Standard Treatment for Common Illnesses of Children in Papua New Guinea

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

10th Edition
2016

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) or pneumococcal vaccines. Measles/Rubella 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, or hospital manager 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
- Record mid-upper arm circumference (MUAC)
- Treat any malnutrition
- Immunise the child and the other members of the family if they are due or overdue for immunisation.

RECENT CHANGES IN IMMUNISATION AND 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, such as changes in immunization schedule (polio, measles)

POLIO VACCINE

In April, 2016 trivalent OPV (tOPV) was replaced with the new bivalent OPV (bOPV) and a dose of inactivated polio virus vaccine (IPV) was introduced. All children should be receiving bOPV at one, two and three months and a dose of IPV also at 3 months. This marks major progress towards the eradication of Polio. It is anticipated that in 2018 or 2019, bOPV will be withdrawn and replaced with IPV, so children will then receive IPV at one, two and three months.

MEASLES and RUBELLA VACCINE

There are 2 changes with the measles vaccine. Firstly - the measles vaccine is now combined with the rubella vaccine (MR) as of 2015. The second change is that children should receive an additional measles vaccination at 18 months. This means children should receive MR vaccine at 6, 9, and 18 months to avoid future epidemics.

Possible Developments: It is possible that in the next few years the Human Papilloma Virus (HPV) may be introduced to be given to older school age children.

CHILD FRIENDLY TB MEDICINE

A new paediatric friendly fixed-dosed combination (FDC) TB medicine has been developed. It contains the same 3 drugs (rifampicin, isoniazid, pyrazinamide) but it is dosed better for children, comes in a liquid, and tastes better. It will become available throughout the country in 2016 and 2017. See TB section for more details.

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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).

The book can be downloaded at:
http://pngpaediatricsociety.org/treatment

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. 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 (p. 157).

CHANGES IN THIS EDITION

- Minor changes to the asthma section, including use of chronic controller medications
- Changes to Babies Born Before Arrival (BBA) section
- Additions to Babies-Neonatal Infections section
- Additions to Babies-Drug Doses table
- Updated immunization table and schedule
- Minor changes to convulsions section
- Changes to section on Meningitis or Severe Sepsis
- Changes to Pneumonia section
- Changes to diarrhoea section
- Changes to breastfeeding section
- Updated malnutrition section including feeding volumes
- Minor changes to osteomyelitis section
- Minor changes to Skin Diseases section
- Addition of New TB Regimen to the TB section including MDR
- Updated Drug Doses table
- Updated IV fluid recommendation and table (p. 167)

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). 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

10th Edition

PAEDIATRIC STANDARD TREATMENT BOOK
NEW EDITION 2016

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. 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.

We have an obligation as responsible parents, governments and civil society to ensure that children's rights are fulfilled, protected and respected. In fulfilling the rights of children and young people to good health, we have to provide cost-effective prevention and treatment regimens as described in this revised Paediatric Standard Treatment Manual, and in the PNG Child Health Plan 2009-2020.

Let there be a warm welcome for this 10th Edition of the Paediatric Standard Treatment Manual. It is a publication with a remarkable history, in existence for over 40 years. The earlier editions have been extensively used by health workers in PNG. Since the last edition much more evidence 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 strong adherence to the standard treatment regimens on the part of all health workers in PNG.

Mr Pascoe Kase
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.15
⬇		
STEP 2 ➔	Does the child have COUGH or DIFFICULT BREATHING? Check for fast breathing and chest indrawing.	p. 119
⬇		
STEP 3 ➔	Does the child have DIARRHOEA? Check for signs of dehydration.	p. 48
⬇		
STEP 4 ➔	Does the child have FEVER? Look for signs of malaria, meningitis and other infections.	p. 61 73, 102
⬇		
STEP 5 ➔	Does the child have MEASLES now or had it in the last 3 months? Look for signs of measles.	p. 100
⬇		
STEP 6 ➔	Does the child have EAR PAIN OR DISCHARGE? Look for signs of otitis media or ear discharge	p. 112, 113
⬇		
STEP 7 ➔	Check all children for PALLOR. Check of the Palmer or conjunctiva for pallor.	p. 17
⬇		
STEP 8 ➔	Check if the child is MALNOURISHED. Check MUAC & plot the weight on the WFA curve in the Clinic Book.	p. 82
⬇		
STEP 9 ➔	Assess FEEDING if age < 2 YEARS. Check for ANAEMIA / MALNUTRITION for Feeding problems?	p. 17, 82 34
⬇		
STEP 10 ➔	Assess BREAST FEEDING if aged less than 6 months. Ask about EXCLUSIVE BREAST FEEDING: check attachment / positioning	p. 34
⬇		

STEP 11 ➔	Does the child have DIARRHOEA and or COUGH for more than 2 WEEKS? (Think about possible HIV infection).	p.62

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STEP 12 ➔	Does the child need IMMUNIZATION? Check immunization record in the clinic book	p. 67, 68
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	p. 15, 24, 28
⬇		
STEP 2 ➔	ASK ABOUT FEVER Look for signs of bacterial infection or malaria	p. 61
⬇		
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. 89, 90
⬇		
STEP 5 ➔	ASK ABOUT BABY'S FEEDING Check feeding pattern: emphasize exclusive breast feeding	p. 34
⬇		
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. 67, 68
⬇		
STEP 8 ➔	ASK ABOUT FAMILY PLANNING	p. 98

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. **<u>Immunise</u>** Always check the health record book and immunise if the child is due for it.

- There is no contra-indication to giving measles/rubella vaccine.
- Pentavalent, pneumococcal 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, 12 and 18 months.

2. **<u>Admit</u> or Refer babies and 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 for age (WFA) less thar 60% line or less than the -3 line, and/or a flat or falling weight curve
- MUAC less than 11.5 cm (in children > 6 months)
- 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 green bile
- 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

PAEDIATRIC RULES (continued)

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

PAEDIATRIC RULES (continued)

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
- Children with polyarthritis (swelling of the joints)

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.

a. 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

b. Whenever possible do:

- haemoglobin
- RDT for malaria.

TREATMENT

a. Antimalarials

Treatment — antimalarial course (see p. 73)

Prophylaxis — i) give antimalarials once a week for 3 months if possible (See p.81).
ii) Explain the importance of insecticide treated bednets. Contact the local PHA if you don't know where to get them

b. Hookworm Treatment (inpatients and outpatients).

Use Albendazole — crushed up for children >6 months.
Older children can chew the tablet.

Weight	**Dose (200 mg tab)**	**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

c. Folic Acid

1 tablet each week for 3 months (same day as malaria prophylaxis).
Supply parents with 12 tablets (see p. 943).

ANAEMIA (continued)

d. 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. 162).

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.**

e. 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).

f. Blood Transfusion

(i) Transfuse any child with haemoglobin less than 3g/dL.
(ii) Transfuse a child with haemoglobin between 3.0 and 6.0g/dL 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.

ANAEMIA (continued)
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

* **Cross-match 1 unit of packed cells**

** **Cross-match 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

ANAEMIA (continued)

Note on blood transfusion:

1. Give furosemide (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 10 kg 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. 73).

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. 119).

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 2-4 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

b. Oxygen

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

- Nebulised Salbutamol Respirator Solution (0.5% solution)

Weight	**Amount of Solution**	**Amount of Normal Saline**
Less than 9kg	½ ml	4 ml
9kg or more	1 ml	4 ml

Give this through the face-mask every three hours.

ASTHMA (continued)

Foot operated nebulisers may be through your Provincial Health Office and Area Medical Stores.

A good alternative is to use an MDI with spacer (see **Mild Asthma** p. 21). Give 4-6 puffs every 2-3 hours in severe asthma, up to 6-12 puffs if child >12 years and asthma severe. 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. 21)

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 only if the child is too sick to drink, do not give excess IV fluid to a child with asthma

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:

ASTHMA (continued)

f. Aminophylline intravenously: 250mg/10ml Ampoule.

<u>Do NOT use 0.5gm/2ml Ampoule</u>

Every 6 hours put the dose of aminophylline into the burette and add Hartmann's solution up to the hourly maintenance amount (p. 167) 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: **<u>IV Aminophylline can be dangerous</u>**

- **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.167)

When the child improves:

Stop the IV fluids and change to:

- Salbutamol by inhaler with spacer (2-4 puffs every 4-6 hours) or oral salbutamol (see p. 166).
- Continue this until the chest is free of wheeze. If you were giving benzyl penicillin, change to **amoxicillin oral TDS** for 5 days (see p. 159).

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) - ALWAYS CHECK DOSE!!!
   1 mg IM once (1mg/ml ampoule) - give 1 ml
   1 mg/0.5 ml - give 0.5 ml
   Do **NOT** use 10mg/ml Ampoule (option of diluting in 9mls sterile water to make 10mg/10mls or 1mg/ml and use. However, all facilities have the 1mg/0.5ml or the 1mg/ml ampoules)

b. 4% chlorhexidine 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 (if available).
   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 (rectal temp *below* 35.5°C)
  OR very cold skin of arms and legs
- Not able to suck
- Severe abdominal distension
- Fitting
- Skin pustules - give flucloxacillin
- 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

BABIES – BORN BEFORE ARRIVAL (BBA) (continued)

- Maternal fever
- Offensive liquor
  Give ampicillin (or crystapen or amoxicillin) plus gentamicin. If skin infection give flucloxacillin. See **Babies– Neonatal infections** (p. 31)

g. **Oxygen** 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

i. Be sure to check blood glucose level (low is < 2.5 mmol/L)

BABIES LESS THAN 2.2KG WEIGHT

These babies need special care, but unless the baby is very ill the safest place is with their mother. **Do not separate even very small or premature babies from mother** unless absolutely necessary.

a. Keep the baby warm -

Small babies get cold easily, particularly in the highlands. Mothers should be taught how to keep these small babies warm in skin to skin contact via kangaroo mother care (KMC). If KMC is not possible, 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 or bags, 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. 34). Use expressed breast milk by cup if the baby cannot suck well. Use a nasogastric or gastric 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. See breastfeeding section if the baby is unable to drink breastmilk for any reason.

When the baby is sucking well from the breast and is gaining weight above 1.8 kg, 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 5 mg daily while the baby is in hospital/health centre (p. 32)

NOTES: (Space to write your own notes)

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 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, for 5 to 10 days, depending on the response, plus

(iii) Test for Malaria and treat if positive (see Malaria section page 79)

Notes:

- If the baby has signs of Staph infection: skin pustules, abscesses, cellulitis, purulent umbilical cord, use cloxacillin and gentamicin
- If the baby is still febrile and not improving after 2-3 days, refer
- If there is no gentamicin, give chloramphenicol
- There are special dilutions for gentamicin and special doses of chloramphenicol for babies (see Babies **Drug doses** in the tables on pages 30)

BABIES – NEONATAL INFECTIONS (continued)

- For babies with a high fever (T>38 C) from malaria endemic areas, consider congenital malaria. Treat only if the RDT or blood slide is positive. PR, IMI or IV artesuante should only be given to babies who are too sick to take oral artemether-lumefantrine (Co-artem, Mala-1)

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
AZT (Zidovudine)	Oral	See P. 66. HIV Infection and prevention (PMTCT)					
Amoxicillin 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 (and for meningitis in all ages) – 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 1 gram • 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
Diazepam. Amp 10mg / 2ml. Mix with 2 ml sterile water. Give slowly IV or rectally (p. 45) (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**
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 slowly IV or rectally (p. 36) (0.25mg / kg / dose)	IM	To stop convulsions use paraldehyde	¼	¼	½	½	
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 Infant suspension (or *break* 200mg tabs)	Oral	See P. 66. HIV Infection and prevention (PMTCT)					
Paraldehyde amp 5ml IM (0.2ml/kg) Use only glass syringe	IM	¼	¼	½	½	½	¾

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) **Benzathine** Vial 2,400,000 Units (add 5ml sterile water) IM Once only	IM / IV IM / IV	¼ ½	¼ ½	¼ ½	½ 1	½ 1	½ 1
Phenobarbitone Amp 200mg/ml Diluted (add 4ml sterile water) IM Loading Dose (first dose only) Tablets (30mg) Daily dose	 IM Oral	 ½ ¼	 ¾ ¼	 1 ½	 1¼ ½	 1½ ½	 1¾ 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
- Swab cord with 4% chlorhexidine once

BREAST FEEDING AND NUTRITION

Breast feeding is best!!

Breast milk is safe, simple, readily available and cheap.

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

Breastfeeding reduces the risks of diarrhoea, pneumonia, bronchiolitis, malnutrition and other diseases.

GENERAL

- Breast feeding should be initiated or begin within one (1) hour of birth,
- Skin-to-skin (or Kangaroo-mother care) should be encouraged at all deliveries to help the initiation of breastfeeding
- For most babies, the easiest and best schedule is 'on-demand' breast feeding.
- Infants who cannot demand feed (such as low or very low birth weight and sick babies) should be fed every 2-3 hours.
- Infants who cannot suck on the breast (e.g. very premature, sick babies or babies with severe cleft palate) should be given expressed breast milk (EBM) by cup or by nasogastric tube (refer to section on **babies weighing less than 2.2kg**, (p. 26)
- The first yellow milk a mother makes (colostrum) ***should*** be given to the baby. It should *not* be thrown away. It contains nutrients and important anti-infective substances that are part of the baby's defense against infection.
- **All babies should be exclusively breast fed for the first 6 months of age**. Exclusive breast feeding means that no other foods or drinks, not even water should be given.

BREAST FEEDING AND NUTRITION (continued)

Breast feeding should continue after the introduction of nutritionally adequate local foods at 6 completed months (complementary feeds). Breastfeeding should continue for up to 24 months or more as long as it is acceptable to the mother.

Breastfeeding should be encouraged in all situations (including Emergencies and Special Situations)

- Babies exposed to or infected with HIV should be encouraged to breast feed (refer to HIV section p. 63)

- If the mother has died, breast feeding by another woman can be considered after the biological father, the woman and her husband are counselled and tested negative of HIV/AIDS.

- For adopted babies, breastfeeding should be encouraged after the biological parent(s) and adopting parents are counselled and tested negative of HIV/AIDS.

- If the baby is abandoned and the mother is not found at the time of discovery of the baby, refer to the nearest health facility and notify the Child Protection officer (child welfare) or appointed officer at the Community Development Office nearest to you for further feeding options and care.

Breast feeding policies should be supported, promoted and upheld when and wherever possible.

- Baby feeding bottles with or without teats and baby cups with spouts should never be used in any health facility and should not be encouraged anywhere else. They are difficult to sterilize and often results in infections such as diarrhoea and malnutrition.

- Infant formula should not be encouraged to be used in the health facilities

BREAST FEEDING AND NUTRITION (continued)

FAILURE TO BREAST FEED

If the baby fails to breast feed:

a. Check the baby for underlying causes

For example:

- premature or low birth weight
- birth trauma
- infections
- congenital abnormalities e.g. cleft lip / palate

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

b. 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, childhealth nurse, paediatrician or obstetrician.

BREAST FEEDING AND NUTRITION (continued)

PROBLEMS WITH MILK SUPPLY AND BREAST FEEDING

1. Check to see that the baby is properly positioned and attached at the breast during breastfeeding
2. Check to see whether baby is sucking frequently and adequately
3. Check to see if the breast milk supply of the mother really is inadequate.
4. If it is, give the mother:

   Metoclopramide (Maxolon) 10mg oral TDS (1st choice)

   OR,

   Chlorpromazine (Largactil) 25mg oral TDS
5. Continue until an adequate milk supply is established (usually within one week).
   Mothers given chlorpromazine should be warned that it may make them sleepy.
6. 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.

See page 63 for breast feeding by HIV positive mother

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

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. 165)
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. See p. 170

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.

BURNS AND SCALDS (continued)

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. 165), then Amoxicillin orally TDS for 5 days (see p. 122).

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. This *Act* can be downloaded at: **http://pngpaediatricsociety.org/png-child-health**
- 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 behaviour 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 Infections (p. 132)
- 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 appropriate action (e.g. 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:

Antibiotic	Dose	Alternative
Ceftriaxone	250 mg IM/IV x 1 dose	Augmentin 50 mg/kg oral x 1 dose or Amoxicillin (p.160) for one day
Metronidazole	30 mg/kg x 1 dose (max 750 mg dose)	Tinidazole 50 mg/kg x 1 dose (max dose 2000 mg)
Azithromycin	10 mg/kg x 1 dose (max dose 500 mg)	

**** ANTIRETROVIAL 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

a. If no fever is present:

reassure the parents and take time to explain why the child is coughing.

b. If fever is present:

- Test for malaria and if positive treat accordingly p. 73
- If otitis media is present treat as on p. 113.
- If pus is present on the tonsils treat with amoxicillin for 10 days (p. 165)

c. 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 <u>not</u> indications for antibiotics <u>unless</u> 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

a. Mild conjunctivitis

1. 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.
2. Give the mother a tube of:
   - Oxytetracycline eye ointment, OR
   - Compound antibiotic eye ointment, OR
   - Chloramphenicol eye ointment.

b. Severe conjunctivitis (a lot of pus or redness and swelling of the eyelids)

1. Admit to hospital or health centre
2. 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.

c. 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. 132).

1. Wash the eyes with breast milk or water to clear as much pus as possible.
2. Oxytetracycline eye ointment 4 times a day for 5 days.
3. 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. 32)
   - Gentamicin daily dose: see Babies: Drug Doses (p. 31)

   Treat the mother and father and contacts for STIs.

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

CONVULSIONS

1. **Make sure the airway is clear and the child is able to breathe:**
   - Place the child on his side
   - Suction secretions
   - Give oxygen during the fit
   - Check the blood sugar if you can
     If the blood sugar is low, or 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). Or give a teaspoon of sugar moistened with water under the tongue.

2. **Stop the convulsion:**

   a. Use rectal diazepam (10mg/2ml vial) or IV diazepam, or IM paraldehyde

Weight	Diazepam dose (rectal, ml)	Diazepam dose (IV, ml)	Paraldehyde dose (ml IM)
3-5.9	¼ ml	¼ ml	1 ml
6-9.9	½	½	1 ½
10-14.9	1	½	2 ½
15-19.9	1½	¾	3
20-29.9	2	1	4
30 kg or more	2	2	5

   For rectal diazepam use either:
   - A Mantoux syringe (without the needle) inserted into the rectum,
     Or
   - A 5ml syringe. Mix the dose of diazepam with 5ml of water in the syringe and put it into the rectum through a feeding tube.

   If giving IV diazepam, give a single dose only.

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

CONVULSIONS (continued)

c. 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		
Weight	**Phenobarbitone IM (200mg/ml ampoule)**	**Phenobarbitone oral (30mg tabs)**
3-5.9	¼ ml	2 tabs
6-9.9	½	3
10-14.9	¾	5
15-19.9	1	6
20-29.9	1	7
30kg or more	1	7

3. Reduce temperature if febrile (see Fever p. 61).

4. Treat initially for severe malaria, stop if test negative (see p. 73)

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

a. If the child has signs of meningitis, start treatment immediately (p. 102)

b. If CSF result is clear - treat for cerebral malaria (see p. 73).

c. If CSF is cloudy, blood stained or you cannot get CSF - treat for cerebral malaria (see p. 73) and meningitis (see p. 102).

For a child with a single febrile convulsion who recovers with a normal conscious state and who has no neck stiffness or other signs of meningitis, **there is no need for a LP**. Observe closely for 4 hours, and look for the cause of the fever.

6. For children who may have epilepsy:

- **Epilepsy** is repeated convulsions usually *without* fever, usually over weeks or months
- 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 the anticonvulsant medicine 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.
- Children with epilepsy may have other problems, and should be assessed by a paediatrician
- Follow-up is very important for children with epilepsy
- For more information see Convulsions – recurrent in Paediatrics for Doctors in PNG, p 92

Daily Maintenance Doses of Anticonvulsants		
Weight (kg)	**Phenobarbitone 30 mg tab**	**Phenytoin 30 mg capsule or tab (NOT 100mg cap / tab)**
3 - 5.9	½ tab	1 capsule
6 - 9.9	1	2
10 - 14.9	2	2
15 - 19.9	3	3
20 - 29.9	4	4
30 kg or more	5	5

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: Always continue breastfeeding and give food to older children
Bloody diarrhoea (p. 58), persistent diarrhoea (p. 56), or cholera (p. 59)
Examine all children carefully for other illnesses

DIARRHOEA –SEVERE

(WITH SIGNS OF SEVERE DEHYDRATION)

Use the table on page 48 to decide if the child has signs of severe dehydration.

TREATMENT

Fluids

Give IV Half Strength Darrow's (HSD) Or Hartmann's solution:

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

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

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)

4. Review the patient <u>every hour</u> and repeat fast IV fluid each time if still dehydrated

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

- Drinking well
- Not vomiting
- No longer dehydrated

DIARRHOEA –SEVERE (continued)
(WITH SIGNS OF SEVERE DEHYDRATION)

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.
Give Rehydration Solution for Malnutrition (ReSoMal) (if child has severe malnutrition and ReSoMal is available).

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. 73).
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

DIARRHOEA — SEVERE (continued)
(WITH SIGNS OF SEVERE DEHYDRATION)

Antibiotic choice:

- Only if very sick: amoxicillin (or penicillin) and gentamycin (p. 121).
- If not available give chloramphenicol (p. 116)
- If bloody diarrhoea refer to p. 58

Change to **oral chloramphenicol** when the child has no fever and looks well. Give every 6 hours for 5 days (see p. 116).

e. Tinidazole (see p. 58 or p.168 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. 58)

f. Albendazole (must be crushed or chewed)

Weight	**Dose (200 mg tab)**	**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

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. 50 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

a. Fluids

Give ORS (ORS or ReSoMal If child has severe malnutrition)

- 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.49)
  - If the child is no longer dehydrated change to treatment for mild diarrhoea
  - If signs of moderate diarrhoea with **some dehydration** are still present continue ORS and continue to give some food.
  - If signs of **severe dehydration** have appeared, change to IV half-strength Darrow's solution (p. 50)
- 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

DIARRHOEA – MODERATE (continued)
(WITH SOME DEHYDRATION)

- 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
- sunken eyes
- absent tears
- thirsty, drinking eagerly
- dry mouth and tongue
- skin pinch goes back slowly
- fast pulse or cold limbs
- not able to drink, drinking poorly

If the child has no signs of dehydration:

1. Weigh the child carefully.
2. 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 (p. 73).
3. 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
4. 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:
     a. Thin soups from boiled vegetables are good e.g. rice-water, sweet potato-water, banana-water
     b. Boiled water that has cooled or cold tea
     c. 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.

DIARRHOEA-MILD (Continued)
(NO SIGNS OF DEHYDRATION)

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 AND CHILDREN, IMPORTANT WAYS TO PREVENT DIARRHOEA, ESPECIALLY HAND WASHING AND THE USE OF PROPER TOILETS
(Use IMCI Flip Chart pictures to help discuss 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. 84)
d. If no RDT, very sick and febrile treat for severe malaria (p. 73). **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.**
3 – 5.9	¼ tab
6 – 9.9	½ tab
10 – 14.9	1 tab
15 – 19.9	1½ tab

Weight (kg)	**No of tab.**
20-29.9	2tab
30-39.9	3tab
40kg or more	4tab

Repeat dose only if first dose vomited.
(Use metronidazole if tinidazole is not available (see p. 164).

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 (200 mg) Tab	1 tab	2 tab

c. **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

DIARRHOEA — LASTING MORE THAN 7 DAYS (continued) (PERSISTENT DIARRHOEA)

d. **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.

NOTE: Persistent Diarrhoea may be a presenting symptom of HIV infection. All children with persistent diarrhoea should have Provider Initiated Counselling and Testing (PICT) for HIV infection

DIARRHOEA WITH BLOOD - DYSENTERY

- Treat as for diarrhoea (see pages 48-58).
- 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:

- **Ciprofloxacin** 10-20mg/kg orally twice daily for 5 days (p. 58 below or p. 157).
- **Amoxicillin and Gentamycin IV** (p. 121) if child very sick or Ceftriaxone at 50mg/kg twice daily and refer asap
- **Tinidazole** - Give orally once daily for 3 days (see p. 56).
- **Albendazole** (see p. 56).
- **Antimalarials** (if RDT positive p. 73).
- **Zinc tablets 20mg** (see p. 56).

Give daily until diarrhoea stops or for 10 days

Ciprofloxacin **250 mg tab**	
Weight (kg)	**No of 250 mg tab**
3 – 5.9	1/4 tab BD
6 – 9.9	1/2 tab BD
10 – 14.9	1 tab BD
15 – 19.9	1 tab BD
20 - 29	1.5 tab BD

Ciprofloxacin **100 mg tab**	
Weight (kg)	**No of 100 mg tab**
3 – 5.9	1/2 tab
6 – 9.9	1 tab
10 – 14.9	1.5 tab
15 – 19.9	2 tab
20 - 29	3 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.

DIARRHOEA DUE TO CHOLERA (continued)

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. 157)

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 infectior
- malaria
- otitis media
- measles
- urinary infection
- pneumonia
- meningitis
- diarrhoea
- abscess

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. 73).

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 (p. 164). 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.

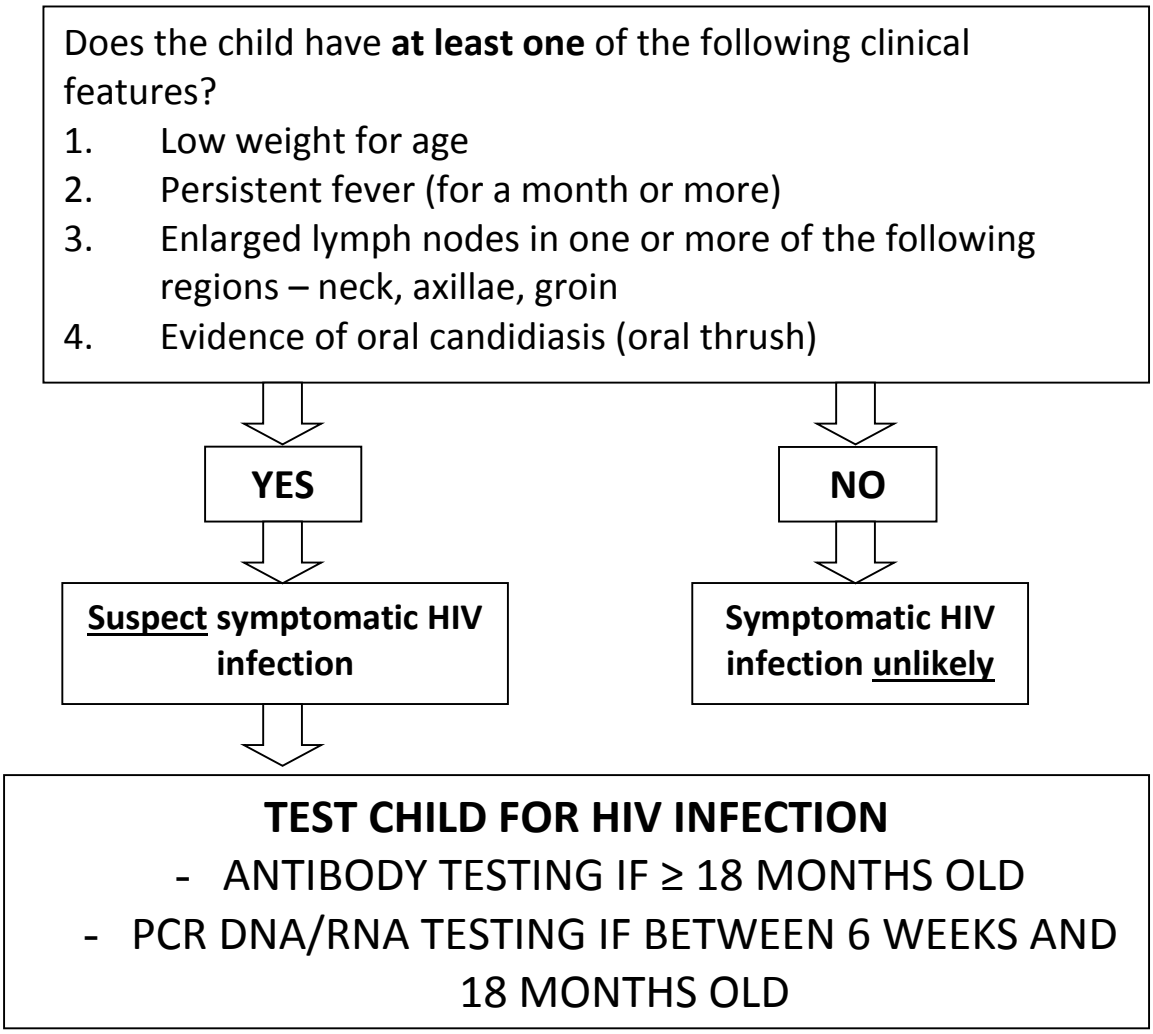
FIND THE CAUSE OF THE FEVER.
ALWAYS TREAT THIS CAUSE.

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 paediatrician.

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.

HIV INFECTION (continued)

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

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 septrin/cotrimoxazole **(< 6 months** 2.5 ml; **6 mo-5 yr** 5 ml; **6-14 yr** 10 ml or 1 SS tab 400 SMX/80 mg TMP) once daily

i. **Prophylaxis for TB:** All HIV exposed children should receive INAH prophylaxis until HIV testing is done then discontinue if test is negative. See P. 151

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 (p. 97)**
Prolonged or bloody diarrhoea	Ciprofloxacin (p. 58) or azithromycin and albendazole, tinidazole (p. 157, 56) and zinc
Pneumonia	Give the usual treatment for given severity, (e.g. penicillin or chloramphenicol) plus cotrimoxazole. If fails to respond, consider TB treatment

HIV INFECTION (continued)

- **Prevention of parent to child transmission: if the mother is tested positive:** All infant should receive twice daily AZT or once daily NVP from birth through age 6 weeks.

AZT prophylaxis:

Simplified infant prophylaxis dosing recommendation: AZT

Infant Age	Dosing
Birth[a] to age 6 weeks Birth weight 2000 – 2400g Birthweight >2500g	 10 mg twice daily 15 mg twice daily
[a] Infant weight less than 2000g	2mg /kg once daily

NVP prophylaxis:

Simplified dosing infant prophylaxis recommendation: NVP

Infant Age	Daily Dosing
Birth[a] to age 6 weeks Birth weight 2000 – 2400g Birthweight >2500g	 10 mg once a day 15 mg once a day
[a] Infant weight less than 2000g	2 mg/kg once daily

Note:

1. All mothers who are diagnosed with HIV should be commenced on ART immediately regardless of their gestational age even if they are in Labour.

2. Remember all HIV exposed infants should be seen at 6 weeks of age, or the earliest time thereafter. They should have an HIV DNA PCR test performed on a Dried Blood Spot (DBS) sample and started on co-trimoxazole prophylaxis pending the DBS result

3. All infants with an initial positive PCR result should be started on ARV's without delay! - *be sure to collect contact information of the caregiver so you can trace them in the event they do not follow-up at clinic.*

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- but if diagnosed early, effective treatment can be provided

For a mother who is near 100% compliant on ART treatment, the chances of another baby being infected are small- but the baby should still receive ARV prophylaxis and testing at 6-8 weeks. If the mother is not compliant, there is a substantial risk that another baby will be infected. It is therefore very important to discuss this with the mother and father to make sure they understand the importance of compliance with treatment.

HIV (AIDS) IS A PREVENTABLE DISEASE.
ADVISE THE PARENTS OF CHILDREN WITH HIV TO USE CONDOMS WHEN HAVING SEX AND TO SEEK TREATMENT WITH ARVs - THIS WILL AVOID FURTHER VIRUS TRANSMISSION AND PREVENT THEM FROM HAVING ANOTHER INFECTED CHILD

REMIND THE PARENTS IF THEY BOTH GET ON ARVs THEY WILL LIVE LONG AND HEALTHY LIVES, AND SO WILL THEIR BABY

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, pneumococcal 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, pneumococcal, bOPV and IPV, 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 left upper arm
Hepatitis B Vaccine	1. As soon as possible after birth (within 24 hours)	0.5ml (10mcg)	Intramuscular right thigh
Oral Polio (OPV/Sabin)	1. One month of age 2. One month after 1st dose 3. One month after 2nd dose	2 drops	Orally
Inactivated Polio Vaccine IPV	Give one dose at the same time as the 3rd dose of OPV. So at 3 months child gets OPV + IPV	0.5ml	Intramuscularly right thigh
Pentavalent Vaccine	1. One month of age 2. One month after 1st dose 3. One month after 2nd dose	0.5ml	Intramuscular right thigh
Pneumococcal Conjugate Vaccine	1. One month of age 2. One month after 1st dose 3. One month after 2nd dose	0.5ml	Intramuscular left thigh
Measles/Rubella Vaccine (MR)	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 3. At 18 months of age.	0.5ml	Subcutaneous right upper arm Do not give IM
Tetanus Toxoid	1. First year community school 2. Last year 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
HPV -human papilloma virus	Currently availability and schedule under review		
Vitamin A Capsules	**6 months** & **9 months**: 100,000 units (Blue capsule) **18 months** of age: 200,000 units (Red capsule)		Orally

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

IMMUNISATION (CONTINUED)

Notes

The **Pentavalent vaccine** contains Triple Antigen (pertussis, diphtheria, tetanus), Hepatitis B and Hib vaccine in the one vaccine. 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

Immunisation schedule

Immunization Schedule for Papua New Guinea (0 month-24 months)									
Immunization	**Age at vaccination (months)**								
To be given at	**Birth**	**1**	**2**	**3**	**6**	**9**	**18**	**school entry**	**school exit**
BCG	√								
Hepatitis B	√								
OPV		√	√	√					
IPV				√					
Pentavalent		√	√	√					
PCV-13		√	√	√					
Measles-Rubella (MR)					√	√	√		
Tetanus								√	√
Vitamin A					√	√	√		
Remember the mothers' tetanus injection									

DOSE AND SITE OF VACCINES

BCG	0.05ml	Intradermal left upper arm
Hepatitis B	0.5ml	Intramuscular right anterolateral mid-thigh
Oral Polio	2 drops	Oral
Inactivated Polio	0.5ml	Intramuscular right anterolateral mid-thigh
Measles/Rubella	0.5ml	Subcutaneous right upper arm
Pentavalent	0.5ml	Intramuscular right anterolateral mid-thigh
Pneumococcal	0.5ml	Intramuscular left anterolateral mid-thigh
Tetanus Toxoid	0.5ml	Intramuscular left upper arm.

If the child is late for the first injection, give one dose for each injection due. For example, a child seen first at 5 months receives BCG, 1st dose of Sabin, Penta-valent and PCV, and should return in one month for measles and 2nd dose of Sabin, Penta-valent and PCV.

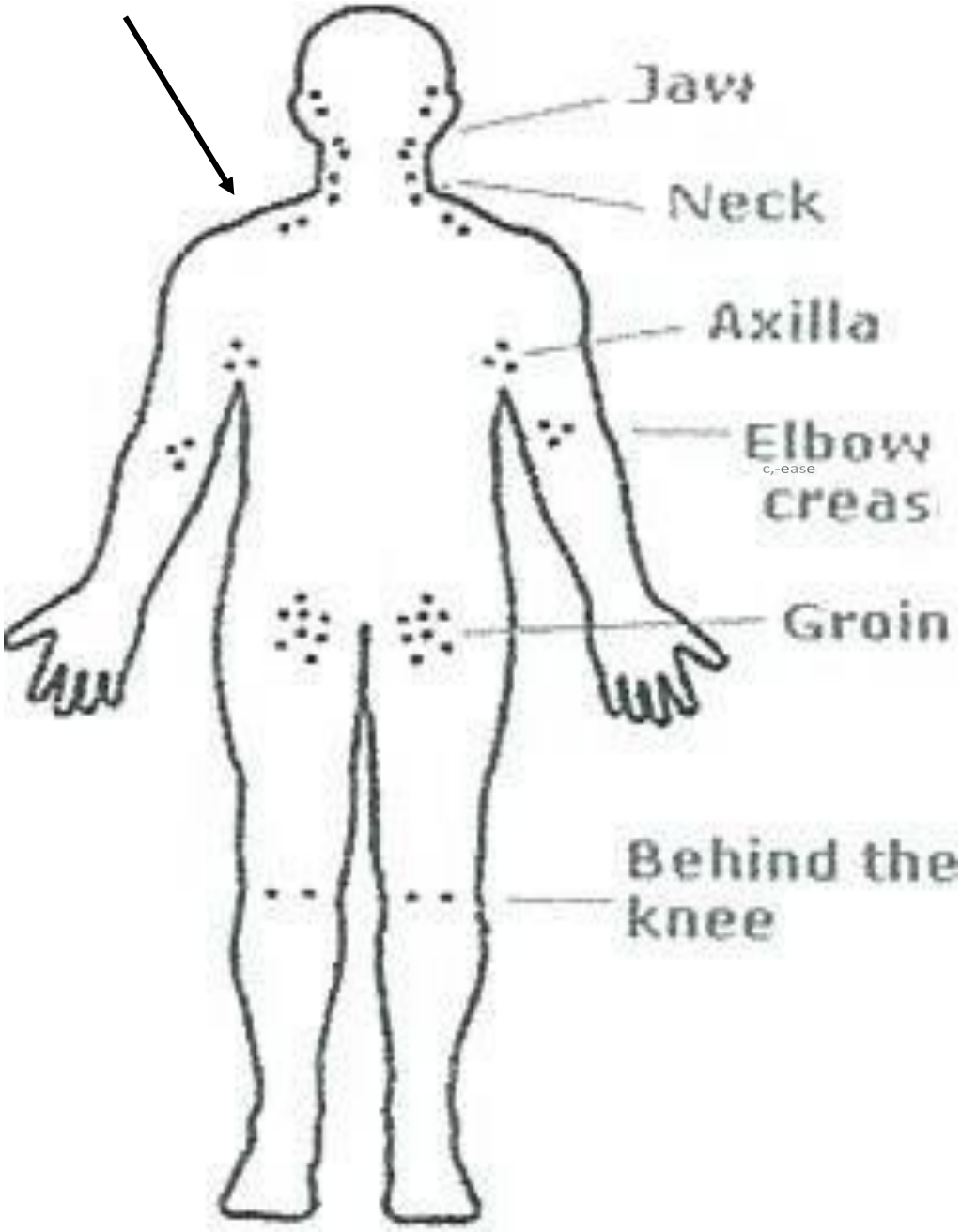
LYMPH GLAND ENLARGEMENT

Lymph nodes larger than 1cm may be caused by:

- Acute infections
- Tuberculosis
- Malignancy

Below is a diagram summarizing position of lymph glands:

Lymph nodes above clavicle



LYMPH GLAND ENLARGEMENT (continued)

a. 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 or mouth for sores or tooth infection. Generally any skin or wound infections will cause the proximal lymph nodes to swell)

TREATMENT:

- Amoxicillin orally for 2 weeks (see p.169). Cloxacillin orally for 2 weeks if cellulitis (see p. 161)
- If abscess forms ➔ Incision and drainage. Refer if necessary.
- If not improved after 5 days, refer to health centre or hospital.

b. Fixed, hardened, rapidly growing multiple glands

- May indicate a tumour. Refer to health centre or hospital

c. Large glands growing slowly (more than 1 month)

Investigate fortuberculosis:

- Take a history of TB contact within the family
- Do a TB Score (see p. 142). Treat for TB if score ≥ 7
- Do a Mantoux test if available

-

MALARIA

ASSESS - SIGNS	CLASSIFY	ACTION
• Any of the TOO SICK signs, OR • Stiff neck • Fever Yes	**MENINGITIS OR SEVERE MALARIA OR OTHER SEVERE FEBRILE DISEASE**	•Give 1st dose of Ceftriaxone IM /IV (if unavailable give chloramphenicol) 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 • Malaria test (or blood smear) positive OR • Malaria test (or blood smear) not available • Fever Yes	**UNCOMPLICATED MALARIA**	•Give ACT (Co-artem, MALA) •Give 1st dose of paracetamol, if temp ≥38°C •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 persists 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 • Fever Yes	**MALARIA UNLIKELY OTHER CAUSES FOR FEVER**	•Do not give ACT (Co-Artem, MALA) •Giver 1st dose of paracetamol if temp ≥38°C •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 (C0-artem, MALA) •If the fever persists after treatment re-assess the child •If fever persists for more than 7 days, refer for assessment
*** If the results of the malaria rapid test (RDT) is positive during initial visit <u>do not</u> 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

MALARIA (continued)

At Health Centre

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

1. Give first dose of Artesunate injection if it is 12hours after the last dose of Artesunate suppository
2. Continue parenteral (IV/IM) Artesunate until referral to hospital is possible
3. Commence parenteral Artesunate, if no treatment has been given yet.
4. If patient markedly improved whilst waiting for referral, continue Artesunate to complete at least 3 doses of parenteral treatment
5. Then continue with Artemether-Lumefantrine (Coartem. Mala-1) to complete the 3-day course

At Hospital

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

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

- If able to swallow give Dihydroartemisin-piperaquine (DP) (p. 81)
- If still very sick or unable to swallow give quinine

b. <u>If did not complete</u> full course of Artemether-Lumefantrine

- Give artesunate IV/IM followed by full course of Artemether-Lumefantrine
- Use artesunate injection - dosing next page

MALARIA (continued)

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. 79)

Artesunate injection for severe malaria

		Weight (Kg)								
Formulation	**Days and doses**	**<3**	**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)	0.6ml	1ml	2ml	3ml	4ml	6ml	8ml	10ml	12ml
	Day 2 onwards: once a day	0.6ml	1ml	2ml	3ml	4ml	6ml	8ml	10ml	12ml
IM 60mg in 3mls	**Day 1:** 1st dose & 2nd dose (12h after)	0.3ml	0.5m	1ml	1.5m	2ml	3ml	4ml	5ml	6ml
	Day 2 onwards: once a day	0.3ml	0.5m	1ml	1.5m	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. 79).

Do a lumbar puncture if you can:

- If CSF clear:
  - Give IM or IV artesunate injection (above table)
- If CSF cloudy or bloodstained, or if you cannot get CSF:
  - Give IM or IV artesunate and ceftriaxone for meningitis (see p. 103)

MALARIA (continued)

Do dextrostix (if available) and repeat every 6 hours until the child is conscious:

- If less than 2.2 mmol: insert an IV of 10% Dextrose, give 5ml/kg over 5-10 minutes then run Hartmann's solution + dextrose or dextrose / saline at "coma regimen" rate (see p. 168/170).
- If IV Dextrose is not available, give N/G Full Strength Sunshine Milk (FSSM) 4 times a day (see p. 107)
- or put a moistened teaspoonful of sugar under the tongue

Second line treatment for severe malaria

Indications for second line treatment

- Treatment failure of the artemisinin derivatives;
  OR
- 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.

Dose

- 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 every 12 hours after start of LD
    - Adults: give MD every 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 <u>10mg/kg every 8 hours for 7 days</u> (p. 78)

MALARIA (continued)

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

Quinine tablet take 3 times per day for 7 days	3-5.9	6-9.9	10-14.9	15-19.9	20-29.9	30-39.9	40-49.9	50+
300 mg tab	-	-	½	½	1	1½	1½	2

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, MALA)

- 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.

MALARIA (continued)

Day	Weight (Kg)	<2.5 kg	2.5-4.9 kg	5-14.9 kg	15-24.9 kg	25-34.9 kg	>34 kg
Day 1 (AL)	1st dose at 0 hours	1/4	1/2	1	2	3	4
	2nd dose after 8 hours	1/4	1/2	1	2	3	4
Day 2 (AL)	3rd dose after 24 hours	1/4	1/2	1	2	3	4
	4th dose after 36 hours	1/4	1/2	1	2	3	4
Day 3 (AL)	5th dose after 48 hours	1/4	1/2	1	2	3	4
	6th dose after 60 hours	1/4	1/2	1	2	3	4

- The 1st dose of AL treatment is given at 0 hours.
- 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 a 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

MALARIA (continued)

- 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, 8h, 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)
- Use insecticide treated bed nets. Talk to the Provincial Health Authority if you need them.

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

Explain how to take the medications. See Medicine for Mothers to Take Home (p. 101).

MALNUTRITION

MODERATE MALNUTRITION: SUMMARY

DIAGNOSIS: any of the 3 below

1. **Weight for age between the -2 line and the -3 line with a flat or falling weight chart and no oedema**
2. **Mid-upper arm circumference (MUAC) between 11.5-12.5cm in a child between 6 months and 5 years (or 13.5-14.5 ages 6-10 yr.)**
3. **Weight for height/(length) between -2SD and -3SD in children < 5 yr.**

TREATMENT

Check and treat for diseases:	Treat for worms, anaemia, chronic diarrhoea and other infections if present. Rule out tuberculosis, resistant malaria, HIV.
Advise parents:	Give one or two of the 6 Nutrition Messages below:
Admit if:	Other serious illness is present
	Serious social problem, or a child at risk of neglect
	No improvement after 1 month

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 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 fresh 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.

SEVERE MALNUTRITION: SUMMARY

DIAGNOSIS: any of the 4 below

1. **Weight for age below the -3 line with a flat or falling weight chart or if there is severe wasting or oedema**
2. **Mid-upper arm circumference (MUAC) less than 11.5 in a child over 6 months**
3. **Weight for height/(length) below -3SD in children < 5 years old**
4. **Children with nutritional oedema (also known as kwashiorkor)**

TREATMENT	
1	Fully assess the child for the cause of severe malnutrition, daily food intake, social circumstances, other diseases
2	Children with severe acute malnutrition with loss of appetite or any medical complication or serious social problem should be admitted for inpatient care. Children with a good appetite and no medical complications, from a stable social environment can be managed as outpatients
3	For children who are sick requiring admission follow the 8 steps outlined below under **inpatient treatment of severe malnutrition**, these include:
4	Treat infection (rule out TB, HIV, UTI and resistant malaria)
5	Fatten the child: • If child will eat give them food, including RUTF ('Ezee-paste') • If child won't eat, give FSS/F75 – admit (guidelines below)
6	Dietary education – spend time discussing the nutrition messages, and practicing food preparation
7	Vitamin A, multi-vitamin liquid, folic acid, albendazole, tinidazole, cotrimoxazole, zinc, antimalarials, measles/rubella and other vaccines that are due

MALNUTRITION DIAGNOSIS

1. Measuring and recording the weight

1. Weigh the child carefully on the most accurate scales available.
   zero the scales first
2. 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.
3. Using the **weight chart**, mark the weight in the column above the child's age.
4. **Compare** the weight with the previous weights, for easy comparison plot the chart.

2. Decide the child's nutritional state: use any one of these criteria

a. Weight for Age (charts on page 86-87)

1. If the weight is above -2SD and increasing, then the child is well nourished.

2. If the weight is between -2SD and -3SD and increasing then the child is also well nourished.
   Praise the parents for their well-fed child.

3. If he is under 6 months, check that he is exclusively breast feeding

4. If he is over 6 months old, check that he is being given 4-6 meals each day as well as breast milk.

5. If the weight is between the -2 and -3 line and not increasing (flat or falling weight curve) but the child has no oedema, this is moderate malnutrition.

6. If the weight is below -3SD and not increasing or, if there is oedema and a flat or falling weight curve, this is severe malnutrition: admit this child (see p. 91)

MALNUTRITION DIAGNOSIS (continued)

b. Weight for Height (or Weight for Length)

1. Measure the height (if the child is able to stand/more than 2 years) or length (if is unable to stand/less than 2 years) using a measuring board.

2. Measure the child's weight as explained above and compare it against his height/length on a Weight for Height chart - available in the NDoH Malnutrition Guidelines and downloadable at http://pngpaediatricsociety.org/treatment .

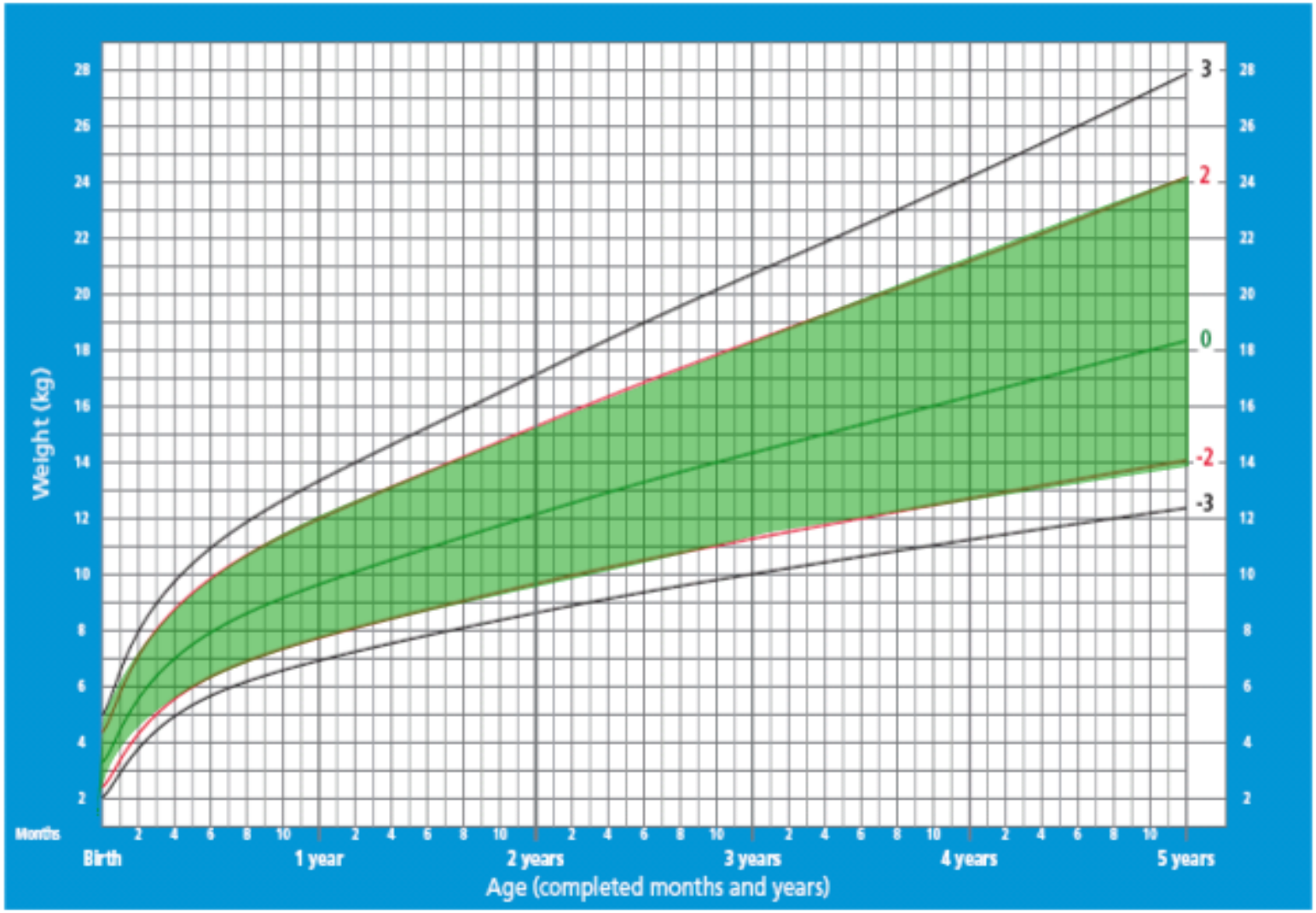
c. Mid upper arm circumference (MUAC)

1. Always take the MUAC reading on the left mid upper arm. See figure on page 88.

Weight-for-age BOYS

Birth to 5 years (z-scores)

World Health Organization

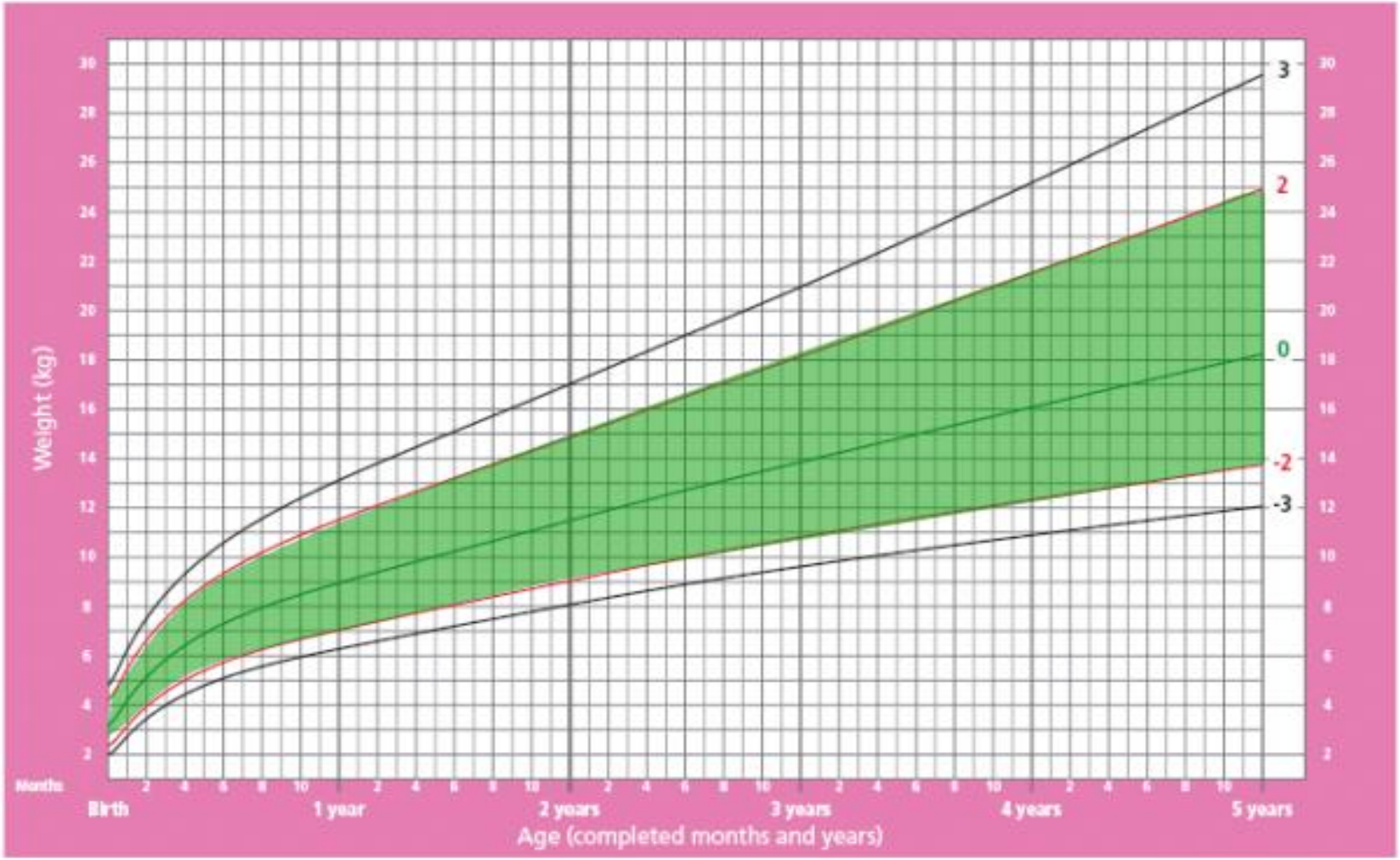


WHO Child Growth Standards

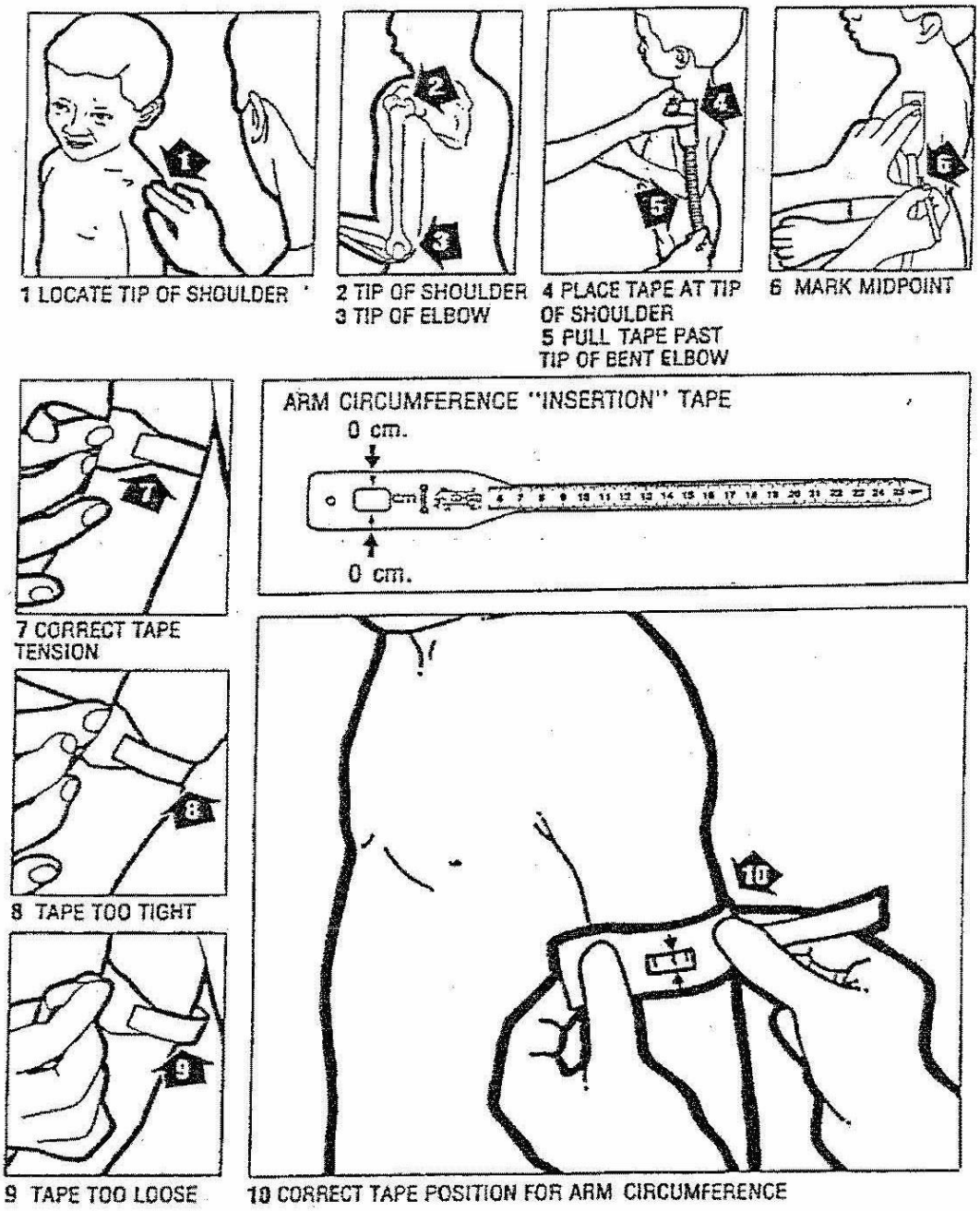
Weight-for-age GIRLS

Birth to 5 years (z-scores)

World Health Organization



WHO Child Growth Standards



OUTPATIENT TREATMENT OF MODERATE MALNUTRITION

1. Sit with the parents and discuss the problem:

Try to find the reason for the malnutrition, which might include:

- Child was adopted
- Lack of breast milk
- Not enough high energy and protein foods given.

MALNUTRITION DIAGNOSIS (continued)

- Not enough meals of solid food each day (should be 4-6 every day).
- Too much "junk food" (sweet biscuits, cheese pops, lollywater)
- Not enough food for the family.
- Too many children in the family or children born too close together
- The child has a chronic infection (gastroenteritis, malaria, tuberculosis, urinary infection).
- The home environment is unhealthy: poor sanitation.

2. Discuss nutrition with the parents. Encourage the mother to:

1. Continue breast feeding.
2. Give generous serves of nutritious food 4-6 times a day.
3. Add coconut cream, dripping, or margarine to the child's food.
4. Give the child their own plate so they don't have to share a plate with siblings
5. Grow peanuts and beans for the child to eat.

3. Give multi-vitamins for at least a month

4. Give amoxicillin (p. 159) or cotrimoxazole (Septrin) twice a day for 7 days (p. 161)

5. Give a single dose of albendazole (see p. 56)

6. Examine for anaemia (see p. 17): treat if present.

7. Ask about diarrhoea. If present more than 7, days treat as per p. 48.

8. Check for enlarged spleen and ask about recurrent fevers.
Test and treat for malaria if present (see p. 73).
Ensure the child is sleeping under an insecticide treated bed net.

MALNUTRITION DIAGNOSIS (continued)

9. Check for tuberculosis by performing a TB Score (see p. 142)

You may need to re-consider TB if the child is not improving in weight after a month and has symptoms of TB.

10. Check for scabies and treat if present

11. Discuss family planning and commence a suitable family planning method if the mother agrees.

12. Refer to Nutrition Unit for outpatient treatment with ready-to-use therapeutic food (RUTF), if available

13. Arrange for regular follow up to check progress until improvement in using one of the following criteria (not all):

- Weight for age is greater than the -2 SD line
- MUAC > 12.5 cm
- Weight for height is > -2SD (if measurement is possible)

- If there is no weight gain or further weight loss after 1 month:
  - Refer to a paediatrician or recommend admission for supervised feeding.

- If mother refuses referral or admission:
  - Give as much of the treatment as you can.
  - Teach the mother two or more important nutrition messages and give a demonstration of food preparation if possible.
  - Arrange for the MCH sisters to make home visits.

- Continue to follow the child and do regular weight monitoring

MALNUTRITION - INPATIENT TREATMENT

Admit

- Children with moderate malnutrition who are not improving after 1 month of outpatient treatment, or if they are sick (pneumonia, diarrhoea)
- Children with severe malnutrition, especially if they are sick (fever, cough, diarrhoea)
- Children with malnutrition whose home environment is unsafe

Management of severe malnutrition

a. ABC

b. Assess for Emergency signs of shock:

- Lethargic or unconscious
- Cold hands and feet
- Capillary refill > 3 seconds
- Weak and fast pulse

If no Emergency signs of shock, go straight to steps 1 to 8.

If all of the Emergency signs are present

- Give oxygen
- Give IV fluids at 15 mL/kg over 1 hour. Use Ringers lactate (Hartman's) with 5% dextrose or HSD with 2.5% dextrose. If neither are available give dextrose/saline
- If signs of dehydration do not improve after 1 hour, repeat IV fluids at 15 mL/kg and monitor for fluid overload.
- Once there are signs of improvement
    - Stop IV fluids
    - Start milk feeds
    - Give ReSoMal (or ORS) as detailed in step 3 below.
- If the child is very pale and in shock, give a blood transfusion (p. 18)

MALNUTRITION – INPATIENT TREATMENT (continued)

1. Prevent and treat hypoglycaemia

Diagnosis: blood glucose is < 3 mmol/L. If unable to check glucose assume child is hypoglycaemic and treat

Treatment: If conscious and able to drink, give 50 mL of sugar water (add 2 heaped teaspoons of sugar to 100 mL of cool, previously boiled water and stir to make sugar water)

- If unconscious, give 5mls/kg IV bolus of sterile 10% Dextrose solution (or 1 mls/kg of 50% dextrose) Or if you cannot put in an IV, give 1 teaspoon of sugar, moistened with water under the tongue
- Re-test the blood glucose after 30 minutes

Prevent: give the first feed of therapeutic milk feeds as soon as possible

2. Prevent and treat hypothermia

Diagnosis: A rectal temperature < 35.5^{o}C or an under-arm temperature < 35^{o}C

Treatment: The child should be covered properly in a blanket and a hat on the head. For infants the mother can hold her child skin-to-skin for warmth, but also keep warm with a blanket.

3. Assess and treat dehydration

- Do not give IV fluids unless the child is severely dehydrated
- Prevent dehydration with ORS or ReSoMal (rehydration solution for malnutrition).
  Give 50 – 100 mL / loose stool if weight < 10 kg
  and **100 ml if >10kg**

If there is history of diarrhea treat according to MILD DEHYDRATION in the diarrhoea section (p. 54) with ReSoMal or ORS

SEVERE DEHYDRATION: if there is profuse watery diarrhea and signs such as sunken eyes (recent onset), cool extremities, absence of tears, dry mouth, very thirsty, reduced urine output and rapid pulse and respirations.

Treat according to diarrhoea section for SEVERE DEHYDRATION (p. 49)

4. Correct electrolytes and micronutrients

- Feeds that are designed based on WHO recommendations such as F75, F100 and RUTF have sufficient electrolytes and nutrients, so you don't need to add any extra medications (i.e. no Vit A, etc.).

However, if FSS or MOF are given, then the following electrolytes should be given if available.

Potassium (to be given with food, not on an empty stomach):		
Weight range (Kg)	Span K tablet	Potassium mixture
3 – 5.9	½ tablet	5 mL
6 – 9.9	1 tablet	10 mL
≥ 10	1 ½ tablet	15 mL
Magnesium oxide: 40 mg twice daily		
Zinc:	10 mg daily if < 6 months	20 mg daily if > 6 months

Give Vitamin A

- No eye signs of Vitamin A deficiency: single dose on day 1
- If eye signs of vitamin A deficiency are present or the child had recent measles, then give Vitamin A on days 1, 2 & 14

Vitamin A dosages		
< 6 months	6 – 12 months	> 12 months
50,000 IU	100,000 IU	200,000 IU

- Multivitamin syrup: 5 mL oral daily for 2 weeks.
- Folic acid: 5mg on day 1, then 1 mg daily for 2 weeks.

5. Infections and routine medications

Antibiotics: Give all children with severe malnutrition antibiotics

- Crystalline penicillin (or ampicillin) plus gentamycin for 5-7 days (p. 121)
- Crystalline penicillin may be changed to oral amoxicillin after 2 days if clinically stable (p. 122)
- Use flucloxacillin (p. 161) instead of crystalline penicillin if there are signs of skin sepsis or abscesses.

- 2nd line antibiotics: if child fails to improve within 48 hours of the above antibiotics, change to ceftriaxone (50mg/kg IV BD, p. 103) and flucloxacillin (or cloxacillin p. 161)

- Treat worms: Albendazole: (must be crushed or chewed) - p. 56

- Tinidazole once daily for 3 days (p. 56)

- Treat thrush:
  - **Nystatin** 1 mL TID or Gentian Violet BD x 7 days or
  - **Fluconazole** PO 6 mg/kg on day 1 then 3 mg/kg/day x 7 days

- Treat for malaria

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

- Give measles and other vaccinations as required, check immunization record.

- Investigate for TB
  - TB score (p. 142)
  - Chest x-ray
  - Gastric aspirate for AFB (or GeneXpert if possible)

MALNUTRITION – INPATIENT TREATMENT (continued)

Investigate for HIV on all patients with malnutrition (PICT test)

- If possible:
  - Haemoglobin
  - Blood slide
  - Urine for protein if oedema
  - Urine for microscopy to look for UTI
  - Stool for parasites (especially strongyloides) if the child has oedema

7. Early initiation of feeds. Always start feeds on the first day

- Start ORAL milk feeds with F75 (or FSS) at 130 ml/kg/day and give at least 6 feeds per day - See **Feeding chart 1** (F75 or FSS) next page
- Insert a naso-gastric tube for feeds if the child takes less than 80% of the feeds.
- Encourage the mother to continue breast feeding if the child still breast feeds.
- Do NOT give IV fluids unless the child is severely dehydrated as it can cause the child to go into respiratory failure

8. Continued feeding and catch up growth

- Change from F75 to F100 (or from FSS to MOF) at the same volume of 130ml/kg/day usually at 3-5 days
- If the child has oedema: Maintain the child on F75 until the oedema fully resolves before changing to F100

Catch up growth Rehabilitation phase:

After changing to F100 (or MOF) for 2 days, increase the volume slowly until the aim of 220 mL/kg/day is reached - **Feeding Chart 2**. Try increasing the volume of each feed by 10 ml each day until you reach the target volume

If the child is more than 6 months of age and able to tolerate the feeds well, in place of F100, give RUTF (e.g. 'Plumpy-nut' or 'Ezee-paste') if you can (See **Chart 3 RUTF**)

Chart 1 - Feeding chart for stabilization phase during inpatient treatment of severe malnutrition, using F-75 or Full Strength Milk

F-75 (or FSS) milk volumes during initial stabilization phase	
Weight of child (kg)	**Amount of milk for each feed (give 6 times per day) 130ml/kg/day**
2.0 to 2.1 kg	50 ml / feed
2.2 - 2.4	60
2.5 - 2.7	65
2.8 – 2.9	70
3.0 - 3.4	75
3.5 – 3.9	80
4.0 – 4.4	85
4.5 – 4.9	95
5.0 – 5.4	110
5.5 – 5.9	120
6 – 6.9	140
7 – 7.9	160
8 – 8.9	180
9 – 9.9	190
10 – 10.9	200
11 – 11.9	230
12 – 12.9	250
13 – 13.9	275

Chart 2 - Volumes for each feed (give 6 times per day) using F-100 or Milk Oil Formula

F-100 (or MOF) milk volumes during catch-up grown		
Weight of child (kg)	**Amount of milk for each feed (130 ml/kg/day)** **START WITH THIS VOLUME**	**Amount of milk for each feed (200 ml/kg/day)** **INCREASE SLOWLY TO THIS VOLUME**
2.0 to 2.4	50 ml / feed	75 ml / feed
2.5 - 2.9	60	90
3.0 - 3.4	75	105
3.5 – 3.9	80	125
4.0 – 4.4	85	140
4.5 – 4.9	95	155
5.0 – 5.4	110	175
5.5 – 5.9	120	190
6 – 6.9	140	215
7 – 7.9	160	245
8 – 8.9	180	280
9 – 9.9	190	315
10-11.9	250	365
12-13.9	280	430
When the child has been on F100 or MOF for 2 days, increase the volume of each feed by 10 ml until you reach the target. Example: a 5.6 kg child would drink 120 ml of F100 6 times a day for 2 days. On the 3rd day each feed would be 130 ml, the 4th day 140 ml, etc until 190 ml is reached **Note: For children with oedema, the oedema should be gone before starting F100 or MOF**		

MALNUTRITION – INPATIENT TREATMENT (continued)

Chart 3 – Ready-to-use therapeutic feeds (RUTF, 'Eezee-paste')

Weight of child (kg)	Packets per day	Packets per 2-week supply
< 3.5		
3.5 – 3.9	1.5	22
4.0 – 5.4	2.0	28
5.5 – 6.9	2.5	36
7.0 – 8.4	3.0	42
8.5 – 9.4	3.5	50
9.5 – 10.4	4.0	56
10.5 – 11.9	4.5	64
12.0 – 13.9	5.0	70

9. Monitoring progress and discharge planning

- Monitor the weight frequently, at least 3 times per week
- Plot the weight on a weight chart

Discharge criteria

Child is stable, no fever, eating well with a good appetite
If child had oedema it should completely resolve

Children should continue nutrition support as an outpatient until the following criteria are met:

a. Weight-for-age > -2 line
b. MUAC > 12.5 cm (6 months - 5 years)
c. Weight-for-Height > -2 SD (if measurement is possible)

If the child can be reliably followed in clinic, and they come from a safe home environment, they can go home with a 2 week supply of RUTF if you have it. Review every 2 week until they reach the above discharge criteria.

Dietary education - discuss Nutritional messages (p. 87 section 2)
Family planning - discuss available methods

MALNUTRITION – INPATIENT TREATMENT (continued)

IN HOSPITALS AND HEALTH CENTRES A NUTRITION GARDEN AND A PLACE FOR TEACHING FOOD PREPARATION ARE IMPORTANT FOR THE TREATMENT OF MALNOURISHED CHILDREN AND THEIR FAMILIES

There are other reasons apart from malnutrition and infection that may cause the child to look malnourished or have poor growth (failure to thrive).

If the child does not respond to the above treatment there may be some underlying cause. Refer the child to a paediatrician if you can.

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. 164).
b. Extra fluids, if diarrhoea (see p. 49).
c. Conjunctivitis. Treat this with antibiotic eye ointment. (see p. 44).
d. Treat pneumonia (see p. 119) and otitis media (see p. 112) 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 (p. 95)

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 (malaone)
- Salbutamol
- phenobarbitone (phenobarb)
- folic acid
- 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 <u>ALWAYS</u> 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 and fast pulse, **and** cold hands, **and** capillary refill time more than 3 sec) 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. 73).

If there are any signs of **skin sepsis** (boils, pustules, swollen joints) give flucloxacillin (p. 161) 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 <94%

If the child is shocked (weak and fast pulse, **and** cold hands, **and** capillary refill time more than 3 sec), give IV Normal Saline or Hartmann's solution, a bolus of 10-20ml/kg over 30-60 minutes, then reassess.

If the shock does not resolve the child will need a further bolus of 10-20ml/kg.

MENINGITIS OR SEVERE SEPSIS (continued)

Investigations

- Do a lumbar puncture if you can, except when the child is extremely ill. Send CSF for cell count, Gram stain, protein, sugar, and bacterial culture
- Blood slide or RDT for malaria. If not available, treat 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<94% give oxygen

1. Antibiotics

Many infections causing meningitis and severe sepsis are now resistant to chloramphenicol. Ceftriaxone is the most effective treatment for meningitis in PNG.

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

- Vial of 1 gram mixed with 9.6 ml sterile water to give 1gram/ 10 ml
- When possible, calculate exact dose for the weight of the child, otherwise use dosing table below

CEFTRIAXONE DOSING TABLE (50 mg/kg IV twice daily)			
Weight	No of mls given **TWICE a day**	**Weight**	No of mls given **TWICE daily**
3 - 3.9 kg	1.8 ml	12 - 14.9 kg	6.5 ml
4 - 5.9 kg	2.5 ml	15 - 17.9 kg	8 ml
6 - 7.9 kg	3.5 ml	18 - 21.9 kg	9.5 ml
8 - 9.9 kg	4.5 ml	22 - 24.9 kg	12 ml
10 - 11.9kg	5.5 ml	25 - 29.9 kg	13 ml

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

MENINGITIS OR SEVERE SEPSIS (continued)

If the child has any signs of **skin sepsis** (boils, pustules, swollen joints) give cloxacillin or flucloxacillin (p. 161).

If ceftriaxone, cefotaxime or ceftazadime are *not* available give chloramphenicol 25mg/kg IM or IV every 6 hours for 14 days and refer the child when safe to do so. Chloramphenicol dosing p. 116

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

2. Anticonvulsants

- Give oxygen
- Check the blood glucose if you can and give 5ml/kg 10% dextrose IV or sugar under tongue if confirmed or suspected hypoglycaemia.
- Give **rectal diazepam** (see p. 45)
- **Prevent further fits with phenobarbitone.** Give loading (starting) dose IM and then daily maintenance dose orally 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	

3. Nutrition

If the child is alert and awake, allow her to breast feed.

Use a nasogastric tube if the child is too sick to feed. Use expressed breast milk (EBM) or full strength full cream milk given at least 4 times a day.

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	

4. Fluids

Avoid fluid overload in children with meningitis. Check daily to see if the child has eyelid or facial swelling. If present give *less* fluid.

5. Blood transfusion

If the child has a haemoglobin less than 6g/dL, give a transfusion of packed cells if you can (see Anaemia p. 18)

Meningitis must be detected early
Think of meningitis or severe sepsis in any very sick child

Not all children with meningitis will have neck stiffness
Antibiotic resistance is common in meningitis, so treat with ceftriaxone
Avoid fluid overload by avoiding intravenous fluids, regularly check for facial swelling

MILK MIXTURES - FOR NON-MALNOURISHED CHILDREN

a. 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 cup-full
Cool, previously boiled water	Three (3) 50ml measuring cups	Three (3) big cup-fulls

b. 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

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. 37):
   - 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.

Milk Mixtures - MALNOURISHED CHILDREN (continued)

If a child is MALNOURISHED, it is recommended they be given F-75 or F-100 based formula.
This is better formulated to meet the needs of a malnourished child.
If WHO formula is not available at your facility, you may make an equivalent of F-75 or F-100 as indicated next:

F-75	**Ward Use**	
	milk powder	**cows milk**
Milk	35 grams whole dried milk	300 ml UHT or boiled hot cows milk
Vegetable Oil	20 grams	20 grams
Sugar	100 grams	100 grams
CMV* (if available)	20 grams (1 scoop)	20 grams (1 scoop)
Cool, previously boiled water	Hot water to make up to 1 Litre	Hot water to make up to 1 Litre
* CMV - combined mineral and vitamin mix.		

F-100	**Ward Use**	
	by weight	**by volume**
Milk Powder	110 grams	880 ml UHT or boiled hot cows milk
Oil (any kind)	30 grams	20 grams
Sugar	50 grams	75 grams
CMV* (if available)	20 grams (1 scoop)	20 grams (1 scoop)
Cool, previously boiled water	Hot water to make up to 1 Litre	Hot water to make up to 1 Litre
* CMV - combined mineral and vitamin mix.		

MILK MIXTURES - MALNOURISHED CHILDREN (continued)

GENERAL RULES:

- Milk must be used within 2 hours of making it - the rest must be discarded. Even though this seems like a waste - this saves the children from risk of digestive problems.
- No need to add extra vitamins or minerals if using WHO provided F75/F100
- OR if you have CMV available, which has all the nutrients added (i.e. don't give Vitamin A, Zinc, Iron, Folic Acid)

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 furosemide (lasix) (p. 163) and treat with digoxin (p. 162 or 122). 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. 91) 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 commence treatment with amoxicillin (p. 159) and refer urgently to hospital
- If the child has mild swelling and is not "sick" treat with a 3 day course of albendazole (p. 56 for dosing):

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. Symptoms & Signs

- 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/cloxacillin(p. 161)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. 161)

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.

- If child is not improving on flucloxacillin or chloramphenicol, refer to a paediatrician or to an orthopaedic doctor.
- The commonest cause of Osteomyelitis is Staphylococcus Aureus. (Paediatricians should be aware there is increasing resistant to Flucloxacillin (oxacillin)

OSTEOMYELITIS, SEPTIC ARTHRITIS AND PYOMYOSITIS (continued)

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)

a. Hb and WCC every 2 weeks to check for chloramphenicol toxicity.
b. X-ray of bone — to assess progress.
c. Culture pus — to see whether the antibiotic should be changed.
d. 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. Amoxicillin (250 mg tab) oral 3 times a day for 5 days.

WEIGHT	Susp dose	Tab dose
3 — 9.9kg:	5ml	½ tab
10 — 14.9kg:	7.5ml	¾ tab

WEIGHT	Tab dose
15 — 19.9kg:	1 tab
20 — 29.9kg:	1½ tab

2. If fever present:
   - Test for malaria and treat appropriately (see p. 73)
   - Antipyretics (see Fever p. 61)
3. If pus discharging:
   - Ear cleaning with toilet tissue (see next page, p. 113)
4. If pus still discharging after one week of treatment:
   - Cotrimoxazole (Septrin) BD orally for 5 days (see p. 161).
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:

- Lay 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.

OTITIS MEDIA – CHRONIC (continued)

- 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
- Treat with erythromycin as per inpatient treatment below
- 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 **erythromycin or chloramphenicol**. 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. 119).
   - Otherwise give oral chloramphenicol for 5 days if the child <u>does not</u> have pneumonia.
   - Give chloramphenicol for 5—10 days if the child <u>does</u> have pneumonia (see dosing of chloramphenicol next page)

Chloramphenicol IV/IM: Add 4ml sterile water to 1gram vial chloramphenicol.

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

Chloramphenicol PO.

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

3. Treat heart failure if present (see p. 122).
4. Treat convulsions if they occur (see p. 45).
5. Encourage the mother to feed the child immediately after vomiting.
6. Treat malnutrition if present (see p. 82).

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 — 5.9 kg:	25ml/hour	7 drops/min
6 — 9.9 kg:	50ml/hour	13 drops/min
10 —14.9 kg:	75ml/hour	20 drops/min
15 kg 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. 159), or mebendazole oral once (see p. 164) then nothing to eat or drink.

4. Tinidazole oral once (see p. 168) if child is malnourished.

5. Benzyl (crystalline) penicillin (see p. 165)

PIGBEL (continued)

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. 107) 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 (p. 165), **and give:**
- chloramphenicol IV every 6 hours (p. 116).

- 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	**SEVERE PNEUMONIA**	• Give oxygen • Give first dose of amoxyl (or penicillin) and gentamycin • Admit or refer to hospital URGENTLY if possible
• Chest indrawing	**MODERATE PNEUMONIA**	• Give 1st dose of benzyl penicillin • Admit or refer to hospital URGENCY if possible • If cough > 14 days do TB score
• Fast breathing - Age 0-2 months **>60 breaths/min** - Age 2-12 months **>50 breaths/min** - Age > 12 months **>40 breaths/min**	**MILD PNEUMONIA**	• Treat at home with amoxicillin • Advise mother when to return immediately • Follow-up daily • If cough more than 14 days, do TB score
• None of the signs above	**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 refer 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).

Fast breathing in children is defined as (WHO definition)

- Age 0-2 months respiratory rate **>60 breaths/min**
- Age 2-12 months respiratory rate **>50 breaths/min**
- Age > 12 months respiratory rate **>40 breaths/min**

1. Admit to hospital or health centre.
2. Suck out the nose gently when necessary to clear the airway.
3. Do pulse oximetry if available
4. Give **oxygen** (if available) at ½ -1litre per minute if the child is:
    - cyanosed
    - grunting
    - in heart failure
    - restless
    - drowsy
    - stopping breathing
    - has oxygen saturation less than 90% on pulse oximetry

- 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
- Humidification of oxygen is recommended, but is not absolutely necessary.

PNEUMONIA OR BRONCHIOLITIS — SEVERE

5. 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.
6. If child very sick and has septicaemia, see section on sepsis and meningitis

TREATMENT

1. Amoxicillin (or benzyl penicillin) and gentamicin IV.

If Amoxicillin and Gentamycin are not available - treat with chloramphenicol (p. 116)

Amoxicillin doses:

Give IV/IM every 8 hours: Add 1ml sterile water to 250 mg vial.

Weight	No. of mls
3— 5.9kg:	1 ml
6— 9.9kg:	1.5 ml
10—14.9kg:	2 ml
15—19.9kg:	2 ml

Weight	No. of mls
20—29.9kg:	2 ml
30—39.9kg:	2 ml
40—49.9kg:	2 ml
50kg or more	2 ml

Gentamycin doses:

Give IV/IM once daily: 80mgs/2mls. (7.5mgs/kg)

Weight	No. of mls
3— 5.9kg:	0.75 ml
6— 9.9kg:	1.25 ml
10—14.9kg:	2 ml
15—19.9kg:	2.5 ml

Weight	No. of mls
20—29.9kg:	3.5 ml
30—39.9kg:	5 ml
40—49.9kg:	6 ml
50kg or more	6 ml

- IF the child does not improve after 2 days of amoxicillin and gentamycin, change to Ceftriaxone (see p. 103)
- If staphylococcus pneumoniae is suspected then add flucloxacillin (p. 161)

When the patient has no fever and looks better (usually after 3 to 5 days), you can stop gentamycin and change to oral amoxicillin. Complete 10 days of therapy:

PNEUMONIA OR BRONCHIOLITIS — SEVERE

Oral Amoxicillin 250mg tabs or 125mg/5ml suspension - <u>give 3 times/day</u>

Weight	No. of mls
3— 5.9kg:	5 ml
6— 9.9kg:	7.5 ml
10—14.9kg:	10 ml or 1 capsule
15—19.9kg:	10 ml or 1 capsule

Weight	No. of mls
20—29.9kg:	2 capsules
30—39.9kg:	2 capsules
40—49.9kg:	2 capsules
50kg or more	2 capsules

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

2. Antimalarials if blood slide or RDT positive (see p. 73).

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

4. 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 with severe pneumonia and severe respiratory distress 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. Check oxygen saturation if you have an oximeter – give oxygen if SpO_2 <90%
3. Suck out the nose gently when necessary to clear the airway.

TREATMENT
Oral Amoxicillin 250mg tabs or 125mg/5ml suspension
Give 3 times/day for 5 days

Weight	No. of mls
3— 5.9kg:	5 ml
6— 9.9kg:	7.5 ml
10—14.9kg:	10 ml or 1 capsule
15—19.9kg:	10 ml or 1 capsule

Weight	No. of mls
20—29.9kg:	2 capsules
30—39.9kg:	2 capsules
40—49.9kg:	2 capsules
50kg or more	2 capsules

OR

Benzyl (crystalline) penicillin
Give IM or IV 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:
Amoxicillin tabs or suspension 3 times daily for 5 days.
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** with no chest indrawing, and feeding well with no cyanosis or heart failure. Fast breathing in a child is according to the child's age

- 0-2 Months RR>60
- 2-12 Months RR>50
- 12 Months RR>40

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

Note: A fast respiratory rate 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

Oral Amoxicillin 250mg tabs or 125mg/5ml suspension
Give 3 times/day for 5 days - see p. 124

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. 119).

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.

POISONING (continued)

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, **B**reathing, **C**ardiac, **D**rugs

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
  A) One person: 30 compression to 2 breaths
  B) Two person: 15 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 or IM.

RESUSCITATION (continued)

2. RESCUCITATION 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 (p 165) 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 RHEUMATIC 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, polyarthralgia, raised white cell count and ESR, prolonged PR interval on ECG, previous history of RF

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

RHEUMATIC FEVER AND RHEUMATIC HEART DISEASE (cont.)

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) IM or IV 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.

SEXUALLY TRANSMITTED INFECTIONS (STIs)(continued)

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. 132).
- 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. 132).

AND

- benzyl penicillin IM twice daily for 10 days (see p. 132).

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. 44)
- 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** amoxicillin **and** augmentin, (amoxicillin and clavulinic acid) **and** probenecid tablets

Weight	**Azithromycin**	**Amoxicillin**	**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

SEXUALLY TRANSMITTED INFECTIONS (STIs) (continued)

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.40).

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 flucloxacillin (p. 161) or chloramphenicol (p. 116)
  - when pus has formed ➔ **incise and drain**.

c. Remember:

A febrile child with a hot, swollen and tender limb probably has osteomyelitis (see p. 110).

IMPETIGO

Multiple crusting sores, usually on the face.

1. Clean scabs away with antiseptic, e.g. chlorhexidine (Savlon).

2. Apply crystal violet (gentian violet).

3. Give amoxicillin oral 3 times daily for 5 days (see p. 161) **or**
If no improvement after 5 days;
Change to cotrimoxazole (septrin)(p. 161) or erythromycin (see p. 162).

GRILE (ringworm, tinea imbricata)

1. Clean skin with soap and water.

2. 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

SKIN DISEASES (continued)

SCABIES

1. 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.
2. Wash the patient with soap and water.
3. Apply scabies lotion to **all** the body except the face
4. 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

5. If the scabies is infected, treat with amoxicillin.

SORES AND ULCERS

1. Clean dirt and dead tissue away with antiseptic solution like sterile normal saline.
2. If the sore is infected, painful, swollen and red, apply antiseptic dressings (e.g. acriflavine) daily until the sore is clean and pink.
3. Make sure that ulcers, sores and cuts which are clean are kept clean. Apply dry dressings every day.
4. If any of the sores are raised, consider yaws as a possible cause (p. 156).
5. If there are many infected sores: give amoxicillin oral 3 times daily for 5 days (see p. 159).
6. If the ulcer is larger than a 10 toea coin give amoxicillin.
7. If the ulcer does not get better after amoxicillin, change to cotrimoxazole (septrin) orally twice daily for 5 days (see p.161) and tinidazole orally once daily for 3 days (see p. 168).
8. If the ulcer is bigger than a one Kina coin, it needs skin grafting when it is clean.

SKIN DISEASES (continued)

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)

1. 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.

2. 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 amoxicillin for 5 days (see p. 159).

SNAKE BITE (continued)

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 Hartmann's solution or 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 IV fluid in a burette and infuse over 30-60 minutes. Then run drip at maintenance rate (p. 167).
- Give tetanus toxoid ½ml IM stat.
- Do not touch the site of the bite.
- Give crystapen IV (p. 165) or amoxicillin for 5 days (see page 159).

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

- Give promethazine IM (see p 165)
- 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

SNAKE BITE (continued)

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

TB is endemic in PNG, so all are at risk, but there are some high risk groups:

- Close contacts of sputum smear positive PTB (a family member, household contact, neighbour)
- Children with severe malnutrition
- Children with HIV infection

The diagnosis of TB in children is a clinical diagnosis, based on symptoms and signs, x-ray changes and sometimes on special tests. A combination of:

- Chronic symptoms suggestive of TB > 2 weeks
- Physical signs highly suggestive of TB
- Chest X-ray suggestive of TB
- Sometimes other tests are done (such as GeneXpert or Mantoux)

TUBERCULOSIS (continued)

Diagnosis of Tuberculosis with the aid of the Paediatric TB Score Chart

Feature	0	1	2	3	4	Score
Length of illness (weeks)	< 2	2-4		> 4		
Nutrition status (weight for age)	Above the -2 line	Between the -2 and -3 line		Less than the -3 line		
Recent close contact with an infectious TB case (adult PTB or sputum sm+)	None	Verbal history of TB Contact		Proven sputum +ve contact		
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 of treatment				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

- **If the child scores 7 or more, and has no other disease more likely to explain the illness, then commence TB treatment**
- **Length of illness**: This means how long the child has been sick with the particular symptom e.g. cough, diarrhoea, swollen neck glands. Previous episodes 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. For children over five years of age, use an MUAC tape to decide nutrition status: MUAC cut-offs for children over 5 years are: >14.5 cm score = 0, 13.5-14.5cm = 1, <13.5cm= 3

TUBERCULOSIS (continued)

- **Family contact history of TB**: Ask the child's guardians about contact with TB. 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.
- **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 sores, a dental abscess from tooth infection
- **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.

TUBERCULOSIS (continued)

- **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:

Nutrition: most children with TB are malnourished. For management of malnutrition refer to:
This book p. 83.
WHO Pocketbook of Hospital Care for Children (Chapter 7)
Paediatrics for Doctors in PNG (pages 210-220)

HIV testing - all children with TB should have an HIV test. Do provider-initiated testing and counseling (PITC).

Screen contacts for TB, inquire about history of cough (including coughing blood), fever, night sweats, and weight loss. If an adult has these symptoms, use the diagnostic algorithm for adult TB for diagnosis.

Report all TB cases to the Provincial TB Programme Unit using the "basic management unit" (BMU) quarterly reporting form.

TUBERCULOSIS (continued)

New Treatment Guidelines for Childhood Tuberculosis in PNG

The following are the changes to the treatment of childhood TB compared to those in *the 9th edition of the Standard Treatment Manual for Common Illnesses of Children, 2011*)**:**

1. **NEW FDC**: A new child-friendly TB drug has been developed that dissolves in water (dispersible tablet). The new fixed-dose combinations of RHZ 75:50:150 and RH 75:50, will replace the currently available formulation of RHZ 60:30:150 and RH 60:30. Further, the revised WHO recommendations for dosages in children now cut-off at 25 kg so children of ≥25 kg can have adults dosages and adult formulations. This medication will become available in 2016/2017
2. **Categories of treatment**: Children are no longer classified as Category I or Category II patients. All children will be treated with 2 months intensive phase: daily rifampicin (R), isoniazid (H), pyrazinamide (Z), ethambutol (E). The continuation phase will be rifampicin (R) and isoniazid (H) for 4 or 7 months, depending on the type of TB
3. **Treatment duration**: Pulmonary TB is treated for 6 months (2 months RHZE + 4 months RH). All other forms of TB including TB meningitis, TB osteomyelitis, miliary TB, TB pericarditis/effusion, abdominal TB, and lymph node TB is treated for 9 months (2 months RHZE + 7 months RH).
4. **Children with HIV** should be treated for 9 months (2RHZE/7RH) no matter what type of TB they have.
5. **Poor adherence and defaulting**: Children who have failed to complete a full course of treatment previously (i.e. defaulted from treatment) and retreatment cases will be treated the same way, as above
6. **Children suspected of having MDR** should be evaluated by a paediatrician and have a GeneXpert test. Children who have MDR should be treated by a paediatrician or a healthcare worker familiar with MDR-TB

TUBERCULOSIS (continued)

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	Dose range
Rifampicin	15 mg/kg	10-20 mg/kg
Isoniazid	10 mg/kg	7-15 mg/kg
Pyrazinamide	35 mg/kg	30-40 mg/kg
Ethambutol	20 mg/kg	15-25 mg/kg

TB Treatment

TB disease category	Recommended regimen	
	Intensive phase	**Continuation phase**
Pulmonary TB	2 RHZE	4 RH
Extrapulmonary TB (e.g. TB of lymph nodes, miliary, meningitis, osteomyelitis, spine, abdomen, pericarditis, etc) and all TB in children with HIV*	2 RHZE	7 RH
Multi-drug resistant (MDR) TB	Refer to PNG MDR guidelines	

R=Rifampicin, H=Isoniazid, Z=Pyraziamide, E=Ethambutol

* HIV: A child who has HIV should be treated for 9 months, even if they have pulmonary TB

** Other: If a patient has both pulmonary TB and another form of TB then they will be treated for the longer duration which is 9 months. For example: A child with pulmonary TB and lymph node TB - treat for 9 months

TUBERCULOSIS (continued)

TREATMENT REGIMENS

For children weight 3kgs – 10.9kgs (using <u>CURRENT</u> formulations)

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: Daily (RH) for 4 months in PTB cases All other forms of TB give daily for 7 months			
	Rifampicin:Isoniazid (60mg:60mg)		
3 – 5.9	1 tab		
6 – 10.9	2 tabs		

For children weight 11-30.9 kgs and more, use ADULT FDCs with additional INAH

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: Daily (RH) for 4 months in PTB cases All other forms of TB give daily for 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

TUBERCULOSIS (continued)

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

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: Daily (RH) for 4 months in PTB cases All other forms of TB give daily for 7 months	
Weight bands (in kgs)	**Rif: INAH 150:75**
30 – 39	2
40 – 54	3

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

IF UNSURE ASK SOMEONE ELSE TO CHECK

DOSING TB MEDICATIONS USING THE NEW DISPERSIBLE FDC

The new FDC should become more available in 2016/2017 as it is rolled out across the country. It is ok to change to this formulation at any time during TB treatment.

For children in the weight bands of 4 to 25 kg using the new FDC for children

NEW FDC DRUG TABLE	Numbers of tablets		
	Intensive Phase		Continuation Phase
	RHZ (dispersible tabs)	E	RH (dispersible tab)
Weight bands	75/50/150	100	75/50
4-7.9 kg	1	1	1
8-11.9 kg	2	2	2
12-15.9 kg	3	3	3
16-24.9 kg	4	4	4
25 kg+	Go to adult dosages and preparations		

Isoniazid Preventive Therapy (IPT)

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

a. less than 5 years old, and not symptomatic for TB

b. HIV-infected, irrespective of age, and not symptomatic for TB

6 months of IPT can help protect a child from TB for two years.

If such children are symptomatic for TB, a pediatrician should fully evaluate them to exclude active TB disease. If the child has TB, then he or she should receive full anti-TB treatment.

Never give IPT to children who are symptomatic for TB without a proper evaluation.

TUBERCULOSIS (continued)

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). Consult a paediatrician on the management of all children with suspected HIV and TB.

ADDITIONAL TREATMENT CONSIDERATIONS

Steroids

- Use in TB meningitis, TB pericarditis (pericardial effusion), or airway obstruction from TB glands.
- Prednisolone (or prednisone) orally **2 mg/kg/day** for 1 month, and then decrease the dose over 2 weeks.
- If unable to take orally, you can give IV dexamethasone 0.15 mg/kg every 6 hours.
- Change to oral prednisone as soon as possible

TUBERCULOSIS (continued)

The child with TB and HIV

- Treatment for TB is same as for HIV-uninfected children, except the total treatment duration is 9 months even if PTB
- Children with TB/HIV need Septrin prophylaxis and ART
- For children with HIV and TB, both TB treatment and ART are necessary
    - If a child with TB is newly diagnosed with HIV start ART after 2 weeks of starting TB therapy
- All children with HIV and TB should be seen by a paediatrician

Failure to Respond to Treatment

- The causes of failure to respond to TB treatment:
    1. Poor adherence to TB medications
    2. TB is not the diagnosis, or not the *only* diagnosis
    3. Drug resistant TB
- If a patient is failing to respond in spite of directly observed treatment (DOT) with standard TB drugs, consider the possibility of drug resistance. 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, refer to a paediatrician for further assessment.

TUBERCULOSIS (continued)

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

- MDR-TB is a laboratory diagnosis made by GeneXpert
- Consider MDR-TB in children known to have TB disease with any of the following features:
    - Contact with a known case of drug resistant TB - These children should be investigated for active TB including a GeneXpert and a CXR. If they have active TB they should be referred to a paediatrician and treated as a case of MDR-TB
- If a patient remains sputum smear-positive after 3 months of treatment.
- Not responding to the anti-TB treatment regimen even though patient is adherent to treatment.
- If the patient gets worse on 1-2 months of standard treatment
- Recurrence of TB after adherence to treatment

If GeneXpert is available at your facility, every effort to obtain an early morning (before eating) sputum sample or orogastric aspirate is helpful. If GeneXpert is not available, refer suspected MDR cases to a paediatrician at the provincial hospital. If rifampicin resistance is detected on GeneXpert treat according to PNG MDR-TB guidelines.

<u>GeneXpert can be done on the following samples: sputum, gastric aspirate, cerebrospinal fluid, and an FNA of a lymph node</u>

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
  - abdominal tenderness
  - abdominal distension
  - constipation
  - diarrhoea (with or without blood).
  - confusion
  - talking nonsense
  - dehydration
  - looking or feeling very sick

If you think the child has typhoid:

1. Admit to **hospital** or **health centre**

If 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 (CMP) 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. 116).

If not responding to CMP use ciprofloxacin (p. 58 & 157).

If you do not have chloramphenicol or ciprofloxacin, give ampicillin/amoxicillin (p. 122) for 3 weeks, or cotrimoxazole (p. 161) for at least 2 weeks.

2. Antimalarials Test and treat if positive (see p. 73).

TYPHOID (continued)

3. Fluids

a. If dehydrated: rehydrate with either ORS or intravenous ½ strength Darrow's Solution. (see p. 169/171).

b. If not dehydrated:

If vomiting or the child has a distended, tender abdomen

- give intravenous maintenance fluids. (see p. 168/170).

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.

1. Give extra food

2. 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)*
  - Urine collection (see Paediatrics for doctors in PNG, p. 378)
- Look at the urine in a glass bottle.
  - If it is cloudy treat for urinary infection.
    Give cotrimoxazole (septrin see p. 161) twice a day for 1 week. 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.

Note Infants do not complain of pain on passing urine- but if they have a urinary infection they are likely to be irritable, to cry, to feed poorly, and to be febrile. Urinary infection should always be considered in a sick febrile child with no obvious source of infection.

2. Passing blood in the urine:

- All children passing blood in the urine should be admitted to hospitalor health centre for investigation and treatment.
- If oedema is present, start treatment with amoxicillin oral daily for 10 days (see p. 159). Measure the blood pressure if you can. If more than 120/90, discuss the problem with a doctor.
- If there is no oedema, start treatment with Cotrimoxazole (see p. 161).Arrange for the child to be checked by a doctor later.
- If bleeding continues after 2 days treatment:
- Refer patient to hospital.

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

1. 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

2. Or Azithromycin 30 mg/kg oral stat, if you have it

The sores, pains and bone problems get better very quickly

Treat close contacts with benzathine penicillin or azithromycin 30 mg/kg oral stat if you have it

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. Amoxicillin	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	10-20mg	2	Oral
	7. Cloxacillin/Flucloxacillin	25mg to 50 mg	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

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 See dosing tables starting on p. 74	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 respirator solution (0.5%)	0.5-1 mls – fixed dose, not per kg (diluted to 4 mls with normal saline)	6	Nebuliser
Cardiac	1. Digoxin	10micrograms	1	IM or oral
	2. Furosemide	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/10 ml IV over 1 hour (put in burette) every 6 hours	ml	—	1.5	2	3	4	6	8	10
Elixer 25mg/5ml every 6 hours, oral	ml	—	6	10	15	—	—	—	—
Tab. 100mg, every 6 hours, oral	tab	—	¼	½	¾	1	1	1	1
Amoxicillin Tabs 250 mg. 3 times daily. oral	tab	½	½	1	1	2	2	2	2
Amoxicillin suspension 125mg/5ml three times daily oral	ml	5	7½	10	10	Use tabs			
Ampicillin or Amoxicillin Vial 250mg (add 1ml sterile water) IM/IV every 6 hours	ml	1	1.5	2	2	2	2	2	2
Artemether 20mg/ Lumefantrine 120 mg tab (Coartem or Mala-1)		See malaria section p. 79							
Artesunate injection		See malaria section p. 76							
Artesunate suppository		See malaria section p. 74							

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									
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.119	1½	2	2½	3	3	4
– Susp. 125mg/5ml, every 6 hours, oral	ml	see	p.119	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 83				
– 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 (flucloxacillin)									
– 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 Tab daily x 3 days	tab	¼	½	1	1	1.5	2	2.5	3
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 and 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	See Tuberculosis drug dosing section p. 146							
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**
Furosemide (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
Isoniazid (INH) Tab. 100mg, oral:	See Tuberculosis drug dosing section p. 146								
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	_	_	¼	¼	½	¾	1	1½
Nitrofurantoin	ml	—	2½	5	5	7½	10	—	—
Paracetamol Suspension 4 times daily oral.	ml	1	1½	2½	3	4	5	7½	10
Paracetamol suppository (125 mg tab) 4 times daily PR	tab	—	—	1	1 or 2	2	2	—	—
Paracetamol suppository (250 mg tab) 4 times daily PR	tab	—	—	—	1	1	1	2	2
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, 2,400,000 u, 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/IV	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	See Tuberculosis drug dosing section p. 146								
Rifampicin									
Quinine	See malaria section p. 78								
<u>Salbutamol (ventolin)</u> Tab 4mg. 4 times daily oral	tab	—	¼	¼	½	½	1	1	1
Respirator Solution dilute with 4ml of normal saline	ml	½	½	1	1	1	1	1	1
Septrin: see cotrimoxazole)									
Tinidazole Tab. 500mg (see p. 56)	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**
Total maintenance fluid requirements – do not exceed this in a non-dehydrated child. **Hartmann's solution (Ringers Lactate) plus 5% dextrose** Or 0.45% NaCl and 5% dextrose In sick children who can take oral or nasogastric fluids, give **nutrition** enterally, and **reduce IV fluid rate** so that the total fluid intake is according to the volumes in the table	ml/hr drops/min	18 18	30 30	45 45	55 55	65 65	75 75	90 90	120 120
		For an explanation of how to make up Hartmann's plus 5% dextrose or 0.45% NaCL and 5% destrose see p. 171 *Note: It is important to TRY and make up these fluids. If this is not possible for whatever reason, then dextrose/saline (4.3% dextrose and 1/5N saline) is an alternative but it is not as good							
<u>Meningitis, Heart failure, Coma</u> **Hartmann's solution (Ringers Lactate) plus 5% dextrose** If oral or nasogastric fluids are given, reduce IV rate	ml/hr drops/min	12 12	20 20	30 30	36 36	44 44	50 50	60 60	80 80

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**
Diarrhoea (½ strength Darrow's)									
— quickly if dehydrated	ml	100	150	250	350	500	700	900	1000
— then	ml/hr	25	50	75	100	100	150	150	150
	drops/min	25	50	75	100	100	150	150	150
Burns Hartmann's solution (Ringers Lactate) or 0.9% Sodium Chloride									
— quickly if more than 10% burn	ml	100	150	250	350	500	700	900	1000
— then	ml/hr	25	50	75	100	100	150	150	150
	drops/min	25	50	75	100	100	150	150	150
Also give nasogastric or oral feeds									
Oral fluid and nutrition maintenance requirements: Give milk feeds every 3 hours (6 times a day) oral or by N/G tube	ml	120	240	300	350	400	450	450	500
Diarrhoea with dehydration ORS, oral or N/G tube									
— FAST	ml	100	150	250	350	500	500	500	500
— THEN every hour for 4 hours	ml	50	100	150	200	300	400	500	600
Meningitis, coma, or heart failure 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

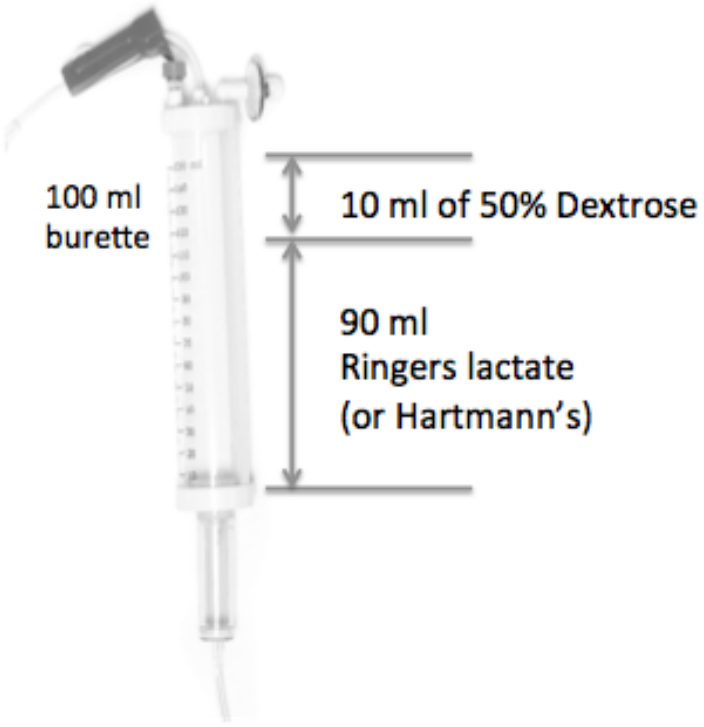
IV and Oral Fluid Calculation When Using the Adult IV Giving Set

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**
Total maintenance fluid requirements – do not exceed this in a non-dehydrated child. **Hartmann's solution (Ringers Lactate) plus 5% dextrose** Or 0.45% NaCl and 5% dextrose In sick children who can take oral or nasogastric fluids, give nutrition enterally, and **reduce IV fluid rate** so that the total fluid intake is according to the volumes in the table	ml/hr drops/min	18 5	30 8	45 11	55 14	65 16	75 19	90 23	120 30
<u>Meningitis, coma, or heart failure</u> Hartmann's solution (Ringers Lactate) plus 5% dextrose If oral or nasogastric fluids are given, reduce IV rate	ml/hr drops/min	12 3	20 5	30 8	36 9	44 11	50 13	60 15	80 20

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**
Diarrhoea (½ strength Darrow's)									
— quickly if dehydrated	ml	100	150	250	350	500	700	900	1000
— then	ml/hr	25	50	75	100	100	150	150	150
	drops/min	7	13	20	25	25	40	40	40
Burns Hartmann's solution (Ringers Lactate) or 0.9% Sodium Chloride									
— quickly if more than 10% burn	ml	100	150	250	350	500	700	900	1000
— then	ml/hr	25	50	75	100	100	150	150	150
	drops/min	7	13	20	25	25	40	40	40
Also give nasogastric or oral feeds									
Oral fluid and nutrition maintenance requirements: Give milk feeds every 3 hours (6 times a day) oral or by N/G tube	ml	120	240	300	350	400	450	450	500
Diarrhoea with dehydration ORS, oral or N/G tube									
— FAST	ml	100	150	250	350	500	500	500	500
— THEN every hour for 4 hours	ml	50	100	150	200	300	400	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

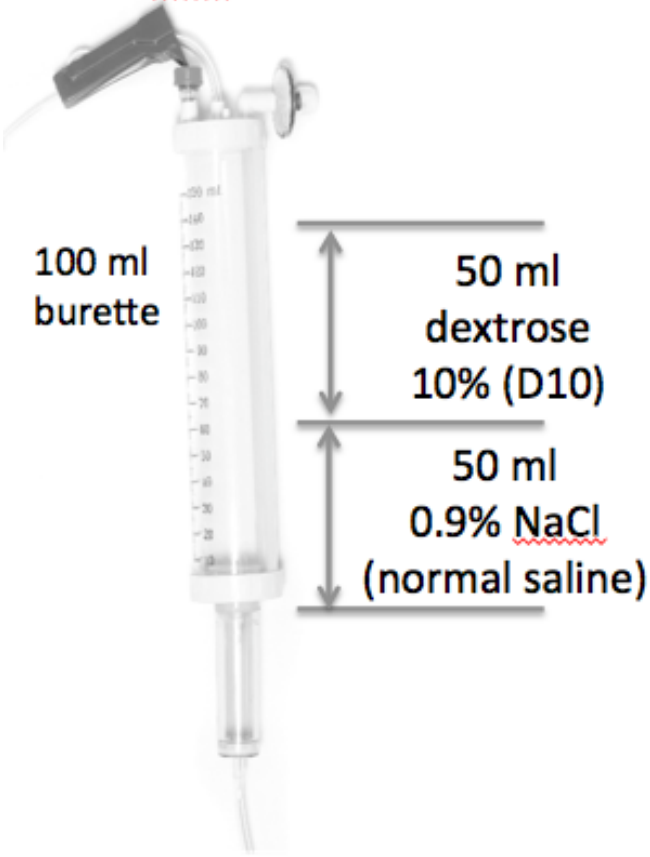
How to make Hartman's solution plus 5% dextrose (or Ringers Lactate plus 5% dextrose), or 0.45% NaCl plus 5% dextrose

How to make
Hartmann's plus 5% dextrose



Note: if you don't have 50% Dextrose
you can make using:
25 ml of 25% Dextrose plus 75 ml
Hartmann's

How to make
0.45% NaCl plus 5% dextrose



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