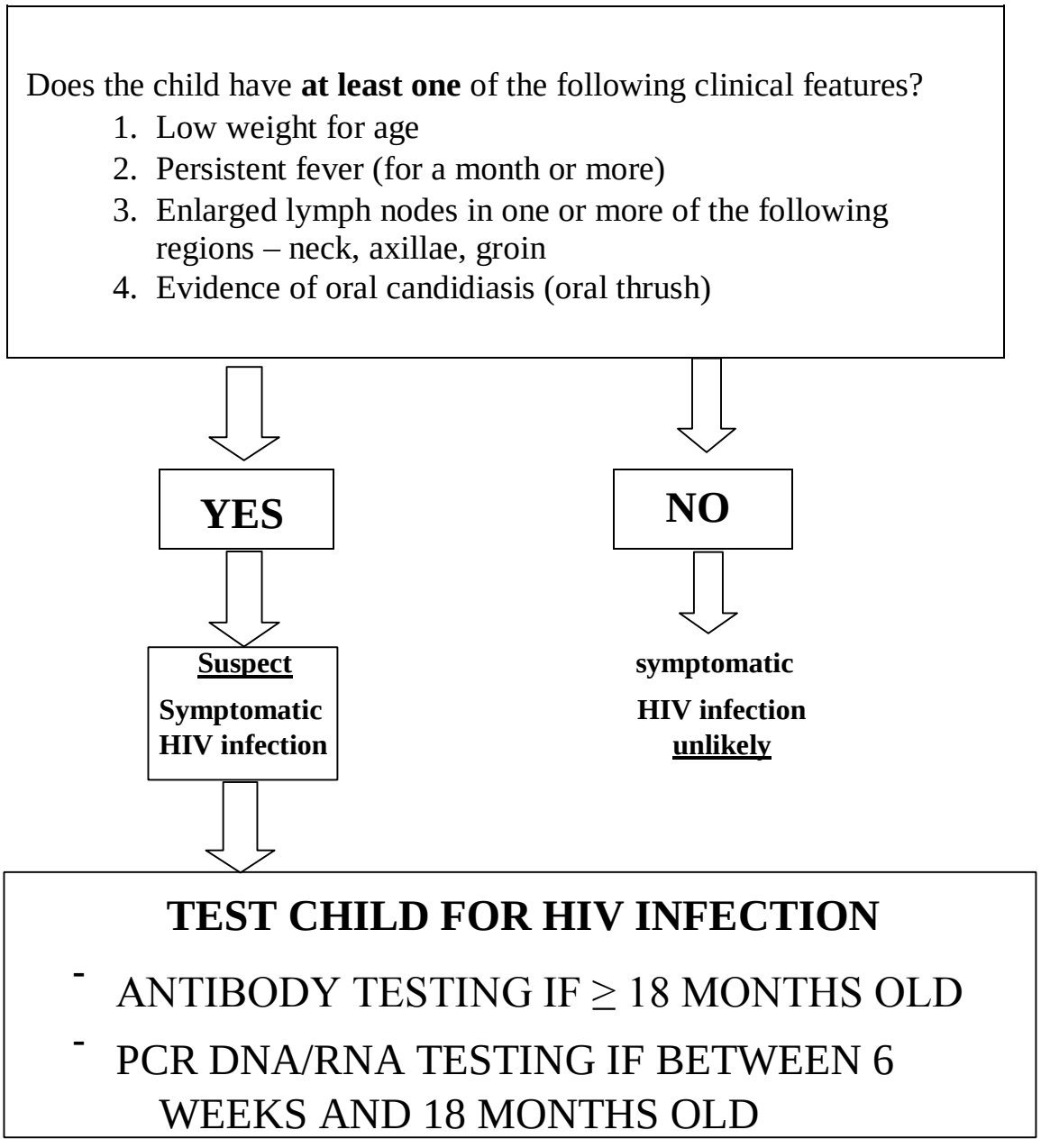
HIV INFECTION

Children are infected by:

1. spread from a mother who is infected
    - before birth (the virus crosses the placenta)
    - during delivery
    - very soon after birth

2. by transmission in blood or by contaminated needles and syringes
3. uncommonly by breast feeding

Not all babies who are born to HIV infected mothers are infected (although all of them will be positive on the HIV screening test until the age of 15-18 months).



HIV INFECTION (continued)

SIGNS AND SYMPTOMS

Infants and young children with 2 or more of the following should be referred for examination and screening:

- Persistent diarrhoea (more than 2 weeks)
- Severe thrush infection
- Malnutrition which does not respond well to treatment
- Recurrent or persistent chest infections
- Unexplained enlargement of lymph glands
- TB responding poorly to treatment
- Persistent unexplained fever
- An infected parent

If you suspect HIV, refer the child to your Medical Officer or pediatrician.

TREATMENT

a. **Symptomatic treatment:** Treat the child's signs and symptoms with the correct standard treatment. Remember that infected children may not respond to treatment as quickly as non-infected children.

b. **Nutrition**: Give the best nutrition that you can. Monitor the child's growth.

c. **Nursing care**: Give the best nursing care you can give. Children with HIV infection and their families need **care, kindness and consideration.** The risks of infection to staff are *very* small indeed if staff follow the guidelines for nursing infected patients (in particular avoiding contact with blood and body secretions by wearing gloves).

d. **Breast feeding**: Counsel the mother about feeding options:
    - The baby's best chance of survival is exclusive breast feeding for the first six months after birth, followed by introduction of complementary feeding after six months, with breast feeding

continuing for as long as the mother wishes and is able to do so, irrespective of the Mother's or Baby's HIV status.

Current evidence states that Exclusive Breast Feeding (EBF) for the first six months provides the best chance of overall survival for the large majority of children, irrespective of HIV status of mother and baby

- If affordable, feasible, acceptable, sustainable and safe (AFASS), infant formula feeding is an option, but it is less desirable for the overall health of the baby. Refer to Medical Officer, Paediatrician or Child Health Nurse for advice.

e. **Immunisation**: It is important to give all vaccines for children with HIV infection. However BCG should not be given while the child is very ill. BCG should still be given to all newborns of HIV-positive mothers, unless they are very ill.

f. **Explanation**: Once the diagnosis is confirmed, explain as simply and as kindly as you can about HIV infection.

g. **Respect:** Respect the patient's and families right to confidentiality

h. **Prophylaxis for Pneumocystis Pneumonia:** All infants of HIV positive mothers should receive cotrimoxazole 0.6ml per kg each day.

i. **Prophylaxis for TB:** All HIV exposed children should receive INAH prophylaxis until HIV testing is done then discontinue if test is negative.

j. **Treatment of other infections:** It is important to treat intercurrent infections. Refer to the relevant sections for each condition, and give the following treatment:

Oral thrush	Nystatin or Ketoconazole or Fluconazole

HIV INFECTION (continued)

Prolonged or bloody diarrhoea	Ciprofloxacilin or azithromycin and albendazole, tinidazole and zinc
Pneumonia	Give the usual treatment for given severity, (e.g. penicillin or chloramphenicol) plus cotrimoxazole. If fails to respond, consider TB treatment

k. Prevention of parent to child transmission: If the mother is tested HIV positive:

Nevirapine 2mg/kg should be given to the baby soon as possible after birth followed by 4 weeks twice daily of AZT 4mg/kg (see p 29).

Note:

If the mother is on ART treatment, the dose of Nevirapine is omitted. If you are unsure, check with your paediatrician or your obstetrician

HIV (AIDS) IS A PREVENTABLE DISEASE. ADVISE THE PARENTS OF CHILDREN WITH HIV TO USE CONDOMS WHEN HAVING SEX TO AVOID FURTHER VIRUS TRANSMISSION AND TO AVOID HAVING ANOTHER INFECTED CHILD

HIV - PREVENTION OF HIV INFECTION IN CHILDREN

Almost all of the children with HIV infection have acquired the infection from their parents (through Mother to Child transmission- or more correctly Parent to Child transmission, since the mother is often infected by the father).
Therefore **prevention of HIV in children is prevention of HIV in adults**.
All adults should follow the basic rules of HIV prevention:

Abstinence (Don't have sex)

OR

Be faithful to one partner who is faithful to you

OR

Use a **C**ondom

It is very sad if a baby is born with HIV infection. It is even more tragic if the mother becomes pregnant again. All HIV infected mothers and their partners need unhurried discussion about the fact that any future pregnancy will very likely result in the birth of another infected baby, and about ways in which pregnancy can be prevented.

IMMUNISATION

- Always check the expiry date on the ampoule or vial and check the vial monitor.
- Never use vaccines that have expired.
- Keep all vaccines in the main compartment of the refrigerator (temperature 2-8ºC), not in the freezer. Only ice packs are kept in the freezer compartment.
- Use cool boiled water to clean the skin before giving an injection. Do not use alcohol or an alcohol swab.

On patrol

- Pack vaccines in ice in a vaccine carrier.
- If the ice packs have melted by the end of the day, all remaining vaccines whether opened or not should be discarded
- If ice packs are still partly frozen at the end of the day, put all unopened vaccine vials back in the refrigerator and use these first at the next immunisation session.
- Write the date on the vials before returning them to the refrigerator.
- Don't forget to check whether the child's brothers and sisters and mother need immunisation also.
- The only vaccines ever to be withheld are Pentavalent and hepatitis B if the child has a fever of more than 38ºC. (These should be given when the temperature returns to normal).
- You must always immunise a child even though you may have to open a new vial for only one child. Order more vaccine to make sure you have sufficient for all the children expected at the clinic plus a little extra as well.
- At the end of each immunisation session return the opened Pentavalent, hepatitis B, polio, and tetanus toxoid vials with any remaining vaccine to the refrigerator. These vaccines can be used within the next 5 days.
- Discard reconstituted BCG and measles vaccines at the end of each immunisation session.

PNG IMMUNIZATION SCHEDULE

VACCINE	WHEN GIVEN	WHAT DOSE	ROUTE
BCG	1. As soon as possible after birth	0.05ml	Intradermal into left upper arm
Hepatitis B Vaccine	1. As soon as possible after birth (within 24 hours)	0.5ml (10mcg)	Intramuscular into left thigh
Measles Vaccine	1. At 6 months of age or as soon as possible afterwards 2. At 9 months of age or 3 months after the first dose	0.5ml	Subcutaneous into right upper arm Do not give IM
Oral Polio (OPV/Sabin)	1. One month of age 2. One month after 2nd dose 3. One month after 3rd dose	2 drops	Orally
Pentavalent Vaccine (contains TA, Haemophilus influenza & Hepatitis B vaccines)	1. One month of age 2. One month after 1st dose 3. One month after 2nd dose	0.5ml	Intramuscular into right upper arm
Tetanus Toxoid	1. First year of community school 2. Last year of community school 3. During pregnancy (2 doses, 4 weeks apart in the first pregnancy, one dose in each of the next pregnancies)	0.5ml	Intramuscular into left upper arm
Vitamin A Capsules	1. At 6 months of age together with measles vaccine	100,000 Units *	Orally
	1. At 12, 18 and 24 months	200,000 Units *	

***Check the units in Vitamin A capsule ***

IMMUNISATION (continued)

Notes

The new **PENTAVALENT VACCINE** contains Triple Antigen, Hepatitis B and Hib vaccine in the one vaccine. This vaccine prevents 5 diseases in one vaccine. 3 doses are necessary: at 1, 2 and 3 months

*The birth dose of Hepatitis B vaccine is very important and should still be given separately, the 3 later doses of Hep B are given as **PENTAVALENT**

LYMPH GLAND ENLARGEMENT

Lymph nodes larger than 1cm may be caused by:

- Acute infections
- Tuberculosis
- Malignancy

1. **Sudden onset of swelling (often with fever)**
   Probably due to acute infection (if a neck gland, check the throat for pus on the tonsils and ears for pus.)

   TREATMENT:

   - Amoxycillin orally for 2 weeks (see p.140)
   - If abscess forms ➔➔ Incision and drainage. Refer if necessary.
   - If not improved after 5 days, refer to health centre or hospital.

2. **Large glands growing slowly (more than 1 month)**
   Investigate for tuberculosis:
   - Take a history of TB contact within the family
   - Do a Mantoux test
   - Do a TB Score (see p. 122)

Check Mantoux at 72 hours. Mantoux test is *positive* if >10mm reaction at 72 hours (or >5mm if the child is malnourished or has HIV).

If Mantoux positive ➔➔ Treat for tuberculosis (see p. 126).

If Mantoux negative ➔➔ Refer to health centre or hospital for chest X-ray and gland biopsy.

MALARIA

ASSESS –SIGNS	CLASSIFY	ACTION
• Any of the TOO SICK signs, OR • Stiff neck YES	MENINGITIS OR SEVERE MALARIA OR OTHER SEVERE FEBRILE DISEASE	• Give first dose of Chloramphenicol IM or Ceftriaxone IM and • Give Artesunate IM / suppository or Quinine IM. • Give sugar water and encourage continued feeding • Do LP if you can • Admit or refer URGENTLY to hospital
• None of the signs above AND YES • Malaria test (or blood smear) positive OR • Malaria test (or blood smear) not available	UNCOMPLICATED MALARIA	• Give ACT (Co-artem). • Give first dose of paracetamol, if temp. 38°C or more. • If test positive treat appropriately other causes of fever, if present • Continue treatment at home. • Ask mother to come back in 3 days if fever persists. • Advise mother when to return immediately. • If fever persist during the follow-up visit for more than 7 days, refer for assessment.
• None of the signs above AND • Malaria test (or blood smear) negative YES	MALARIA UNLIKELY OTHER CAUSES FOR FEVER	• Do not give ACT (Co-artem). • Give first dose of paracetamol, if temp. 38°C or more. • Treat other causes for fever with appropriate drugs, if present. • Advise mother when to return immediately. • Ask mother to come back in 3 days for follow up. • If fever persists in 3 days, give ACT (Co-artem) • If the fever persist after treatment re-assess the child, • If fever persist for more than 7 days, refer for assessment.
* If the results of malaria rapid test (RDT) is positive during initial visit do not repeat the test during the follow-up visit.		

SEVERE MALARIA

Children who are very sick, unconscious or convulsing, (**Cerebral Malaria), MUST** be referred to the nearest **Hospital or Health Centre.**

Pre-referral treatment

At Aid Post and or Rural Health Centre

Use Artesunate suppository 10mg/kg

- Artesunate suppositories are available in 50mg & 200mg strengths. They can be cut in half.

- To prevent expulsion, hold the buttocks of children together for 10 minutes after insertion. If suppository is expelled within 30 minutes, give another suppository.
- Repeat the dose of Artesunate suppository after 24 hours and daily until referral is possible

Artesunate suppository for pre-referral treatment by weight

Weight (Kg)								
Formulation	2-5.9	6-9.9	10-14.9	15-19.9	20-29.9	30-39.9	40-49.9	50+
50mg	½	1	2	2				
200mg	-	-	-	-	1	1.5	2	4

***After inserting suppositories, wait at least 10 minutes before inserting another suppository.**

Malaria is not common in children with body weight lower than 3 kg, Other causes of fever must be fully looked for, and management/care should be supervised in a hospital setting

At Health Centre

If patient was referred from Aid Post or Rural Health Centre and if Artesunate suppository was given as pre-referral treatment

- Give first dose of Artesunate injection if it is 12hours after the last dose of Artesunate suppository
- Continue parenteral (IV/IM) Artesunate until referral to hospital is possible
- Commence parenteral Artesunate, if no treatment has been given yet.
- If patient markedly improved whilst waiting for referral, continue Artesunate to complete at least 3 doses of parenteral treatment

- Then continue with Artemether-Lumefantrine (Coartem) to complete the 3-day course

At Hospital

- Nurse the child on the side and clear the airway regularly.
- Take a malaria slide to confirm malaria infection
- Assess whether patient completed full course of Artemether-Lumefantrine therapy:

a) If <u>did not</u> complete full course of Artemether-Lumefantrine

- Give artesunate IV/IM followed by full course of ArtemetherLumefantrine
- Use artesunate injection

Artesunate Injection (60mg) (A)

The mixture can be given IV or IM

- IV mixture is 60mg in 6ml
- IM mixture is 60mg in 3ml
- Artesunate dose is 2.4mg/Kg per dose IV or IM
  - Give a dose on admission, the next dose 12 hours later then daily
  - Give for a minimum of 2 doses and continue until the patient can swallow, then complete full course of AL (p.72)

b) If <u>completed</u> full course of Artemether-Lumefantrine and blood slide remain positive

- If able to swallow give Dihydroartemisin-piperaquine (DP) (p. 73)
- If still very sick or unable to swallow give quinine

Artesunate injection for severe malaria

		Weight (Kg)							
Formulation	**Days and doses**	**3-5.9**	**6-9.9**	**10-14.9**	**15-19.9**	**20-29.9**	**30-39.9**	**40-49.9**	**50+**
IV 60mg in 6mls	**Day 1:** 1st dose & 2nd dose (12h)	1ml	2ml	3ml	4ml	6ml	8ml	10ml	12ml
	Day 2 onwards: once a day	1ml	2ml	3ml	4ml	6ml	8ml	10ml	12ml

IM 60mg in 3mls	**Day 1:** 1st dose & 2nd dose (12h after)	0.5 ml	1ml	1.5 ml	2ml	3ml	4ml	5ml	6ml
	Day 2 onwards: once a day	0.5 ml	1ml	1.5 ml	2ml	3ml	4ml	5ml	6ml

- If artesunate is not available, quinine injection should be given as tabulated below.
- When the patient can tolerate oral treatment, give a full cause of Artemether-Lumefantrine as in treatment for uncomplicated malaria below (p.72).

- Do a lumbar puncture if you can:
  - If CSF clear:
  - Give **IM or IV artesunate injection** (p.69) - If CSF cloudy or bloodstained, or if you cannot get CSF:
  - Give **IM or IV artesunate** (p. and **ceftriaxone** for meningitis (see p.88)

- Do dextrostix (if available) and repeat every 6 hours until the child is conscious:
  - If less than 2.2mmol: insert an IV of 10% Dextrose, give 5ml/kg over 5-10 minutes then run 4.3% dextrose saline at "coma regimen" rate (see p. 135).
  - If IV Dextrose is not available, give N/G Full Strength Sunshine Milk (FSSM) 4 times a day (see p. 92)
  - or put a moistened teaspoonful of sugar under the tongue

Second line treatment for severe malaria

Indications for second line treatment

1. Treatment failure of the artemisinin derivatives; or
2. Allergy to artemisinin

The drugs for second line treatment are quinine (QN) injection if child is very sick followed by QN tablets when patient is able to swallow.

Dosage

- Quinine 600mg in 10ml injection (QN) ○ Loading dose (LD): IM 20mg/kg or
  IV 20mg/kg given over 4 hours
  - ○ Maintenance dose (MD): IM 10mg/kg or
    IV 10mg/kg given over 2 hours
    - Children: give MD 12 hours after start of LD
    - Adults: give MD 8 hours after start of LD
  - ○ Continue giving MD at specified intervals until patient can take orally

- When the patient can swallow, give quinine tablets (QN) at 10mg/kg every 8 hours for 7 days

Second line treatment for severe falciparum malaria

	Weight (Kg)							
Quinine	**3-5.9**	**6-9.9**	**10-14.9**	**15-19.9**	**20-29.9**	**30-39.9**	**40-49.9**	**50+**
LD (20mg salt/kg)	1ml	2ml	4ml	5ml	8ml	10ml	15ml	20ml
MD (10mg salt/kg)	0.5ml	1ml	2ml	2.5ml	4ml	5ml	7.5ml	10ml

- If the total volume of quinine injection for IM is more than 3ml, the volume should be halved and one-half injected in each thigh

Treatment of uncomplicated falciparum malaria and presumptive treatment

First line Uncomplicated P. Falciparum Malaria
Important decision criteria

If you have available microscopy or RDT kit – Test and treat according to finding.

If you do not have microscopy or RDT kit – use the 13 step checklist for childhood illness to make diagnosis

TREATMENT

Artemether - Lumefantrine 20/120mg combination tab (AL = Coartem)

- 2mg/kg/dose (A) & 12mg/kg/dose (L)
- 6 doses over 3 days given at 0h, 8h, 24h, 36h, 48h & 60h
- Best taken with fatty or oily food or breast milk.

Day	**Weight (Kg)**	**< 5**	**5-14.9**	**15-24.9**	**25-34.9**	**>34**
Day 1(AL)	1st dose at 0 hours	½	1	2	3	4
	2nd dose after 8 hours	1/2	1	2	3	4
Day 2 (AL)	3rd dose after 24 hours	½	1	2	3	4
	4th dose after 36 hours	1/2	1	2	3	4
Day 3 (AL)	5th dose after 48 hours	½	1	2	3	4
	6th dose after 60 hours	1/2	1	2	3	4

***0 hours is the time when the 1st dose of AL treatment is given. The second dose must be given at 8 hours after the 1st dose.**
***If patients vomit within one hour, the dose should be repeated.**

***For babies less than 5 Kg. It is recommended that the dose of 2mg/kg/dose (A) & 12 mg/kg/dose (L) is used. This will amount to half of one tablet. Malaria is not common in children weighing less than 3kg, and other causes must be looked for.**

Second line treatment

WHAT TO DO WHEN THE FIRST LINE TREATMENT FAILS

- Criteria for treatment failure:
  - Patient has completed a full course of AL

- Did not have vomiting or diarrhoea whilst taking treatment
- Positive PF blood slide (if microscopy available) within 14 days after full course of AL
- No other obvious cause of fever

- All patients with treatment failure within 14 days after a full course of treatment with AL must be referred to the nearest health facility that has a microscope for parasitological confirmation.

Treatment failure within 14 days of receiving an ACT (e.g. Artemether & Lumefantrine) is very unusual and should be confirmed by microscopy, documented and reported

TREATMENT

Dihydroartemisinin-piperaquine (DHA-PPQ) is a fixed formulation and contains 40mg dihydroartemisinin and 320mg piperaquine per tablet

Dose

Dihydroartemisinin dose of 2.1mg per kilogram.

Piperaquine phosphate dose of 17.1mg per kilogram daily for 3 days.

DHA-PPQ(6.4mg/kg DHA and 51.2mg/kg PPQ total dose).

	Body Weight Range (Kg)								
	1-5	6-10	11-20	21-30	31-40	41-45	46-55	56-65	66-75
D1	¼	½	1	1.5	2	2.5	3	3.5	4
D2	¼	½	1	1.5	2	2.5	3	3.5	4
D3	¼	½	1	1.5	2	2.5	3	3.5	4
Total	¾	1.5	3	4.5	6	7.5	9	10.5	12

Treatment schedules of vivax malaria

First line treatment

Vivax malaria is treated with AL plus primaquine (PQ)

- Artemether 20mg & Lumefantrine 120mg tab (AL): 2mg/kg (A) & 12mg/kg (L) ○ 6 doses over 3 days given at 0h, 24h, 36h, 48h & 60h
- PQ: 0.25mg/kg daily for 14 days after 3 days of AL

Weight (kg)	Primaquine (7.5 mg tab)	Weight (Kg)	Primaquine (7.5 mg tab)
5-9.9	¼	30-39	1
10-14.9	½	40-49	11/2
15-19.9	½	50+	2
20-29.9	1		

Prophylaxis:

Give to children living in malarial areas with:

- malnutrition
- anaemia
- a very large spleen (at or below the level of the umbilicus)

Give once a week on the same day each week for 3 months or until the problem is resolved

Weight (Kg)	Amodiaquine	Chloroquine
3-5.9	¼ tab	
6-9.9	½ tab	
10-19.9	1 tab	
20-29.9		1 tab
30-49.9		1 ½ tab
Adult		2 tab

MALNUTRITION

SUMMARY

MODERATE MALNUTRITION

Weight between -2SD and -3SD with a flat or falling weight chart and no oedema.

Advise parents: – Give one or two of the 6 Nutrition Messages below:
Use a Flip Chart on Nutrition if you have one.

Check and Treat – Treat for worms, anaemia, chronic diarrhoea and other for
Diseases: infections if present. Rule out resistant malaria and tuberculosis.

Admit only if: – other illness present

– or no improvement after 1 month.

SEVERE MALNUTRITION

Weight below -3SD and a flat or falling weight chart
OR there is oedema:
Admit:
1. Treat infection and anaemia. (Rule out resistant malaria and TB.) 2.
Fatten the child - If he will eat, give him food
- If he will not eat, give him MOF.
3. Dietary education - Discuss Nutrition Messages (Nutrition Unit).
4. Family planning - Discuss available methods.
5. Drugs: Vitamin A, multiple vitamin liquid, folic acid, albendazole, tinidazole, cotrimoxazole, zinc, antimalarials, measles and other vaccines (if due or overdue).

THE SIX NUTRITION MESSAGES

1. Breast feed for at least 2 years
2. Start giving soft food as well as breast milk when your child is 4-6 months old. If you do not know his age, start when he can roll over.

3. Feed infants and children 4-6 times a day.
4. Give infants and children a variety of healthy foods
5. Feed infants and children during sickness and feed them extra after sickness.
6. Women need to eat more during pregnancy and when breast feeding, especially foods high in energy and protein.

DIAGNOSIS

1. **Measuring and recording the weight**
   a. Weigh the child carefully on the most accurate scales available. zero the scales first.
   b. Assess the age as accurately as possible, and write it in the notes. If the child has 1-19 teeth, then the approximate age (in mths) = Number of teeth +6.
   c. Using the **weight chart**, mark the weight in the column above the child's age.
   d. **Compare** the weight with the previous weights, for easy comparison plot the chart.

2. **Deciding the child's nutritional state**
   a. If the weight is above -2SD and increasing, then the child is **well nourished**. If the weight is between -2SD and -3SD and increasing then the child is also **well nourished**.
   b. Praise the parents for their well-fed child.
   If he is over 6 months old, check that he is being given food as well as breast milk.
   c. If the weight is below -2SD and not increasing (flat or falling weight curve) and the child has no oedema, this is **moderate malnutrition**:
   -Give dietary education (see p. 77).
   -Admit if: other illness is present or, if the child does not improve after 1 month.
   d. If the weight is below -3SD and not increasing OR, if there is oedema and a flat or falling weight curve, regardless of the level of the weight curve, this is **severe malnutrition**: **admit** (see p. 79).

3. **Mid upper arm circumference (MUAC)**
   If the child is older than 12 months, and the MUAC is less than 13.5cm, then he or she is likely to be malnourished. If possible, check the weight and plot on a growth chart.

OUTPATIENT TREATMENT

Children with **moderate malnutrition** (underweight)
i.e.: weight below -2SD and no oedema and a flat or falling weight curve.

a. Discuss the problem with the parents:

(i) Try to find the reason for the malnutrition e.g.

- Soft food was started later than 6 months of age.
- Not enough high energy and protein foods given.
- Not enough food for the family.
- Only one or two meals of solid food each day.
- Too much 'junk' food (sweet biscuits, cheese pops, lollywater)
- Too many children in the family, or children born too close together
- The child has a chronic infection (gastroenteritis, malaria, tuberculosis, urinary infection).

(ii) Discuss nutrition and family planning with the parents (use a flipchart if you have one). Encourage the mother to:

- Continue breast feeding.
- Give food 4-6 times a day.
- Add coconut cream, dripping, or margarine to the child's food.
- Grow peanuts and beans for the child to eat.
- Commence a suitable family planning method.

b. Give a single dose of albendazole (see p. 140)

c. Examine for any infection or anaemia (see p. 16): Treat if present.

d. Ask about diarrhoea. If present more than 7 days treat as per p. 52.

e. Check for enlarged spleen and ask about recurrent fevers. Test and treat for malaria if present (see p.67).
Give weekly prophylaxis for up to 3 months (if in a malarial area) or till the child is no longer malnourished (p.74).

f. **Check for tuberculosis by performing a TB Score** (see p. 122)
Commence treatment if indicated.

g. **Refer to Nutrition Unit**, if available, and arrange for regular follow up to check progress.

If there is no weight gain after 1 month:

- Suggest admission to hospital or health centre.

If mother refuses admission:

- Give as much of the inpatient investigation and treatment as you can.
- Teach the mother one or two important nutrition messages and give a demonstration if possible.
- Arrange for the MCH sisters to make home visits.

MALNUTRITION: OUTPATIENT TREATMENT – SUMMARY

STEP 1
Discuss with the parents: More food more often / family planning. (Use a flipchart if you have one) **STEP 2**
Albendazole.
STEP 3
Examine for any infection or anaemia: Treat if present.
STEP 4
Treat for persistent diarrhoea if present.
STEP 5
Test for malaria and treat if present.
STEP 6
Do a TB Score.

INPATIENT TREATMENT

Admit:
- Children with **moderate malnutrition** (weight between -2SD and -3SD with no oedema and a flat or falling weight chart) if not improving after 1 month of outpatient treatment.
- Children with **severe malnutrition** (weight under -3SD, OR there is oedema (kwashiorkor), with a flat or falling weight chart).

a. Treat infection and anaemia

Examine carefully and treat any infection that may be present e.g.

- Persistent diarrhoea (see p. 43)
- malaria (see p. 72)
- tuberculosis (see p. 122)
- pneumonia (see p. 103)
- otitis media (see p. 97)
- worm infestation of the bowel (see p. 16)
- scabies (see p. 117)
- urinary infection (see p. 136)
- septicaemia - in children who are severely malnourished (severe kwashiorkor or severe marasmus), it is best to treat for septicaemia with ampicillin (or benzyl penicillin) and gentamicin (see p. 138)
- Also treat for anaemia (see p. 16) and thrush if present.

b. Fatten the child

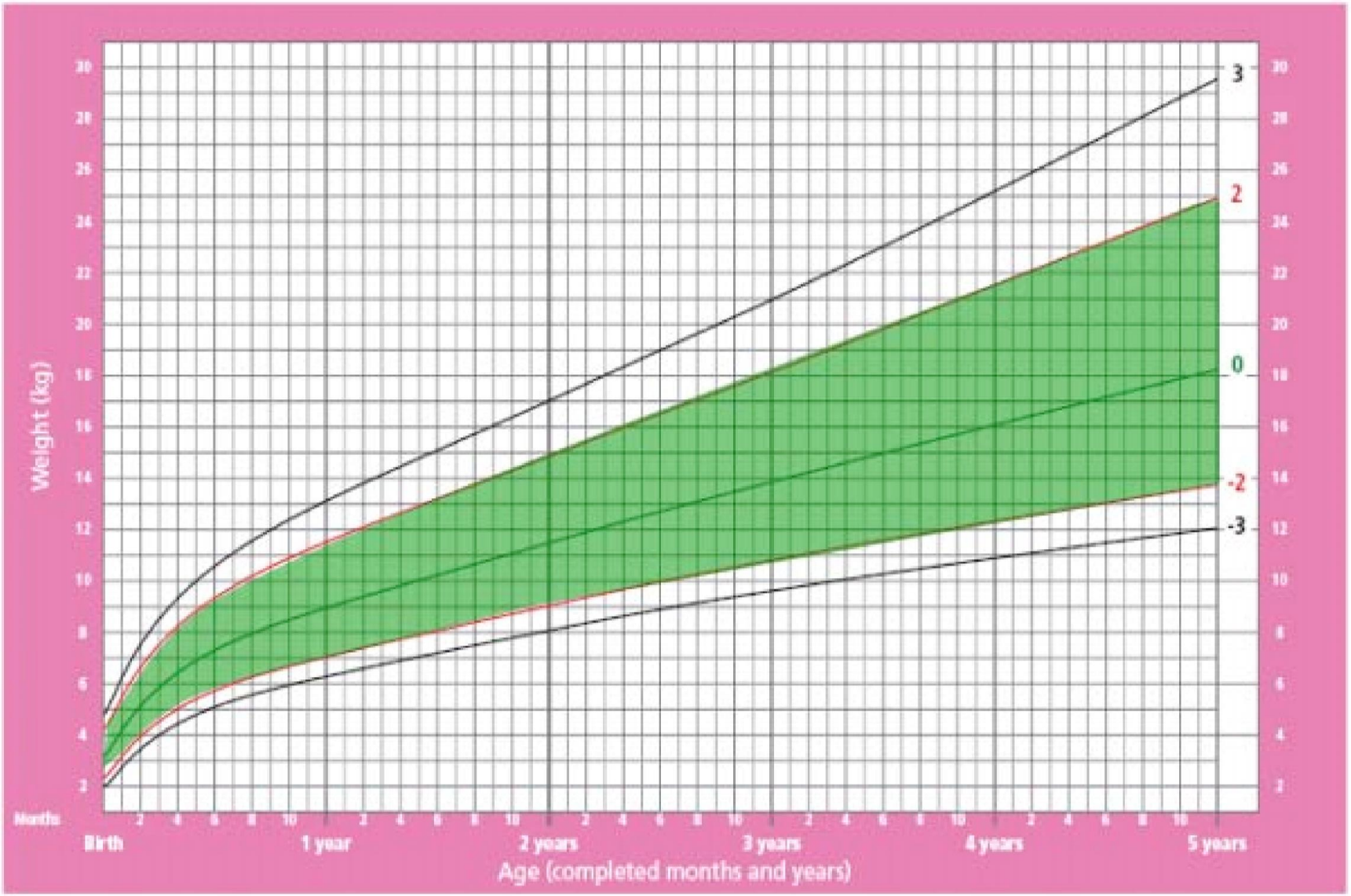
Weigh the child twice a week and record the weight. A child who loses weight after 2 weeks of supervised inpatient treatment may have TB. Use the TB score chart (see p. 122).

(i) If the child will eat, give plenty of food:
- 3 big meals each day(give Plumpy-Nut if available
- Snacks between meals
- Food should be locally available
- Add coconut cream, dripping or margarine to each meal.

Weight-for-age GIRLS

World Health Organization

Birth to 5 years (z-scores)

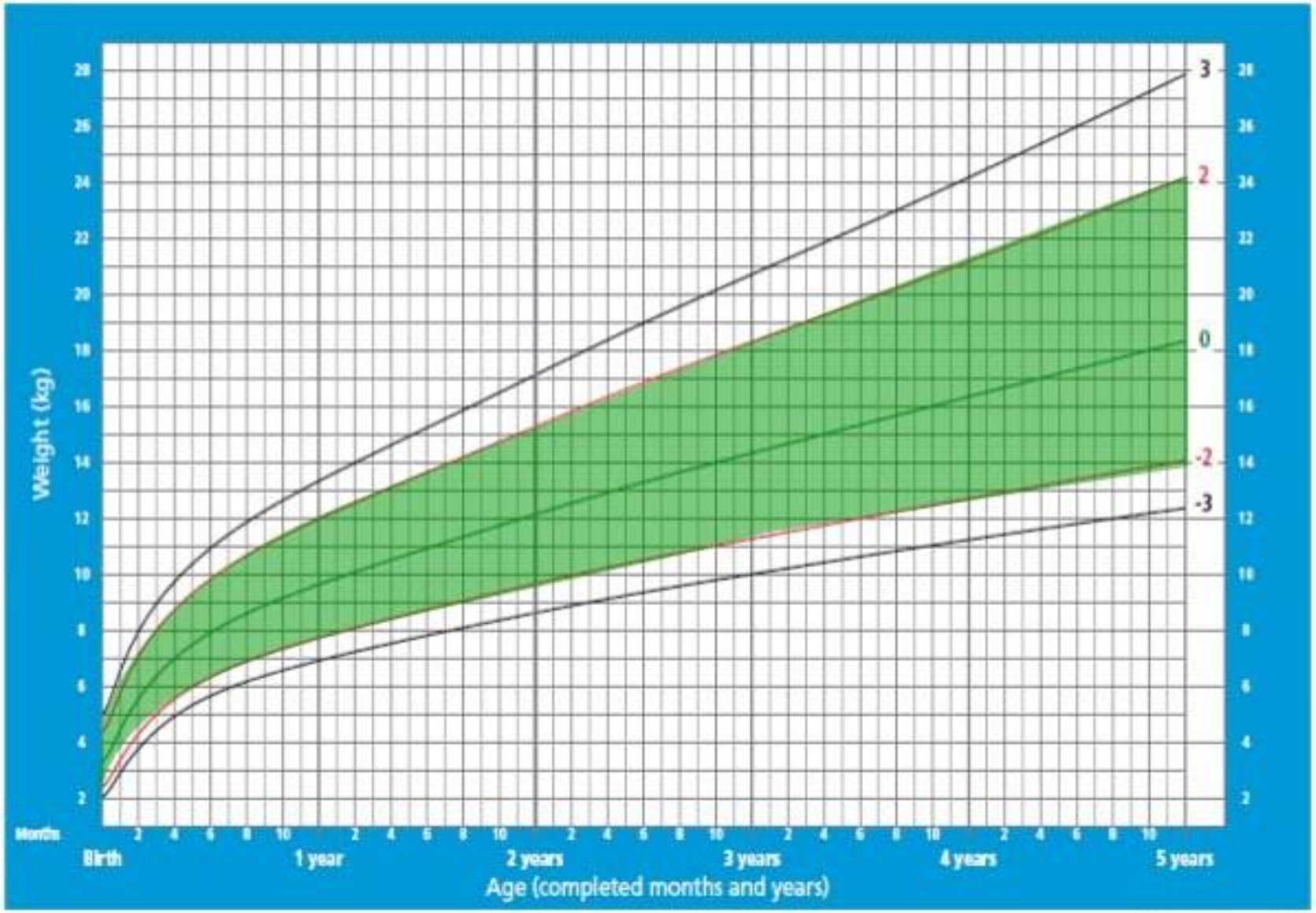


WHO Child Growth Standards

Weight-for-age BOYS

Birth to 5 years (z-scores)

World Health Organization



WHO Child Growth Standards

Contents

MALNUTRITION (continued)

(ii) If the mother does not have enough breast milk, give her metaclopramide (Maxalon) 10mg tabs 3 times a day, OR chlorpromazine (Largactil) one 25mg tab 3 times a day for 1-2 weeks. Encourage her to breast feed the baby many times a day.

(iii) Ensure that the mother is well fed and check her health.

(iv) If the child **refuses to eat** enough food, give MOF (milk-oil formula) (see p. 92), 6 times a day:

Weight (kg)	3—5.9 kg	6—9.9 kg	10—14.9 kg
No of ml MOF	120	240	300

Give MOF by cup, or by nasogastric (NG) tube. If feeding by NG tube, splint the child's elbows.

When the child is drinking well, gradually replace the MOF with food (see p. 92).

(v) If the child has **diarrhoea:**

Continue breast feeding

- Give extra fluids to drink (water, rice-water, kaukau water, weak tea, coconut juice).
- Treat for severe diarrhoea if the child is dehydrated (see p. 45).
- Gradually introduce FSS and then MOF when the diarrhoea has stopped if the child is not eating well.
- Give zinc 20mg per day

c. Dietary education (Use a flipchart if available)

- Try to find out why **this** child is malnourished. Talk to the mother about how **this** problem can be overcome.
- Whenever possible, the mother should help prepare local food for the child while he is still an inpatient.
- The mother should be taught how much food the child needs and how to prepare a mixture of foods.
- Encourage the mother to add extra coconut cream, dripping or margarine to the child's food and to give peanuts, beans, fish or meat.

- The mother and father should learn that all children need food 4-6 times each day.
- Continually encourage the mother to feed the child

d. Family planning (Use a flipchart if available)

If one child in the family is already malnourished and the mother has another baby, then there will be less food for each child. Discuss with the mother (and if possible the father), the benefits of family planning.

- For family planning tell them about:
  - condoms
  - the injection
  - the pill
  - the loop
  - the ovulation method.

- For preventing further children:
  - Tubal ligation or vasectomy.

If they wish to accept a method, then arrange this.

e. Drugs

(i) Give oral vitamin A immediately:

Under 1 year	1 concentrated blue capsule (100,000 units)
1 year or more	2 concentrated blue capsules (200,000 units)

Give 2 more doses, the second on the second day and the third after one week.

(ii) Multiple-vitamin liquid 1ml daily.

(iii) Folic acid 1 tablet daily.

(iv) Electrolyte mixture 5mls daily (contains zinc, potassium and magnesium). Electrolyte mixture should be made with whatever of the 3 components are available, and given to all children with severe malnutrition.

(v) Albendazole: (must be crushed or chewed)

Weight (kg)	Dose	If no oedema	If oedema
5-9.9	1 tab	Stat Dose	Daily for 3 days
10kg or more	2 tab	Stat Dose	Daily for 3 days

(vi) Tinidazole: Give once daily for 3 days (see p. 148).

(vii) Cotrimoxazole (Septrin) twice a day for 7 days (see p. 143). **Note:** Use amoxycillin (or benzyl penicillin) and gentamicin if the child has severe malnutrition (see p. 138)

(viii) Check for enlarged spleen and ask about recurrent fevers. Test and treat for malaria if present (see p. 67). Give weekly prophylaxis for up to 3 months (if in a malarial area) or until the child is no longer malnourished (p. 74).

(ix) Give measles and other vaccines if the child is due or overdue for them (see p. 64).

(x) Nystatin 1ml 3 times a day, or Gentian Violet 2 times a day if the child has thrush.

INVESTIGATIONS

Always:

1. Weigh at least twice a week and record the weight.
2. TB Score (see p. 122) If possible:
3. Haemoglobin
4. Blood slide
5. Urine for protein, if the child has oedema
6. Urine for microscopy and culture
7. Stool for parasites (especially strongyloides) if the child has oedema
8. Mantoux test
9. Chest X-ray
10. Gastric aspiration for AFB
11. Investigation of contacts for TB
12. Consider HIV testing (see p. 58)

A NUTRITION GARDEN AND NUTRITION UNIT ARE IMPORTANT FOR THE TREATMENT OF MALNOURISHED CHILDREN AND THEIR FAMILIES ADMITTED TO HEALTH CENTRE OR HOSPITAL.

Note: There are many other reasons apart from malnutrition and infection that may cause the child to look malnourished (failure to thrive). If the child does not respond to your treatment there may be some underlying cause. Refer the child for further investigation and treatment.

MEASLES

1. Treat as outpatient where possible.
2. Admit to hospital if the child looks very sick or is malnourished or if serious complications occur e.g:
   - pneumonia
   - dark staining rash • diarrhoea with dehydration
   - stridor (noisy breathing).
   - convulsions
   - severe oral thrush
   - difficulty with drinking

TREATMENT

a. Give paracetamol if temperature is over 38.0 C (see p. 146).

b.Extra fluids, if diarrhoea (see p. 43).

c. Conjunctivitis. Treat this with antibiotic eye ointment. (see p. 39).

d. Treat pneumonia (see p. 103) and otitis media (see p. 96) if present.

e. Give two doses of oral Vitamin A to all children with measles presenting to hospital or health centre:

Age	**Dose day 1**	**Dose day 2**
under 1 year	100,000 units	100,000 units
1 year or more	200,000 units	200,000 units

f. Give measles vaccine to all the child's siblings who are between 6 months and 5 years of age and who have not been vaccinated. If you are not sure if the child has measles or not, give him measles vaccine as well.

g. Vaccinate all children in the ward over the age of 6 months who have not had measles vaccine.

h. Treat oral thrush if present.

MEDICINE FOR MOTHERS TO TAKE HOME

Children should receive the first doses of all medications before leaving the clinic. Often it is necessary to give mothers medicine that they will give later to their children at home. e.g:

- Artemether-Lumefantrine
- folic acid
- phenobarbitone (phenobarb)
- salbutamol
- ORS

1. Make sure that you are giving the correct medicine and the correct dose. Carefully check this book.

2. Only put one kind of medicine into a bottle - do not mix two different types of medicine in the same bottle.

3. Explain to the mother:
    - When she should give the medicine to the child.
    - That she should store the medicine out of reach of the child.

4. Ask the mother to tell you what you have explained to her

Note: Empty penicillin bottles are very useful.

Before the clinic commences:

- Remove the rubber lids.
- Wash and dry the bottles.
- Put the medicine in the bottles.
- Label the bottles.

MEDICINES MUST ALWAYS BE LABELED

MENINGITIS OR SEVERE SEPSIS

Always think about meningitis or severe sepsis when you see any very sick or convulsing child.

The signs of meningitis or severe sepsis are high fever, severe headache, neck stiffness, severe vomiting, repeated convulsions, lethargy or unconsciousness, bulging fontanelle, severe respiratory distress, shock (weak pulses, HR>160, low blood pressure or cold skin) or purpura (red or black spots on the skin).

If you suspect meningitis or severe sepsis give IM or IV ceftriaxone plus treatment for severe malaria (see p. 67). If ceftriaxone not available give chloramphenicol.

If there are any signs of **skin sepsis** (boils, pustules, swollen joints) give flucloxacillin also.

EMERGENCY TREATMENT

Nurse any unconscious or convulsing child on the side and keep the airway clear.

Give oxygen if there is severe respiratory distress, cyanosis or the oxygen level is <90%

If the child is shocked (weak pulses, HR>160, low blood pressure or cold skin), give IV Normal Saline or Hartmanns, a bolus of 20ml/kg, then reassess. The child will need a further bolus of 20ml/kg if the shock does not resolve

Investigations

- Do a lumbar puncture if you can, except when the child is extremely ill. Send CSF for cells, gram stain protein, sugar, culture
- Blood slide or RDT for malaria
- Haemoglobin
- Dextrostix to check for hypoglycaemia. If unconscious or fitting give sugar under the tongue (a teaspoon of sugar with water repeated every 20 mins) or 5ml/kg 10% dextrose if the child has a drip running.

- Oxygen saturation (SpO_2) using a pulse oximeter, if SpO2<93% give oxygen

1. Antibiotics

Many bacteria causing meningitis and severe sepsis are now resistant to chloramphenicol. Ceftriaxone will be available in most hospitals, and it should be given to any child with meningitis or severe sepsis.

Give ceftriaxone for 10 days

Give 50mg/kg IM or IV twice daily for 10 days.

It is important that stocks of ceftriaxone are available, so get some in. (Cefotaxime - given 6 hourly - or ceftazadime are alternatives)

If the child has any signs of **skin sepsis** (boils, pustules, swollen joints) give cloxacillin or flucloxacillin.

If ceftriaxone is *not* available give chloramphenicol for 14 days

Give IM every 6 hours, 25mg/kg/dose. (100mg/kg/day) Add 4ml sterile water to 1gram vial.

Weight	**No of mls**
3 — 4.9kg*	½ml
5 — 6.9kg	¾ ml
7 — 9.9kg	1 ml
10 — 14.9kg	1½ ml

Weight	**No of mls**
15 — 19.9kg	2ml
20 — 29.9kg	2½ ml
30 — 49.9kg	3ml
Adult	4ml

* (for babies less than 1 month old, see **Babies – Drug Doses** (p. 28)). If the child is not improving on chlorampenicol, and you don't have ceftriaxone, refer to hospital immediately.

If giving chloramphenicol for meningitis: If less than three months of age or those with severe malnutrition, continue IM chloramphenicol for 14 days if possible. In well nourished children more than three months of age, change to

oral chloramphenicol every 6 hours when the patient has no fever and looks well (usually after 3 to 5 days). It is very important that you check that the child has taken the medicine well; if not, change back to IM treatment.

Weight (kg)	**Oral Chloramphenicol**
3 — 4.9	4ml suspension
5 — 6.9	6ml suspension
7 — 9.9	8ml suspension
10 — 14.9	12ml suspension or 1 capsule
15 — 19.9	15ml suspension or 1 capsule
20 — 49.9	2 capsules
Adult	4 capsules

If you do not have either ceftriaxone or chloramphenicol, give benzyl (crystalline) penicillin IM every 3 hours and refer to hospital **immediately.**

3. Anticonvulsants

(a) Stop fits

- Test for hypoglycaemia and give sugar under tongue if confirmed or suspected.
- Give **IM paraldehyde or rectal diazepam** (see p. 42)

(b) Prevent further fits

- Give **phenobarbitone**. Loading (starting) dose IM if possible and then oral maintenance dose daily while the child is in hospital (see below).

(c) All children less than 2 years of age: **prevent fits**.

- Give **phenobarbitone** loading (starting) dose IM if possible and then oral maintenance dose daily while the child is in hospital.

Doses of Phenobarbitone 200mg/ml Ampoule or 30mg Tab		
Weight (kg)	**Loading (Starting) Dose**	**Daily Maintenance Dose**

3 — 5.9	¼ ml IM or 2 tabs	½ tab
6 — 9.9	½ ml IM or 3 tabs	1 tab
10 — 14.9	¾ ml IM or 5 tabs	2 tabs
15 — 19.9	1 ml IM or 6 tabs	3 tabs
20 — 29.9	1 ml IM or 7 tabs	4 tabs
30kg or more	1 ml IM or 7 tabs	5 tabs

- Give the loading (starting) dose of phenobarbitone IM if possible.
- If the child has a lot of fits, phenobarbitone should be continued after discharge (see p. 43).

4. Nasogastric tube feeds

Use this if the child is too sick to feed. Use expressed breast milk (EBM) or full strength full cream milk given 4 times a day. Splint the child's elbows to prevent him pulling out the tube.

Weight (kg)	No of ml
3 — 5.9	100 ml
6 — 9.9	150 ml
10 —14.9	200 ml

Weight (kg)	No of ml
15— 19.9	250 ml
20 —29.9	300 ml
30— 49.9	350 ml

5. Blood transfusion

If the child has a haemoglobin less than 6g/dL, give a blood transfusion of packed cells if you can (see Anaemia p. 16)

MENINGITIS MUST BE DETECTED EARLY: ALWAYS CHECK FOR NECK STIFFNESS. IF IN DOUBT: DO A LUMBAR PUNCTURE

BEWARE: SOME CHILDREN WITH MENINGITIS DO NOT HAVE NECK STIFFNESS

THINK OF MENINGITIS OR SEVERE SEPSIS IN ALL SICK CHILDREN

MILK MIXTURES

1. **Full strength full-cream milk** (FSM or FSS) (e.g. Sunshine or Pacific Instant Milk)

	One Feed	**Ward Use**
Milk Powder (Instant)	One (1) 50ml measuring cup	One (1) big cupful
Cool, previously boiled water	Three (3) 50ml measuring cups	Three (3) big cupfuls

2. **Milk Oil Formula (MOF)**

- Make Full Strength Full Cream Milk as above:
- Add vegetable oil and sugar as below:

	One Feed	**Ward Use**
Vegetable oil	10ml	50ml
Sugar	2 heaped teaspoons	1 heaped 50ml cup

3. **Half strength milk (Sugar-milk)**

	One or Two Feeds	**Ward Use**
Milk Powder (Instant)	One (1) 50ml measuring cup	One (1) big cupful
Sugar	Half (½) 50ml measuring cup	Half (½) big cupful
Cool, previously boiled water	Six (6) 50ml measuring cups	Six (6) big cupfuls

GENERAL RULES:

1. Whenever you use these milk mixtures, give 1ml multiple vitamin liquid each day.

2. If you cannot keep the milk cold in a refrigerator, only make enough milk for one feed at a time.
3. Always try to stimulate mother's milk supply with chlorpromazine or Maxalon (see p. 33):
    - if mother's milk is drying up or
    - if the mother is adopting and not lactating
4. If you have to give artificial feeds, always use a **glass cup**, because they are easy to keep clean. Never use a baby bottle, medicine dropper or feeding cup with a spout.

REMEMBER THAT BREAST MILK IS BEST FOR BABIES AND THAT ARTIFICIAL MILK FEEDS PUT THE BABY AT RISK FOR DIARRHOEA AND OTHER SERIOUS INFECTIONS.

OEDEMA (SWELLING)

- Oedema is swelling caused by collection of fluid in the subcutaneous tissues.
- Oedema may be localised or generalised.
- Localised oedema is usually due to obstruction to veins or to lymphatics (often due to tuberculosis of the lymph glands).
- Generalised oedema may be due to:
    (a) Low protein in blood: Kwashiorkor
    Nephrotic Syndrome
    Intestinal parasites
    Liver disease
    (b) Reduced excretion of water: Renal Disease (c) Heart failure.

MANAGEMENT

- If the child has signs of heart failure (big liver and pulse more than 160 beats/min), give a dose of im or oral Lasix (frusemide p. 145) and treat with digoxin (p. 144). If no response within 24 hours refer the child urgently to hospital.
- If the child has signs of kwashiorkor (peeling skin, thin brittle hair) start treatment for severe malnutrition (see p. 79) and refer the child urgently to hospital.
- If the child has severe, generalised swelling refer the child urgently to hospital.
- If the child has dark brown or red urine refer urgently to hospital
- If the child has mild swelling and is not "sick" treat with a 3 day course of albendazole:

10 kg or more : 2 tabs daily for 3 days

less than 10 kg: 1 tab daily for 3 days But if no improvement, refer the child to hospital

Note: Most children with oedema need urgent referral to hospital

OSTEOMYELITIS, SEPTIC ARTHRITIS AND PYOMYOSITIS

1.
   - A child with a painful limb and a fever may have osteomyelitis.
   - A child with a painful joint and a fever may have septic arthritis.
   - A child with swelling in a muscle and fever may have pyomyositis.

   These are all serious infections. It is often difficult to be sure which one is present. Always give flucloxacillin even if there is a history of the limb being injured.
2. If fever, tenderness and swelling remain after 48 hours of treatment, refer to hospital.
3. **Early** surgical incision and drainage may be important.

TREATMENT

1. **Flucloxacillin or Cloxacillin for 4 weeks** (p. 143)
   Give IM or IV every 6 hours if:
   - Child is very sick or
   - Child is vomiting

- The child is under 3 months of age

Otherwise give orally, suspension or capsules every 6 hours.

If you do not have any flucloxacillin, give chloramphenicol at 25mg/kg per dose every 6 hours and send the child to hospital as soon as possible.

2. **Blood transfusion**
   If the child is anaemic (haemoglobin less than 6.0g / dL), give a blood transfusion of packed cells if this is possible (see page 18).

Investigations (to be done if possible)

1. Hb and WCC every 2 weeks to check for chloramphenicol toxicity.
2. X-ray of bone — to assess progress.
3. Culture pus — to see whether the antibiotic should be changed.
4. Blood culture.

IF A CHILD WITH OSTEOMYELITIS, SEPTIC ARTHRITIS OR PYOMYOSITIS IS NOT IMPROVING AFTER 48 HOURS, REFER TO HOSPITAL.

OTITIS MEDIA - ACUTE

- Ear pain OR
- A red ear drum which is dull in appearance (poor or absent light reflex) OR
- Pus discharging from the ear for less than 2 weeks.

TREATMENT

1. **Amoxycillin** (250 mg tab) oral 3 times a day for 5 days.

WEIGHT	Susp dose	Tab dose
3 — 9.9kg:	5ml	½ tab

WEIGHT	Tab dose
15 — 19.9kg:	1 tab

10 — 14.9kg:	7.5ml	¾ tab		20 — 29.9kg:	1½ tab

2. If fever present:
   - Test for malaria and treat appropriately (see p 67)
   - Antipyretics (see Fever p. 57)
3. If pus discharging:
   - Ear cleaning with toilet tissue (see p. 97)
4. If pus still discharging after one week of treatment:
   - Cotrimoxazole (Septrin) BD orally for 5 days (see p. 143).
5. If a tender swelling develops behind the ear then mastoiditis is present and the child should be referred to hospital.

OTITIS MEDIA - CHRONIC

- One or both ears discharging pus for more than 2 weeks.
- The ear will heal only when it is dry.

1. Ear cleaning with tissue paper to **dry** the ear. Show the mother as you do this:
   - Use a piece of toilet tissue
   - Twist lightly from one corner to form a tissue spear.
   - Break off and throw away the tip which is too small.
   - Break off and throw away the other end which is too big.
   - Get mother to steady the child's head while you pull the top of the ear upwards and backwards to straighten the ear canal.
   - **Gently** push and twist the tissue into the ear canal until it stops. (Usually about one inch)
   - Leave in place for 2 minutes to absorb the pus.
   - **Gently** remove the tissue spear.
   - If soaked with pus, repeat with more spears until the ear is dry.

2. Boric acid in alcohol ear drops to **kill bacteria and dry** the ear after cleaning with tissue.
   Show the mother as you do this:

- Lie the child on the side on the mother's lap.
- Put 1 or 2 drops in the ear canal.
- Press twice on the flap of skin in front of the ear canal to help push the ear drops through the perforation.
- Supply one bottle of boric acid in alcohol ear drops to the mother.

3. Advice to mother:
    - Advise the mother to clean the ear 4 times a day and put in one or two boric acid in alcohol drops after each time.
    - Tell her that putting the tissue deep in the ear will not harm her child.
    - Warn the mother that the child may cry for a short time after the ear drops (it feels hot), but the ear will get better more quickly.
    - Warn the mother to avoid water getting into the ear.
    - Ask her to return daily, if possible, for the first few days so that you can clean the ear and check her technique.

4. Follow up:
    - Review every 2 weeks until the ear is dry.
    - When the ear is dry, try to look at the drum with an auroscope. If a hole (perforation) is still present, but the ear is dry, continue with boric acid in alcohol drops once a day only and review monthly. If the hole persists, refer for review by a medical officer after 3 months.

Reasons why ear toilet may fail to stop the ear discharge:

- Tissue spear made too fat and/or too short.
- Tissue spear not put far enough into the ear.
- Ear cleaning is not being done 4 times a day.
- Cotton buds are being used instead of tissue paper.
- Boric acid in alcohol ear drops not being used.
- Osteomyelitis already developed.

- Check the way the mother is doing the ear toilet
- You must **show** the mother **again** how to **make** the tissue spear and how to **push** it gently but **deeply** into the ear canal.

REMEMBER:
COTTON BUDS ARE NO GOOD AND MUST NOT BE USED.
NEVER PLUG A DISCHARGING EAR WITH COTTON WOOL.

PERTUSSIS (WHOOPING COUGH)

1. Treat as outpatient, if mild.
2. Admit to hospital or health centre if child is less than 6 months old, or if there are complications e.g.:
    - pneumonia
    - heart failure
    - convulsions
    - malnutrition.

OUTPATIENT TREATMENT

1. **Advice**
    - warn the mother that the illness may last from 6 to 8 weeks • encourage the mother to **feed** the child immediately after vomiting
    - tell the mother to **return** if the child has:
        - fever and shortness of breath.
        - convulsions.
        - loss of weight.
2. **Prevent spread of pertussis**
    - Give pentavalent vaccine to non-immunised brothers and sisters.

INPATIENT TREATMENT

1. If the child goes blue with a cough spasm, give **oxygen** if available and **gentle and brief suction**.
2. Give **chloramphenicol** or **erythromycin**. This stops the child from infecting others, and also treats pneumonia if it is present.
    - Give IM chloramphenicol 4 times daily if the child is less than 3 months old or has severe pneumonia (see p. 104).
    - Otherwise give oral chloramphenicol for 5 days if the child does not have pneumonia.

- Give chloramphenicol for 5—10 days if the child does have pneumonia

Weight (kg)	3 - 4.9	5 - 6.9	7 - 9.9	10 -14.9
Chloramphenicol Suspension	4ml	6ml	8ml	12ml

3. Treat heart failure if present (see p. 105).
4. Treat convulsions if they occur (see p. 41).
5. Encourage the mother to feed the child immediately after vomiting.
6. Treat malnutrition if present (see p. 75).

REMEMBER, PREVENTION IS BEST.
PERTUSSIS IS PREVENTED BY PENTAVALENT VACCINE

PIGBEL

1. Children with pigbel have:

Always - Severe abdominal pain starting up to 5 days after eating a protein meal (often pig meat).

- Experience abdominal pain especially epigastric pain after a meal

Often - Abdominal swelling

- Black-flecked or coffee ground vomit.
- Mild diarrhoea with blood (but sometimes constipation).

2. Assess each case as mild or severe.
- Mild cases can be treated at health centres.
- Severe cases should be sent to hospital immediately.

Sign	**Mild**	**Severe**
Abdominal swelling:	Some	A lot

Epigastric pain	Some	A lot
Toxic (looks sick, fast pulse):	No	Yes
Black-flecked vomit:	No	Yes

TREATMENT OF MILD PIGBEL

1. **Intravenous fluid**

   ½ strength Darrow's

Weight (kg)	**No. of mls/hr**	**No. of drops/min**
3 — 5.9kg:	25ml/hour	7 drops/min
6 — 9.9kg:	50ml/hour	13 drops/min
10 —14.9kg:	75ml/hour	20 drops/min
15kg or more:	100ml/hour	25 drops/min

2. Pass large **nasogastric tube**. Aspirate then leave on free drainage. Splint the arms.
3. Albendazole oral once (see p. 140), or mebendazole oral once (see p. 146) then **nothing to eat or drink.**
4. Tinidazole oral once (see p. 148) if child is malnourished.
5. Benzyl (crystalline) penicillin (see p. 147)
6. If the child gets sicker, or there is no improvement within 2 days - start treatment with IV chloramphenicol and **send to hospital**.
7. If the child improves (reduced abdominal swelling and pain, no vomiting, feels hungry and has bowel motions).
   - after 24 hours of improvement, stop IV fluids, remove the nasogastric tube, and give Oral Rehydration Solution (see below).
   - after another 24 hours of improvement, give full strength milk (see p. 92) over the next 24 hours.
   - then give soft food, gradually introducing solid food

TREATMENT OF SEVERE PIGBEL

Patients with severe pigbel should be treated in hospital. If you cannot transfer them immediately:

Start treatment as for mild pigbel with:

●● intravenous fluid
●● nasogastric tube
●● nil by mouth
●● benzyl (crystalline) penicillin

and give: ●● chloramphenicol IV every 6 hours.

- Do not give albendazole or tinidazole to patient with severe pigbel.
- If you see a child with pigbel notify your Disease Control Officer.

PNEUMONIA OR BRONCHIOLITIS
SUMMARY

For children aged 1 month to 5 years

ASSESS signs	CLASSIFY	ACTION
• Any TOO SICK signs and • Chest Indrawing and or • Cyanosis YES	SEVERE PNEUMONIA	• Give oxygen. • Give first dose of chloramphenical. • Admit or refer to hospital URGENTLY if possible.
• Chest indrawing YES	MODERATE PNEUMONIA	• Give first dose of benzyl penicillin. • Admit or refer to hospital URGENTLY if possible. • If cough more than 14 days, do TB score
• Fast breathing (over 40 breaths/minute) YES	MILD PNEUMONIA	• Treat at home with amoxycillin. • Advise mother when to return immediately. • Follow-up daily. • If cough more than 14 days, do TB score
• None of the signs above YES	SIMPLE COUGH	• Do not give antibiotics. • Advise mother on home care. • Advise mother when to return immediately. • If cough more than 14 days, do TB score and reffer for assessment.

PNEUMONIA OR BRONCHIOLITIS — SEVERE

Cough, fast breathing and **chest indrawing** (very sick children may sometimes not have fast breathing), plus • **too sick to feed properly**

- or **cyanosed** or **restless**.
- or **heart failure** (big liver and pulse over 160 per minute).

1. Admit to hospital or health centre.
2. Suck out the nose gently when necessary to clear the airway.
3. Give **oxygen** (if available) at ½ -1litre per minute if the child is:
    - cyanosed

- grunting
- in heart failure
- restless
- drowsy
- stopping breathing

Oxygen can be given by nasal prongs, a nasal catheter or nasopharyngeal catheter. Nasopharyngeal catheters should be put in very carefully. The distance inserted is the same distance from the opening of the nostril to the front of the ear *minus 1cm*. Measure this distance carefully. The tube should be removed and cleaned at least twice every day

Humidication of oxygen is recommended, but is not absolutely necessary.

4. If the child is drowsy (*slip tumas*) on admission, do a lumbar puncture when he improves to check for meningitis. Do not do the lumbar puncture while the child is very sick.
5. If child very sick and septicaemic, see section on sepsis and meningitis

TREATMENT

1. **Chloramphenicol for at least 10 days**

   Give IM every 6 hours: Add 4ml sterile water to 1gram vial.

Weight	**No. of mls**
3— 4.9kg:	½ ml
5— 6.9kg:	¾ ml
7— 9.9kg:	1 ml
10—14.9kg:	1½ ml

Weight	**No. of mls**
15—19.9kg:	2 ml
20—29.9kg:	2½ ml
30—49.9kg:	3 ml
50kg or more	4 ml

When the patient has no fever and looks better (usually after 3 to 5 days), change to oral chloramphenicol every 6 hours:

Oral Chloramphenicol (mls or capsules)

Weight	**No. of mls**
3— 4.9kg	4 ml
5— 6.9kg	6 ml
7— 9.9kg	8 ml

Weight	**No. of mls**
15—19.9kg	15 ml or 1 capsule
20—49.9kg	2 capsules
Adult	4 capsules

10—14.9kg	12 ml or 1 capsule

- If the child vomits up the oral chloramphenicol or will not take it, change back to giving intramuscular chloramphenicol.
- If you do not have any chloramphenicol, give benzyl (crystalline) penicillin as for moderate pneumonia (see p. 109) and send the child to hospital as soon as you can.

2. **Antimalarials** if blood slide or RDT positive (see p. 67).
3. Treatment of heart failure
   In children under 2 years of age, if the heart rate is over 160 per minute **and** there is a big liver, give:
   Digoxin (lanoxin) elixir (50 microgram/ml).
   Give every 6 hours for 3 doses.

Weight	**No. of mls**	**Dose in microgm.**
3—5.9kg	2 ml	100 microgram
6—9.9kg	3 ml	150 microgram
10—14.9kg	5 ml	250 microgram

If the child is still in heart failure after this, give **maintenance dose of digoxin (lanoxin) elixir** daily, starting 24 hours after the last dose.

Weight	**No. of mls**	**Dose in microgm.**
3—5.9kg	1 ml	50 microgram
6—9.9kg	1½ ml	75 microgram
10—14.9kg	2½ ml	125 microgram

Treatment of wheezing

- If the child is less than one year of age give a trial dose of salbutamol through a nebulizer or metered dose inhaler and spacer, but if there is no improvement, do not continue.
- Wheezing in older children is likely to be due to asthma (see Asthma section), but if it does not respond to inhaled salbutamol

other possibilities such as Tuberculosis or an inhaled foreign body should be considered.

5. **Blood transfusion**
   - If the child has a haemoglobin less than 6g%, give a blood transfusion of packed cells if you can (see p. 18).

PNEUMONIA OR BRONCHIOLITIS — MODERATE

Cough, fast breathing plus **chest indrawing** (rarely a child may have chest indrawing without fast breathing), but feeding well with no cyanosis and no heart failure.

1. Admit to hospital or health centre.
2. Suck out the nose gently when necessary to clear the airway.

TREATMENT

1. Benzyl (crystalline) penicillin

   Give IM every 6 hours until improvement occurs.
   Add 2ml sterile water to 1,000,000u vial.

Weight (kg)	No. of mls	No. of units
3 — 9.9kg	½ ml	250,000u
10 —19.9kg	1 ml	500,000u
20 — 29.9kg	1½ ml	750,000u
30kg or more	2 ml	1,000,000u

When the child looks better, change to:
Amoxycillin tabs or suspension 3 times daily for 5 - 10 days. (p. 140)

CHECK THE CHILD EVERY 6 HOURS.
➔➔IF NO IMPROVEMENT AFTER 24 HOURS OR
➔➔IF CHILD BECOMES TOO SICK TO FEED OR GETS CYANOSIS OR RESTLESS OR HEART FAILURE, TREAT FOR SEVERE PNEUMONIA.

PNEUMONIA OR BRONCHIOLITIS — MILD

Cough and **fast breathing** (over 40/min at rest) with no chest indrawing, and feeding well with no cyanosis or heart failure.

1. Treat as an outpatient.
2. If there is no improvement after 2 days, admit to hospital or health centre.

Note: A respiratory rate more than 40/min (at rest) means that the child with cough may have pneumonia. Confirm that fast breathing is present by asking the mother if the child is "sotwin" and deciding whether the child looks short of breath or not.

TREATMENT

1. **Amoxycillin 250mg tabs or 125mg/5ml suspension** three times daily for 5 days.

Weight (kg)	No. of tab	ml susp
3-5.9	½ tab	5ml
6 -9.9	½ tab	7 ½ ml
10 - 4.9	¾ tab	10mls
15-19.9	1 tab	
20-39.9	1½ tab	
40-49.9	2 tab	

.

CHECK THE CHILD EVERY DAY: ➔➔ IF THERE IS CHEST INDRAWING OR ➔➔ IF NO IMPROVEMENT AFTER 2 DAYS ----ADMIT---- AND START TREATMENT FOR MODERATE PNEUMONIA.

POISONING

Try and find out:

1. What drug or poison was swallowed.
2. How much was taken.
3. What time it happened.

TREATMENT

a. If the child has swallowed **kerosene, petrol** or a **petrol based substance , or**
If the child's mouth and throat have been **burnt** by the substance swallowed (e.g. bleach, toilet cleaner, or battery acid)
Do not make the child vomit
- Give milk to drink.
- If cough or shortness of breath, treat for pneumonia (see p. 103).

b. If the child has swallowed any **other poisons** (e.g. medicines) *within the last 4 hours*
Make the child vomit if he is conscious.
- give the child a cupful of milk or water to drink
- rub the back of the child's mouth (throat) with a spatula or handle of a spoon.
- if he does not vomit, give Syrup of Ipecac. 15ml

- if no vomiting after 10 minutes rub the back of his mouth (throat) again with a spatula or handle of a spoon.

Do not make the child vomit if he is unconscious.

Transfer as soon as possible.

After the child has vomited, or if the ingestion occurred more than 4 hours ago, or if the child is unconscious give:

Activated Charcoal, by mouth or nasogastric tube:

- Medicoal 5g packet in 100ml drinking water

or

- Charcoal tab 200mg 25 tabs crushed in 100ml drinking water

or

- Locally prepared powdered charcoal, 5g to 100ml water can be used.

Weight	No. of mls
3— 5.9kg	20 ml
6— 9.9kg	40 ml
10—14.9kg	60 ml

Weight	No. of mls
15—19.9kg	80 ml
20—29.9kg	100 ml
30—39.9kg	130 ml

Give 3 doses, 20 minutes between each dose.

Activated charcoal causes severe lung disease if aspirated. If giving it by nasogastric tube be sure the tube is in the stomach.

c. Keep the child under observation for 4-24 hours depending on the poison swallowed.

d. Transfer to hospital or health centre as soon as possible any child with poisoning who is

- Unconscious on admission.
- Becoming drowsy or semiconscious.
- Has burns of the mouth and throat.
- Is in severe respiratory distress or cyanosed. - Has signs of heart failure.

e. If you have a poisons book available — check for any special treatment required.

PREVENTION

1. Teach parents to keep kerosene, drugs and other harmful things out of reach of children.
2. Kerosene should **not** be kept in soft drink or beer bottles. 3. Advise parents on first aid for future occurrences i.e.,
    - Give 1 cup of milk or water.
    - Do not make the child vomit if he has swallowed kerosene, petrol, petrol based products or if his mouth and throat have been burned.
    - Make the child vomit if other poisons have been taken.
    - Take the child to a health facility as soon as possible.

RESUSCITATION

1. General

Remember the ABCD of resuscitation – Airways, Breathing, Cardiac, Drugs.

A. **Airways**

- Clear the airways: use suction
- Keep the airway open by lifting the chin and pulling the jaw forward
- Use a plastic (Guedel) airway if available

B. **Breathing**

Put oxygen or air into the lungs:

- Ventilation bag or
- Use mouth to mouth resuscitation
- Inflate the lungs about 20 times per minute.

C. **Cardiac**

Start external cardiac massage: if no response to ventilation

- Squeeze the heart against the backbone by pressing with your hand over the sternum using **30 compression to 2 breaths**

D. **Drugs**

- Adrenaline — if there is no heart beat.
  Mix ½ ml adrenaline 1 in 1000 with 4½ ml of water for injection.
  Give 1ml of this diluted adrenaline by 1 of the following methods:
  - down the endotracheal tube if there is one. This is the best way.
  - intravenously.

2. Resuscitation of babies

Quickly dry the baby and keep him/her warm during the resuscitation.

A. **Clear the airways** (suction, and lift the chin and pull the jaw forward).
B. **Get oxygen or air into the lungs**
   - Use a baby ventilation bag and mask or
   - Frog breathing (using a nasal catheter and oxygen at 2-4 litres/minute) or
   - Mouth to face resuscitation

A + B are far more important than giving drugs.

C. **Cardiac** - not usually required in neonatal resuscitation.
D. **Drugs – most babies do not need drugs**.
   Drugs are only given if the baby is not breathing on his own when he is pink and has a good pulse rate (more than 100/min) after doing Steps A and B above.
   - If mother has been given morphine or pethidine within four hours of delivery, give the baby :
     - **narcan** injection (0.4mg/ml) ¼ ml/kg IV or sublingually or IM.
   - If no improvement give 10% **dextrose** 5ml/kg IV over 5 minutes.
     (or 4.3% dextrose if 10% not available).

IT IS IMPORTANT TO HAVE ALL YOUR EQUIPMENT READY BEFORE THE BABY IS BORN.

RHEUMATIC FEVER AND RHUEMATIC HEART DISEASE

Rheumatic fever and rheumatic can follow *streptococcus pyogenes* infection of the throat or skin. Some children present with fever and pains in the large joints that may move from one joint to another. The infection can damage the heart valves (especially the mitral and aortic valves), leading to respiratory distress and heart failure. Children with mild disease may have a heart murmur. Severe disease can present with fever, fast or difficult breathing, and lethargy. They may have chest pain or fainting. Affected children are usually over 5 years of age. Children in heart failure will have a fast heart rate, respiratory distress and a large liver.

DIAGNOSIS

Diagnosis of rheumatic fever is very important because penicillin prophylaxis can prevent further episodes of rheumatic fever and avoid worsening damage to the heart valves.

Acute rheumatic fever is diagnosed clinically (Jones criteria):

- Two major criteria or 1 major AND 2 minor criteria:
  - **Major criteria**: new heart mumur, polyarthritis (swelling and pain of many joints), chorea (abnormal movements), subcutaneous nodules (raised swellings in skin), erythema marginatum (red rash)
  - **Minor criteria**: fever, raised white cell count and ESR, prolonged PR interval on ECG

If available, echocardiography is useful in confirming rheumatic heart disease.

MANAGEMENT

- Admit to hospital
- Aspirin (25mg per kg every 6 hours) until fever subsides then reduce dose to 12.5mg per kg every 6 hours until joint pains subsided.

- If in heart failure: give frusemide (1mg/kg 6 hourly), digoxin (10 microgram/kg daily) and oxygen. Check for anaemia and give a blood transfusion if the Hb<8mg/dL.
- If heart failure is severe give prednisolone (1mg/kg/day) orally instead of aspirin
- Give iv crystapen or amoxil orally if able to swallow
- Refer to specialist if not improving

Follow-up care

- All children will need ongoing antibiotic prophylaxis. Give monthly benzathine penicillin (37.5mg/kg IM, max 900mg) or daily Pen V • Ensure vaccinations are up-to-date
- Review every 3-6 months

SEXUALLY TRANSMITTED INFECTIONS (STIS)

All STIs should be reported to the Provincial Health Office

CONGENITAL SYPHILIS

- Sometimes the baby is born dead (stillborn)
- If born alive the baby may have:-
  - Blisters or skin rash, often on the palms of the hands or soles of the feet
  - Bleeding spots (petechiae) or bruising
  - Enlarged liver and spleen
  - Prolonged jaundice
- Sometimes the baby may look normal at birth but within a few weeks develops:
  - Sores around the mouth. - Bloody nasal discharge.
- Send blood from baby and mother for VDRL test if you can.

TREATMENT

a. Benzathine penicillin single (stat) dose IMI

Weight	No. of mls	No. of units
Less than 2.5 Kg	½ ml	120,000 units

More than 2.5 Kg	1 ml	240,000 units

b. Benzyl penicillin (crystapen) IMI twice daily for 10 days

Weight	**No. of mls**	**No. of units**
Less than 2.5 Kg	¼ ml B.D.	125,000 units
More than 2.5 Kg	½ ml B.D.	250,000 units

c. Treat mother and father.

When mother has a positive VDRL test during pregnancy:-

- If baby is well with no signs of congenital syphilis:-
  - Give single (stat) dose of benzathine penicillin IM (see p. 114). - Check that both mother and father have been treated.
- If pale check Hb (many are anaemic)
- If baby has any signs of congenital syphilis:-
  - Give single (stat) dose of benzathine penicillin IM. (see p. 114).

AND

  - benzyl penicillin IM twice daily for 10 days (see p. 114).
- Check both parents have been treated.

GONORRHOEA

1. **In babies – gonococcal conjunctivitis**
   - Presents as severe neonatal conjunctivitis
     - Treat as for severe neonatal conjunctivitis (see p. 40)
     - Treat mother and father for genital discharge syndrome and other sexually transmitted diseases.

2. **Genital discharge in young children**
   - Suspect vulvovaginitis in girls with purulent vaginal discharge. Pain on passing urine may also be present.
     - Send a swab for culture if you can.

TREATMENT FOR CHILD

Give one dose of azithromycin **plus** amoxycillin **and** augmentin, (amoxycillin and clavulinic acid) **and** probenecid tablets

Weight	Azithromycin	Amoxycillin	Augmentin	Probenecid
Less than 10kg	½ tab (250mg)	1gm (4x250mg)	½ tab	½ tab
More than 10kg	1 tab (500mg)	1½ gm (6x250mg)	1 tab	1 tab

Confirmed gonococcal disease in a young child almost always means that the child has been or is being sexually abused.

- Discuss the problem with a medical officer if you can.
- Check the child for evidence of other sexually transmitted diseases (syphilis, HIV infection) and treat if present.
- Discuss the problem with the child's family if you feel this is the right thing to do.
- Check the adult members of the family for evidence of sexually transmitted disease and treat if present.

Remember: However you deal with this very difficult problem, your first responsibility is to do what is best for the child.

HIV infection

See Child Abuse Section for HIV infection prophylaxis or ART (p.37).

PREVENTION IS BEST
HIV (AIDS) IS A PREVENTABLE DISEASE

ALL SEXUALLY TRANSMITTED DISEASES ARE PREVENTABLE

SKIN DISEASES

BOILS OR ABSCESSES

a. **If pus is present (the boil is fluctuant) treatment is incision and drainage**.

Antibiotics are not usually required. b. **If pus is not yet present:**

- If the child is not sick
  - check the abscess every day
  - when PUS has formed ➔➔ **incise and drain**.
- If the child has a high fever or looks sick or has multiple abscesses:
  - give chloramphenicol oral or IM every 6 hours (see p.136)
  - when pus has formed ➔➔ **incise and drain**.

c. **Remember:** A febrile child with a hot, swollen and tender limb probably has osteomyelitis (see p. 96).

IMPETIGO

Multiple crusting sores, usually on the face.

a. Clean scabs away with antiseptic, e.g. chlorhexidine (Savlon).
b. Apply crystal violet (gentian violet).
c. Give amoxicillin oral 3 times daily for 5 days (see p. 140) or
   If no improvement after 5 days;
   Change to cotrimoxazole (septrin)(p143) or erythromycin (see p. 144).

GRILE (ringworm, tinea imbricata) a.
Clean skin with soap and water.

b. Apply benzoic acid compound ointment half strength (Whitfield's) OR salicylic acid paint (grile lotion). Do not apply to the face. Apply to no more than ¼ of the body on any one day. Use once a day for 4 weeks If no improvement use griseofulvin tablets

SCABIES

a. Treat the mother as well as the child. Try to treat other members of the family too. Encourage them to wash the whole body every day.
b. Wash the patient with soap and water.
c. Apply scabies lotion to **all** the body except the face
d. Explain to the mother:
   - wash off the scabies lotion after 24 hours.
   - wash clothes and blankets and dry them in the sun.

- return in 4 days for a second treatment

e. If the scabies is infected, treat with amoxycillin.

SORES AND ULCERS

a. Clean dirt and dead tissue away with antiseptic solution like sterile normal saline.
b. If the sore is infected, painful, swollen and red, apply antiseptic dressings (e.g. acriflavine) daily until the sore is clean and pink.
c. Make sure that ulcers, sores and cuts which are clean are kept clean. Apply dry dressings every day.
d. If any of the sores are raised, consider yaws as a possible cause (p. 137).
e. If there are many infected sores: give amoxycillin oral 3 times daily for 5 days (see p. 140).
f. If the ulcer is larger than a 10 toea coin give amoxycillin.
g. If the ulcer does not get better after amoxycillin, change to cotrimoxazole (septrin) orally twice daily for 5 days (see p.143) and tinidazole orally once daily for 3 days (see p. 148).
h. If the ulcer is bigger than a one Kina coin, it needs skin grafting when it is clean.

PREVENTION OF SKIN DISEASES

Skin diseases can often be prevented by good skin hygiene. The use of soap and water should be encouraged.

Advise parents:-

- Keep the skin clean. Use soap and water.
- Get treatment for small skin sores before they get big.
- Use of medicated soaps may prevent small skin sores becoming serious

SNAKE BITE

First aid (at the place where the child is bitten)

- Bandage the whole length of the bitten limb if possible, starting from the hand or foot, and working towards the shoulder or thigh. The bandage (or strip of cloth) should be as firm as an ankle

bandage. It should only be released when the patient is at a place where antivenom is available.

- Splint the affected limb to prevent movement. Place child in left lateral recovery position and keep airway clear

Admit

- All children who have **definitely** been bitten by a venomous snake
- All children who **may have** been bitten by a venomous snake.

Look for symptoms and signs of poisoning (envenomation)

- Nausea and vomiting
- Abdominal pain
- Difficulty seeing properly
- Difficulty with breathing
- Painful lymph glands
- Weakness of limbs
- Drooping eyelids
- Dribbling of saliva

Check for blood clotting time

Take a blood sample, leave for 20 minutes without shaking in glass tube or bottle. An abnormal test is if the blood has not clotted after 20 mins.

TREATMENT

a. **No signs of envenomation *and* blood is clotted by 20 minutes:**

- Keep on bed rest.
- Hourly observations for at least 12 hours after admission.
- If signs of envenomation appear treat as in section b.
- Tetanus toxoid ½ml IM stat.
- Do not touch the site of the bite
- Give amoxycillin for 5 days (see p. 140).

b. Signs of poisoning (envenomation) *or* blood is not clotted after 20 minutes:

- Give 1 vial of snake antivenom as soon as you can.

Giving snake antivenom

- Rest the child in bed. Nurse on the side and keep airway clear.
- Set up a drip: with 1/5th saline + 4.3% dextrose (dextrose/saline)
- Give ***diluted*** adrenaline ***subcutaneously*:** Draw up ¼ ml of 1 in 1000 adrenaline in a syringe and make it up to 2 ½ml with sterile water

Doses of *diluted* adrenaline

Age (years)	Weight kg	Dose (ml)
1-3	Less than 11	1
4-7	11-15	1 ½
8-11	16-20	2

- Add 1 vial of snake antivenom to 100mls of 4.3% in 1/5 NS in a burette and infuse over 30-60 minutes. Then run drip at maintenance rate (p. 149).
- Give tetanus toxoid ½ml IM stat.
- Do not touch the site of the bite.
- Give crystapen IV (p147) or amoxycillin for 5 days (see page 140).

If there is a mild reaction to the antivenom: (fever, skin rash)

- Give promethazine IM (see p 147)
- Continue giving the antivenom slowly over 1 hour, but if the symptoms become severe (see below), **stop**

If there is a severe reaction (wheezing, shock with weak pulse) • Immediately stop giving the antivenom.

- Give another dose of ***diluted adrenaline***- intramuscularly
- Give hydrocortisone 100mg IV
- Give oxygen if available, and use an Ambu bag if patient stops breathing

When the child is stabilized continue giving the antivenom slowly. If there are no signs of the severe reaction subsiding after 30 minutes give one more dose of ***diluted adrenaline*** intramuscularly.

Note: Nursing care is very important. Keep the **airway clear** and nurse the child in the left lateral position. Early referral of severely envenomated patients, patients who are deteriorating after antivenom, and in situations where antivemon is not available may be lifesaving. Ensure the child is nursed properly during transport

TUBERCULOSIS

DIAGNOSIS

Risk factors

- Household contact newly diagnosed with Sputum Smear positive PTB
- 3 years of age or less
- Severe Malnutrition
- HIV infection

Key features suggestive of TB: the presence of three or more of the following should strongly suggest tuberculosis

- Chronic symptoms suggestive of TB
- Physical signs highly suggestive of TB
- A positive Mantoux
- Chest X-ray suggestive of TB

Diagnosis of Tuberculosis with the aid of the Paediatric Score Chart

Feature	0	1	2	3	4	Score
Length of illness (weeks)	< 2	2-4		> 4		
Nutrition status (% of weight for age)	>80	60-80		< 60		

Family history of TB	None	Verbal family history		Proven sputum +ve history		
Significant Mantoux (…….MM)				Yes		
Lymph nodes: large, painless, firm, soft sinus in neck/axilla				Yes		
Night sweats, unexplained fever			Yes			
Angle deformity of spine					Yes	
Malnutrition, not improving after 4 Weeks				Yes		
Joint swelling, firm, non-fluid, non-traumatic				Yes		
Unexplained abdominal mass, ascites				Yes		
Coma for more than 48 hours (with or without convulsions) Send to hospital if possible				Yes		
					TOTAL	

HOW TO USE THE TB SCORE CHART

- **Length of illness:** This means how long the child has been sick with the particular symptom e.g. cough, diarrhea, swollen neck glands. Previous episode should not be counted if the child recovered completely from them.
- **Nutritional status:** This refers to the child's position on the weight for age chart in the clinic book. For children over five years, use an MUAC tape to decide whether the child is thin or not (Green = 0, Yellow = 1, Red = 3)
- **Family contact history of TB:** Ask the child's guardians directly about a household contact history. If they give a convincing story of a close family relative or contact that was thin and coughing up blood, then score 1. If your Health Center has written evidence of positive sputum in a close family member or contact then score 3.

- **Positive PPD Mantoux:** (read at 48 – 72 hrs) ○ If ***10mm or more irrespective of BCG status*** in well nourished children ○ In HIV infection and/or severe malnutrition ***if 5mm or more***

○ In some children who have not received BCG vaccine, mantoux test induces an accentuated response with ulceration, these group of patient should be started on TB treatment *Note*:
In PNG, because TB is endemic in many communities, many healthy children will have a reactive Mantoux test, but will *not require* TB treatment. In addition, many children who have TB infection will not have a reactive Mantoux, because of malnutrition, HIV or other reasons. If a child has a history of contact with sputum positive case and clinical signs suggestive signs of TB, a non-reactive Mantoux should *not* be a reason for withholding treatment.

- **Enlarged painless rubbery neck glands:** Feel the child's neck from behind. TB glands are usually stuck together (matted); don't move easily under the skin and non-painful. If in doubt and the child is otherwise well, treat with amoxicillin or Erythromycin for 10 – 14 days and check the size of the glands after 2 weeks. Other common conditions that cause swelling of the Neck in children are reactive lymphadenitis from sore throat or scalp, dental abscess from tooth infection, Burkitt's lymphoma and Ludwig's angina. The latter two conditions need urgent referral to hospital.
- **Night sweats or unexplained fever:** TB can cause recurrent fever, especially at night, which does not respond to antimalarial or antibiotic treatment and continues for more than two weeks.
- **Angle deformity of spine:** A sharp angle bend in the spine (backbone) is almost always caused by TB. Check all children for this deformity by looking and feeling the spine with your hand.
- **Malnutrition not improved after one-month treatment:** This refers to patients admitted to the nutrition ward. If no weight gain after 1 month or weight loss after 14 days score 3. This is after being on extra nutrition and has been treated for infections and anaemia.
- **Firm non-fluid non-traumatic swelling of a joint:** TB arthritis is not acutely painful. If pain is present always consider and treat for septic arthritis. Chronic arthritis of the hip joint is TB until proven otherwise. If in doubt sent to hospital.

- **Unexplained abdominal swelling (ascites):** Large spleen or liver should be excluded as the cause of the swelling, but if the child's abdomen feels abnormally firm (doughy) or is fluid filled (ascites) or masses are palpable which do not disappear with laxatives treatment, then score 3. A child with abdominal distension who is vomiting needs urgent referral to hospital as the child may have bowel obstruction,
- **Coma for longer than 48 hours:** TB Meningitis or Brain Tuberculoma (TB abscess) can cause lowered level of consciousness (coma) with or without convulsions. Sometimes a child with intracranial TB develops other neurological signs e.g. blindness, double vision, hemiplegia or headache. Almost always these signs develop slowly. Score 3 if coma has been present for more than 48 hrs or the child has developed an unexplained neurological sign. If onset of symptoms is rapid, do a lumbar puncture and treat according to the result. If bacterial meningitis or cerebral malaria is suspected clinically, refer to hospital.

Some other important management issues are as follows:

1. Nutritional status: most children with TB are malnourished. For management of malnutrition refer to:
   - This book p75-85.
   - WHO Pocketbook of Hospital Care for Children (Chapter 7)
   - Paediatrics for Doctors in PNG (pages 210-220)
2. Always ensure provider-initiated testing and counseling (PITC) for HIV, where facilities are available. Children with HIV will be malnourished as well so for all severe malnourished children ensure PITC.
3. Manage other illnesses like pneumonia, anaemia, diarrhoea as per the Standard Treatment Manual.
4. Always screen contacts like family and friends, by inquiring about history of cough. If any adult has history of cough, use the diagnostic algorithm for adult TB for diagnosis.

Use standard recording formats and report all TB cases to the Provincial TB Programme Unit using standard quarterly "basic management unit" reporting formats.

New Treatment Guidelines for Childhood Tuberculosis in PNG

The following are the major changes to the treatment categories and regimens for childhood TB (compared to those in *the 8th edition of the Standard Treatment Manual for Common Illnesses of Children, 2005*)**:**

1. Categories of treatment: The childhood TB patients are categorized into two treatment categories (Category I & Category II).
2. Use of fixed dose combination (FDC[1]) drugs: Depending on the weight of the patient, adult formulations (with four-drug, three-drug and twodrug combination non-dispersible tablets) or pediatric formulations (with three-drug and two-drug combination dispersible tablets) are used.
3. Treatment duration: Treatment duration for *new* cases is 6 months, except in specific cases like TB meningitis, TB spine, TB abdomen, TB pericarditis and TB lymphadenitis, where the health providers can extend the continuation phase by three more months (similar to the "special situations" listed in the 2005 STM).
4. Frequency of treatment: In the new protocol, the frequency of treatment in both the intensive phase and the continuation phase is **daily,** compared to the former protocol where the continuation phase was thrice weekly.
5. Streptomycin Use for Retreatment Cases: Streptomycin is to be used only for MDR cases where there is known drug susceptibility.

Anti-Tuberculosis drug doses for Paediatric age group of <12 years old

The pharmacokinetics of anti-tuberculosis drugs is such that children generally need higher doses (per kg body weight) than adults do to achieve effective serum concentration.

Anti-TB Drug	Paediatric daily doses	Adult daily doses
Rifampicin	15 mg/kg	10 mg/kg
Isoniazid	10 mg/kg	5 mg/kg

Pyrazinamide	35 mg/kg	25 mg/kg
Ethambutol	20 mg/kg	15 mg/kg
Streptomycin	25 mg/kg	15 mg/kg

Categories of treatment for childhood TB

Category I: For (a) all new cases (*patient who has definitely never taken antiTB drugs or who has taken anti-TB drugs for less than one month including both SS-ve and SS +ve paediatric PTB patients*), including severe forms (*Seriously ill cases include children with symptomatic TB meningitis, miliary*
TB, pulmonary TB with severe respiratory signs, bone and joint TB, spinal TB, TB abdomen (ascites or severe abdominal distension), or severe malnutrition (wasting)) , and (b) children who have failed to complete a full course of treatment previously (i.e. defaulted from treatment) but are not seriously ill (*Non-seriously ill cases are those patients who seem clinically well, based on signs and symptoms*)

Category II: For most re-treatment cases: relapse, treatment after default, treatment after failure, others. However, those children who have failed to complete a full course of treatment previously (i.e. defaulted from treatment) but are not seriously ill should receive Category I.

TREATMENT REGIMENS

For children in the weight band of 3kgs – 10.9kgs (using pediatric formulations)

Category I regimen (for all new cases, *and* non-seriously ill defaulters)

Intensive Phase: (RHZ)HE for 2 months, daily			
Weight bands (in kg)	**Rif:INAH:PZA (Dispersible tabs) 60mg:30mg:150mg**	**Additional INAH 100mg Tab**	**Ethambutol tabs 100mg**
3 – 5.9	1 tab	¼ tab	1 tab
6 – 10.9	2 tabs	½ tab	1½ tab

Continuation Phase: (RH) for 4 months, daily (except in severe cases like TB meningitis and TB spine where this phase should be of 7 months)	
	Rifampicin:Isoniazid (60mg:60mg)
3 – 5.9	1 tab
6 – 10.9	2 tabs

Category II regimen (for all re-treatment cases, *except for* non-seriously ill defaulters)

Intensive Phase: (RHZ)HE daily for 3 months			
Weight bands (in kgs)	**Rif:INAH:PZA (Dispersible tabs) 60mg:30mg:150mg**	**Additional INAH 100mg Tab**	**Ethambutol tabs 100mg**
3 – 5.9	1 tab	¼ tab	1 tab
6 – 10.9	2 tabs	½ tab	1½ tab
Continuation Phase: (RH)E for 5 months, daily			
	Rifampicin:Isoniazid 60mg:60mg	**Ethambutol 100mg**	
3 – 5.9	1 tab	1 tab	
6 – 10.9	2 tabs	1 ½ tabs	

For children in the weight bands of 11-30.9kgs and more, use adult kits with additional INAH

Category I regimen (for all new cases, *and* non-seriously ill defaulters)

Intensive Phase: (RHZE)H for 2 months

Weight bands (in kgs)	Rif: INAH:PZA: E tabs 150mg: 75mg: 400mg: 275mg	Additional INAH 100mg tab
11 – 15.9	1 tab	1 tab
16 – 20.9	2 tabs	1 tab
21-30.9	2 tabs	2 tabs
Continuation Phase: (RH) for 4 months, daily (except in severe cases like TB meningitis and TB spine where this phase should be of 7 months)		
	Rif: INAH 150:75	**Additional INAH 100mg tab**
11 – 15.9	1 tab	1 tab
16 – 20.9	2 tabs	1 tab
21 – 30.9	2 tabs	2 tabs

Category II regimen (for all re-treatment cases, *except for* non-seriously ill defaulters)

Intensive Phase: (RHZE)H daily for 3 months		
Weight bands (in kgs)	**Rif: INAH: PZA: E tabs 150mg: 75mg: 400mg: 275mg**	**Additional INAH 100mg tab**
11 – 15.9	1 tab	1 tab
16 – 20.9	2 tabs	1 tab
21-30.9	2 tabs	2 tabs
Continuation Phase: (RHZ)H for 5 months, daily		
	Rif: INAH:Eth 150:75:275	**Additional INAH 100mg tab**
11 – 15.9	1 tab	1 tab
16 – 20.9	2 tabs	1 tab
21 – 30.9	2 tabs	2 tabs

IT IS VERY IMPORTANT TO CHECK HOW LONG YOUR PATIENT SHOULD BE ON TREATMENT AND TO MAKE SURE THAT THE DRUG DOSES ARE CORRECT.

For children in the weight bands of 31kg and more, use adult kits as follows

Category I regimen (for all new cases, *and* non-seriously ill defaulters)

Intensive Phase: (RHZE) for 2 months	
Weight bands (in kgs)	**Rif: INAH:PZA: E tabs 150mg: 75mg: 400mg: 275mg**
30 – 39	2
40 – 54	3
Continuation Phase: (RH) for 4 months, daily (except in severe cases like TB meningitis and TB spine where this phase should be of 7 months)	
Weight bands (in kgs)	**Rif: INAH 150:75**
30 – 39	2
40 – 54	3

Category II regimen (for all re-treatment cases, *except for* non-seriously ill defaulters)

Intensive Phase: (RHZE) daily for 3 months		
Weight bands (in kgs)	**Rif: INAH:PZA: E tabs 150mg: 75mg: 400mg: 275mg**	
30 – 39	2	
40 – 54	3	
Continuation Phase: (RH)E for 5 months, daily		
	Rif: INAH 150:75	**Ethambutol 400mg**
30 – 39	2	2
40 – 54	3	4

Isoniazid Preventive Therapy (IPT)

Give Isoniazid Preventive Therapy to children who have a family or household member known to be a sputum positive TB patient, and who is:

1. less than 5 years old, and not symptomatic for TB
2. HIV-infected, irrespective of age, and not symptomatic for TB

The doses of IPT are listed in the table. Studies have shown that 6 months of IPT may be protective for two years. If such children are symptomatic for TB i.e., have chronic cough, fever, weight loss, malnutrition, enlarged lymph nodes or prolonged pneumonia, a pediatrician should fully evaluate them to exclude active TB disease. If the child has TB, then s/he should receive full anti-TB treatment. Never give IPT to children who are symptomatic for TB without a proper evaluation.

Doses for Isoniazid Preventive Therapy:

Weight	**H (100mg) tabs**
3 - 5.9 kg	½ tab
6 - 10.9 kg	1 tab
11 - 15.9 kg	1½ tab
16 - 20.9 kg	2 tab
21 - 30.9 kg	3 tab
31 - 45.9 kg	3 tab

IPT is effective in preventing TB infection for children with HIV. However it is essential that TB infection, if present, is diagnosed and a full treatment course given. IPT for children with HIV may need to be given for 6 to 9 months, and should be given with Septrin (cotrimoxazole). Antiretroviral therapy in children with HIV improves immune function and also reduces the risk of TB infection. Consult a paediatrician on the management of all children with suspected HIV and TB.

Failure to Respond to Treatment

If a patient is failing to respond in spite of directly observed treatment (DOT) with first-line drugs, the possibility of resistance arises and peripheral health facilities should refer such patients to a major centre urgently. Where you cannot be sure whether a re-treatment case has taken a full course of treatment previously or has defaulted, you should treat the case as a Category II patient and refer the case to a pediatrician for further assessment

Steps to consider multi-drug resistant TB (MDR-TB)

- MDR-TB should be a laboratory diagnosis.

- Clinically consider MDR-TB in children known to have TB disease with any of the following features:
  a. Contact with a known case of drug resistant TB
  b. Remains sputum smear-positive after 3 months of treatment
  c. Not responding to the anti-TB treatment regimen
  d. Recurrence of TB after adherence to treatment

REMEMBER – PREVENTION IS BEST.
SEVERE TUBERCULOSIS IS PREVENTED BY BCG AND BY FINDING AND TREATING SPUTUM POSITIVE ADULTS

TYPHOID

A child may have typhoid if he/she:

- comes from an area where typhoid is common
- has persisting fever
- has one or more of the following:
  - headache
  - abdominal pain
  - diarrhoea (with or without blood).
  - confusion

- abdominal tenderness
- abdominal distension
- constipation
- talking nonsense
- dehydration
- looking or feeling very sick

If you think the child has typhoid:

1. Admit to hospital or health centre*

   *Start treatment and transfer urgently to hospital if the child: - has a distended tender abdomen
   - has rectal bleeding or melaena(black, sticky stools)
   - has severe abdominal pain
   - is unconscious or confused.

2. Do a 'Widal' blood test if possible to confirm the diagnosis.
   A titre of 1:160 or higher is likely to indicate true typhoid fever but a titre of < 1:80 may indicate previous exposure.

TREATMENT

1. **Chloramphenicol for at least 2 weeks; 3 weeks if possible.**
   Give intramuscularly 6 hourly to start with and change to oral when the patient improves (doses see p. 142).

   If not responding to CMP use ciprofloxacin (p138).

   If you do not have chloramphenicol or ciprofloxacin, give ampicillin/amoxycillin (p. 140) for 3 weeks, or cotrimoxazole (p. 143) for at least 2 weeks.

2. **Antimalarials** Test and treat if positive (see p. 67).

3. **Fluids**
   a. If dehydrated: rehydrate with either ORS or intravenous ½ strength Darrow's Solution. (see p.149).
   b. If not dehydrated:
      i) If vomiting or the child has a distended, tender abdomen
      - give intravenous maintenance fluids. (see p. 149).

ii) If not vomiting and the abdomen is soft - give milk and other oral fluids.

4. Nutrition rehabilitation

Children who have typhoid need extra nutrition to build themselves back to normal.

a. Give extra food
b. Give 1ml multiple vitamin liquid daily.

Note: Even with the correct treatment, the child may take 1 to 2 weeks to get better. The fever may remain for up to a week.

PREVENTION

Typhoid is spread by poor hygiene.

Advise patient and parents:

- to wash hands thoroughly with soap and water after toilet.
- to wash hands thoroughly with soap and water before cooking and eating.
- to check they use clean, safe drinking water
- to be careful about buying "fast foods" and ready to eat cooked food and ice-creams from unhygienic places.

At the present time the typhoid vaccine is not very important in typhoid prevention. Emphasis must be placed on hygiene.

URINARY SYMPTOMS

1. **Pain on passing urine:**
   - If possible, collect a urine sample for microscopy (and culture)
   - Look at the urine in a glass bottle.
     - If it is cloudy treat for urinary infection.
       Give cotrimoxazole (septrin see p. 143) twice a day for 1 week, or nitrofurantoin.

Arrange for the child to be checked by a doctor later.

- If it is clear check the penis or vulva to see if there is any cause for pain.

2. **Passing blood in the urine:**
   - All children passing blood in the urine should be admitted to hospital or health centre for investigation and treatment.
   - If oedema is present, start treatment with amoxycillin oral daily for 10 days (see p. 140). Measure the blood pressure. If more than 120/90, discuss the problem with a doctor.
   - If there is no oedema, start treatment with cotrimoxazole (see p. 143). Arrange for the child to be checked by a doctor later.
   - If bleeding continues after 2 days treatment, refer patient to hospital.

Urine collection (see Paediatrics for doctors in PNG, p. 378)

YAWS

Yaws is becoming more common again in Papua New Guinea. It usually occurs in children over the age of 6 years, and is most common in coastal areas.

The first sign of yaws is a skin sore that is:

- Raised and reddish brown, with a yellow crust
- Usually on the leg
- Usually painless
- Sometimes ulcerated
- Unresponsive to standard sore treatments
- Heals slowly over a few months.

Later, many children develop bony problems. These usually start with chronic pain in the long bones and swellings of the fingers, forearms, legs and bridge of the nose. The skin sore may have healed by this stage. The VDRL test is positive.

TREATMENT

Give a single dose of IM benzathine penicillin

Benzathine penicillin 2,400,000 units dilute with 5ml sterile water

Weight (kg)	Dose (ml) IM	Weight (Kg)	Dose (ml) IM
3-9.9	1	30-39.9	4
10-19.9	2	40-49.9	5
20-29.9	3	Adult	5

The sores, pains and bone problems get better very quickly

Treat close contacts with benzathine penicillin.

Notify your provincial health office.

TABLES OF DRUG DOSES

MAINTENANCE DOSES OF COMMONLY USED DRUGS (CHILDREN OLDER THAN 1 MONTH) DOSE PER KILOGRAM BODY WEIGHT, and NUMBER OF DOSES EACH DAY.

	Drug	Dose/kg	No. of doses per day	Route
Antibiotics	1. Amoxycillin	25mg	3	Oral
	2. Ampicillin	50mg	4	IM,IV or Oral
	3. Azithromycin	15mg	1	Oral
	4 Ceftriaxone	50mg	2	IM,IV
	5. Chloramphenicol	25mg	4	IM, IV or Oral
	6. Ciprofloxacillin	10mg	2	Oral
	7. Cloxacillin/Flucloxacillin	25mg	4	IM, IV or oral
	8. Cotrimoxazole	5mg trimethoprim	2	Oral
	9. Crystapen	25,000u	4	IM or IV
	10. Erythromycin	10mg	4	Oral
	11 Gentamicin	5-7.5 mg	1	IM or IV
	12 Metronidazole	15mg	3	oral or rectal
	13. Tinidazole	50mg	1	Oral
Anti TB	1. Ethambutol	20mg	1	Oral
	2. Isoniazid	10mg	1	Oral
	4. Pyrazinamide	35mg	1	Oral
	5. Rifampicin	15mg	1	Oral

Contents

MAINTENANCE DOSES OF COMMONLY USED DRUGS (CHILDREN OLDER THAN 1 MONTH) DOSE PER KILOGRAM BODY WEIGHT, and NUMBER OF DOSES EACH DAY.				
	Drug	**Dose/kg**	**No. of doses per day**	**Route**
Anticonvulsants	1. Carbamazepine	5-10mg	2	Oral
	2. Phenobarbitone	5mg	1	IM, IV or oral
	3. Phenytoin	3mg	2	IV or oral
Antimalarials	1. Camoquin	10mg	1	Oral
	2. Chloroquine	10mg	1	Oral
	3. Quinine	10mg	3	Oral
		10mg	2	IM
	4. Artemether	3.2mg day 1 1.6mg day 2 +	1	IM
	5. Artesunate	4mg day 1 2mg day 2+	1	Oral
Bronchodilators	1. Aminophylline	5mg	4	IV or oral
	2. Salbutamol	0.15mg	4	Oral
	3. Salbutamol Neb solution	0.03mls (make up to 2 mls with sterile water or normal saline)	6	Nebuliser
Cardiac	1. Digoxin	10micrograms	1	IM or oral
	2. Frusemide	1mg	2	IV, IM or oral

TABLE OF DRUG DOSES	WEIGHT (Kilograms)								
		3–5.9	**6–9.9**	**10–14.9**	**15–19.9**	**20–29.9**	**30–39.9**	**40–49.9**	**Adult**
Adrenalin Amp. 1/1000 in 1ml Subcutaneous	ml	—	—	—	0.25	0.25	0.25	0.5	0.5
Albendazole Tab 200mg (must be crushed or chewed)	tab	1	1	2	2	2	2	2	2
Aminophylline Amp. 250mg/10ml IV over 1 hour (put in burette) every 6 hours	ml	—	1.5	2	3	4	6	8	10
Elixir 25mg/5ml every 6 hours, oral	ml	—	6	10	15	—	—	—	—
Tab. 100mg, every 6 hours, oral	tab	—	¼	½	¾	1	1	1	1
Amodiaquine (infant camoquin) Tab 100mg									
Treatment: daily for 3 days, oral	tab	See page 41				Use Chloroquine			
Prophylaxis: weekly dose, oral	tab	¼	½	1	1	Use Chloroquine			
Amoxycillin Tabs 250mg. 3 times daily oral	tab	½	½	¾	1	1½	2	2	2
Amoxycillin suspension 125mg/5ml three times daily oral	ml	5	71/2	10	10				
Ampicillin or Amoxycillin Vial 250mg (add 1ml sterile water) **IM/IV every 6 hours**	ml	1	1.5	2	2	2	2	2	2

TABLE OF DRUG DOSES	WEIGHT (Kilograms)								
		3–5.9	**6–9.9**	**10–14.9**	**15–19.9**	**20–29.9**	**30–39.9**	**40–49.9**	**Adult**
Aspirin									
Tab. 300mg, every 6 hours, oral*	tab	—	¼	½	½	1	1½	2	2
*** Do not use aspirin to treat fever in children less than 10 years of age- use paracetamol**									
Atropine Amp. 0.6mg/ml, IM	ml	—	¼	¼	¼	½	¾	¾	1
Benadryl, see diphenhydramine									
Camoquin—see amodiaquine									
Ceftriaxone, twice daily IM dose	mg	Calculate exactly 50mg per kg							
Chloral hydrate 150mg/5ml, oral	ml	5	10	15	20	20	20	20	20
Chloramphenicol									
– Vial 1 gram (add 4ml sterile water) IV or IM every 6 hours.	ml	see	p.57	1½	2	2½	3	3	4
– Susp. 125mg/5ml, every 6 hours, oral	ml	see	p.58	12	15	—	—	—	—
– Cap. 250mg, every 6 hours, oral.	cap	—	—	1	1	2	2	3	4
Chloroquine Tab 150mg base									
Treatment: daily for 3 days, oral	tab	¼	½	1	See page 41				
Prophylaxis: weekly dose, oral	tab	¼	½	½	1	1	1½	1½	2
Clofazimine(Lamprene) Cap 100mg									
– every second day, oral	cap	1	1	—	—	—	—	—	—
– daily, oral	cap	—	—	1	1	1	1	1	1

TABLE OF DRUG DOSES	WEIGHT (Kilograms)								
		3–5.9	**6–9.9**	**10–14.9**	**15–19.9**	**20–29.9**	**30–39.9**	**40–49.9**	**Adult**
Cloxacillin									
– Vial 250mg (add 1½ml sterile water) IM or IV every 6 hours	ml	¼	½	1	1	1½	2	2	2
– Cap. 250mg, every 6 hours, oral.	cap	—	—	1	1	1	1	1	2
Cotrimoxazole (septrin)									
– Susp. 40mg/5ml Trimethoprim, twice daily, oral	ml	2½	5	7½	10	—	—	—	—
– Tabs 80mg Trimethoprim, twice daily	tab	—	½	½	1	1½	2	2	2
Dapsone (DDS) Tab 50mg									
– Daily for 12 weeks	tab	½	½	½	½	1	1½	1½	2
– THEN either twice a week at clinic	tab	1½	1½	1½	1½	3	5	5	6
Or daily at home	tab	½	½	½	½	1	1½	1½	2
Diazepam (valium) 10mg/2ml – slow IV (rectal: see p.22)	ml	¼	½	½	¾	1	2	2	2
Diethylcarbamazine Tab 50mg **(hetrazan)**									
– 3 times a day for 3 weeks, oral .	tab	¼	¼	½	½	1	1½	1½	2

TABLE OF DRUG DOSES	WEIGHT (Kilograms)								
		3–5.9	**6–9.9**	**10–14.9**	**15–19.9**	**20–29.9**	**30–39.9**	**40–49.9**	**Adult**
Digoxin (lanoxin) every 6 hours									
– Elixir 50microgram/ml, oral, 3 doses.	ml	2	3	5	—	—	—	—	—
– Tab 0.25mg, oral, 3 doses.	tab	—	—	—	1	1	1	1	1
Then maintenance if needed:									
– Elixir 50microgram/ml, oral, daily.	ml	1	1½	2½	3	—	—	—	—
– Tab 0.25mg, oral, daily.	tab	—	—	—	—	1	1	1	1
Dihydroartemisinin (40mg) – piperaquine 320mg fixed formulation Tabs	tab								
Diphenhydramine (Benadryl) – Elixir,10mg/5ml, 3 times a day, oral.	ml	2	4	6	8	10	use promethazine		
Electrolyte mixture									
- (Zinc, Potassium and Magnesium)	ml	5	5	5	10	10	10	10	10
Doses for malnutrition an diarrhoea	ml	5	10	10	10	10	10	10	10
Erythromycin Susp. 125mg/5ml – 4 times daily, oral.	ml	2	3	5	7	10	—	—	—
Ethambutol Tab. 400mg, daily, oral	tab	—	—	—	1	1	1½	1½	2
Fefol 200 mg Ferrous Sulphate	tab	---	¼	½	½	1	1	1½	2
Ferrous fumarate (46 mg/5ml) Oral once daily	ml	2½	5	-- -	-- -	-- -	-- -	-- -	-- -
Flagyl — see metronidazole									

TABLE OF DRUG DOSES	WEIGHT (Kilograms)								
		3–5.9	**6–9.9**	**10–14.9**	**15–19.9**	**20–29.9**	**30–39.9**	**40–49.9**	**Adult**
Frusemide (lasix) Amp. 20mg/2ml – IM or IV.	ml	½	¾	1	1½	2	2	2	2
Gentamicin Vial, 80mg/2ml – IM, once daily (7.5mg/kg)	ml	0.75	1.25	2	2.5	3.5	5	6	6
Ipecacuanha syrup give once,oral	ml	—	15	15	15	15	15	15	15
Iron (imferon) Amp. 2ml or 5ml. Do not give more than 5ml per day.	ml	3	5	7	10	15	20	20	20
Isoniazid (Inah) Tab. 100mg, oral:									
– DAILY for 2 months	tab	½	1	1½	2	3	3	3	3
– THEN twice a week	tab	1	1½	2½	3	4½	6	7½	9
Ketamine (ketalar) 500mg/10ml.									
– IM — first dose.	ml	¾	1½	2½	3½	5	7½	7½	10
— next dose (if needed)	ml	½	¾	1½	2	2½	4	4	5
Lanoxin— see digoxin									
Lasix— see frusemide									
Magnesium hydroxide mixture (milk of magnesia), oral	ml	—	2	5	10	10	15	15	20

TABLE OF DRUG DOSES	WEIGHT (Kilograms)								
		3–5.9	**6–9.9**	**10–14.9**	**15–19.9**	**20–29.9**	**30–39.9**	**40–49.9**	**Adult**
Mebendazole Tab. 100mg	tab	½	½	1	1	1	1	1	1
Inpatient, twice daily for 3 days, oral.	tab	—	2	4	4	4	4	4	4
Outpatient, Single dose, oral.	tab	½	1	1½	2	2	3	3	4
Metronidazole (flagyl) Tab. 200mg or 250mg, 3 times daily for 5 days, oral.	tab	½	½	1	1	1½	1½	2	2
— For Bloody Diarrhoea — For Big Skin sores	ml	—	—	¼	¼	½	¾	1	1½
Morphine Amp. 10mg/ml (NOT 15mg/ml), IM every 6 hours.	ml	_	_	1/4	1/4	1/2	3/4	1	11/2
Nitrofurantoin	ml	—	2½	5	5	7½	10	—	—
Paracetamol Suspension 4 times daily oral.	ml	1	1½	2½	3	4	5	7½	10
Paraldehyde Amp. 5ml, IM Use a glass syringe:	ml	1	1 ½	2½	3	4	5	7½	10

TABLE OF DRUG DOSES	WEIGHT (Kilograms)								
		3–5.9	**6–9.9**	**10–14.9**	**15–19.9**	**20–29.9**	**30–39.9**	**40–49.9**	**Adult**
Penicillin – Benzyl (crystalline) Vial 1,000,000u (add 2ml sterile water) IM or IV every 6 hours	ml	½	½	1	1	1½	2	2	2
– Benzathine Vial, 2,400,000u, Yaws add 5ml sterile water, IM stat	ml	1	1	2	2	3	4	5	5
Pethidine Amp.50mg/ml or100mg/2ml									
– usual dose, IM	ml	—	—	¼	½	½	¾	1	1
– for very severe pain, IM	ml	—	¼	½	¾	1	1½	2	2
Phenobarbitone Tab 30mg, oral. Amp. 200mg mg/ml									
Loading dose once, IM	ml	¼	½	¾	1	1	1	1	1½
Oral	tab	2	3	5	6	7	7	7	8
Maintenance Dose daily, oral	tab	½	1	2	3	4	5	5	6
Phenytoin Cap. or tab. 30mg **NOT** 100mg, Maintenance dose daily, oral	cap	1	2	2	3	4	5	6	8
Promethazine (Phenergan) — Tab 25mg. 2 times a day, oral	tab	use diphenhydramine					1	1	1
— Amp. 50mg/2ml, IM or IV once	ml	—	¼	½	¾	1	1½	2	2

TABLE OF DRUG DOSES	WEIGHT (Kilograms)								
		3–5.9	**6–9.9**	**10–14.9**	**15–19.9**	**20–29.9**	**30–39.9**	**40–49.9**	**Adult**
Pyrazinamide Tab 500mg	tab	¼	½	¾	1	1½	2	2	3
Rifampicin Susp 100mg/5ml	ml	2½	5	7½	10	—	—	—	—
Tab 150mg	tab	—	—	—	—	2	3	3	4
Quinine Tab 300mg. — 3 times a day for 3 days, oral	tab	see p. 43					1½	1½	2
— Amp. 120mg/2ml or 600mg/10ml	ml	see p. 43					6	8	10
Salbutamol (ventolin) Tab 4mg. 4 times daily oral	tab	—	¼	¼	½	½	1	1	1
Respirator Solution through nebuliser (see p.8 for dilution)	ml	¼	¼	½	½	½	½	½	½
Septrin: see cotrimoxazole)									
Tinidazole Tab. 500mg(see p.32, 34)	tab	¼	½	1	1½	2	3	4	4
Valium: see diazepam									
Ventolin: see salbutamol									

IV and Oral Fluid Calculation When Using the Paediatric IV Giving Set

IV AND ORAL FLUIDS	WEIGHT (Kilograms)								
		3–5.9	6–9.9	10–14.9	15–19.9	20–29.9	30–39.9	40–49.9	Adult
IV fluids requirements Normal maintenance 4.3% Dextrose in 0.18% N/Saline	ml/hr drops/min	18 18	30 30	45 45	55 55	65 65	75 75	90 90	120 120
Meningitis, Heart failure, Coma Do not give oral fluid as well 4.3% Dextrose in 0.18% N/Saline	ml/hr drops/min	12 12	20 20	30 30	36 36	44 44	50 50	60 60	80 80
Diarrhoea (½ strength Darrows) — quickly if dehydrated — then	ml ml/hr drops/min	100 25 25	150 50 50	250 75 75	350 100 100	500 100 100	700 150 150	900 150 150	1000 150 150
Burns (0.9% Sodium Chloride) — quickly if more than 10% burn — then	ml ml/hr drops/min	100 25 25	150 50 50	250 75 75	350 100 100	500 100 100	700 150 150	900 150 150	1000 150 150
Oral fluid requirements: Maintenance give every 3 hours (6 times a day) oral or N/G tube	ml	120	240	300	350	400	450	450	500
Diarrhoea with dehydration O.R.S., oral or N/G tube — FAST — THEN every hour for 4 hours	ml ml	100 50	150 100	250 150	350 200	500 300	500 400	500 500	500 600

Meningitis, heart failure, coma. If patient not drinking and unable to insert IV, give N/G fluid 4 times a day, oral	ml	100	150	200	250	300	350	350	350

IV and Oral Fluid Calculation When Using the Adult IV Giving Set

IV AND ORAL FLUIDS	**WEIGHT (Kilograms)**							
		3–5.9	6–9.9	10–14.9	15–19.9	20–29.9	30–39.9	40–49.9	Adult
IV fluid requirements Normal maintenance 4.3% Dextrose in 0.18% N/Saline	ml/hr drops/min	18 5	30 8	45 11	55 14	65 16	75 19	90 23	120 30
Meningitis, Heart failure, Coma Do not give oral fluid as well 4.3% Dextrose in 0.18 % N/Saline	ml/hr drops/min	12 3	20 5	30 8	36 9	44 11	50 13	60 15	80 20
Diarrhoea (½ strength Darrows) — quickly if dehydrated — then	ml ml/hr drops/min	100 25 7	150 50 13	250 75 20	350 100 25	500 100 25	700 150 40	900 150 40	1000 150 40
Burns (0.9% Sodium Chloride) — quickly if more than 10% burn — then	ml ml/hr drops/min	100 25 7	150 50 13	250 75 20	350 100 25	500 100 25	700 150 40	900 150 40	1000 150 40

Oral fluid requirements: Maintenance give every 3 hours (6 times a day) oral or N/G tube	ml	120	240	300	350	400	450	450	500
Diarrhoea with dehydration O.R.S., oral or N/G tube — FAST — THEN every hour for 4 hours	 ml ml	 100 50	 150 100	 250 150	 350 200	 500 300	 500 400	 500 500	 500 600
Meningitis, heart failure, coma. If patient not drinking and unable to insert IV, give N/G fluid 4 times a day, oral	ml	100	150	200	250	300	350	350	350

Produced by the Paediatric Society of Papua New Guinea

Copies of this book can be obtained from:

Provincial Health Advisor

CEO of Provincial Health Authority

Provincial Paediatricians

Or

The Secretary,
Paediatric Society of Papua New Guinea
Paediatric Discipline,
Clinical Sciences Division
School of Medicine and Health Sciences
PO Box 5623
Borok

Contents