

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 caregiver to always bring the Child Health Record Book whenever the child sees a healthcare worker

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/rubella). The changes in place are:

POLIO VACCINE

All children should be receiving OPV at one, two and three months and a dose of IPV also at 3 months and then 9 months. This may change in future years, and then all children will receive IPV at one, two and three months.

MEASLES VACCINE

is now combined with the rubella vaccine (MR), and 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.

TB Preventive Therapy (TPT)

A new option for preventing TB is 3 months of daily RH (3RH), which is the continuation phase drug. Previously this was known as TB prophylaxis, INH prophylaxis, or IPT. 6 months of daily INH (6H) continues to be an option, but 3 months of daily RH (3RH) can be used in HIV negative children. Either 6H or 3RH may be given to children < 10 years of age (previously < 5 years of age only) after ruling out active TB disease.

GeneXpert test may now be used on **stool** (in addition to gastric aspirates, fine needle aspiration (FNA), cerebral spinal fluid). Stool can be more easily obtained than a gastric aspirate in some cases. You will need to speak to your lab to perform GeneXpert on stool.

New HIV drugs for children – Dolutegravir (DTG) is now available. In addition, new algorithms for diagnosing HIV are described in the HIV section.

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 oral medicines. If a child needs IV or IM medications at the start of an illness, when the child improves, changing to oral treatment is almost always effective (except for very young children with meningitis).

Standard Treatment for Common Illnesses of Children in Papua New Guinea

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

11th Edition

2024 Edition



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 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 *Checklist for all Sick Children* or the *Checklist 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.146)

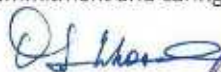
FOREWORD

PAEDIATRIC STANDARD TREATMENT BOOK - 11th Edition 2024

Every child born in Papua New Guinea has the right to healthcare and is the policy of the Government that "no child is left behind". This is easy to say but it is very difficult to provide health care for all children in Papua New Guinea, the large majority of whom are living in rural areas or rapidly expanding periurban settlements. Most child deaths in PNG result from infectious diseases either directly or by contributing to malnutrition, thus increasing the child's susceptibility to further infections. The large majority of deaths can be prevented by early diagnosis and effective treatment, whether it be rehydration for diarrhoea, antimalarial for malaria or antibiotics for pneumonia. The treatments necessary are usually simple and can be administered safely and effectively by the majority of health workers at all levels of health facility in rural and urban sectors. This is the rationale for the Standard Treatment book now in its 11th edition.

Since the first edition in 1975 the book has of necessity become bigger and more complex to deal with changing patterns of antimicrobial resistance, the emergence of new diseases, improved diagnostic ability and more effective treatments. All treatments in this new edition are based on evidence of effectiveness. Using these treatments and management outlines ensures a high standard of care. Whilst a small minority of children may require treatment not included in the book, the treatments included are effective for the large majority of children and should be standard practice across all levels of the health system. It is very important that all health workers treasure this book and use it every day that they deal with sick children. Whilst this book deals primarily with treatment, it is important to stress that all health workers dealing with children and their mothers or caregivers have a vital role in disease prevention by ensuring a hygienic working environment and work practices, encouraging compliance with the Immunisation schedule and discussing health promotion issues in a simple and friendly way.

This edition of the STB is dedicated to Prof. John Vince, who has retired after 47 years. He serves as an example for what is best in a paediatrician. We thank him for his countless years of commitment and caring for the lives of Papua New Guinean children.



Dr. Osborne Lika
Health Secretary



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Antibiotics table summary

Infection	First line antibiotics	Second line antibiotics if poor response to first line, or under special considerations	page
Babies – infection (Neonatal sepsis)	Amoxycillin (or benzylpenicillin) plus gentamicin	Flucloxacillin plus gentamicin if signs of Staph infection: pustules, abscess, cellulitis, purulent cord	31
		Ceftriaxone maybe replace with Cefotaxime if poor response to first line treatment after 48 hours, or if signs of meningitis	33
Conjunctivitis (severe purulent) in newborn babies	Benzylpenicillin plus gentamicin	Ceftriaxone	31
Conjunctivitis in older children	Oxytetracycline eye ointment – OR - Compound antibiotic eye ointment – OR - Chloramphenicol eye ointment		44
Diarrhoea – persistent (>7 days)	Tinidazole Albendazole		54
Diarrhoea with blood (dysentery)	Ciprofloxacin Tinidazole Albendazole	Amoxycillin plus gentamicin OR Ceftriaxone - If severe, or not responding	56
Cholera	Azithromycin		57
Lymphadenopathy	Amoxycillin	Cloxacillin if cellulitis, skin pustules, abscess	74
Malnutrition - severe	Amoxycillin or cotrimoxazole if unwell	If signs of severe sepsis: Ceftriaxone and flucloxacillin OR Flucloxacillin and gentamicin	94
Meningitis	Benzylpenicillin plus gentamicin if fever Ceftriaxone	Amoxycillin (or benzylpenicillin) plus gentamicin OR Chloramphenicol (and refer)	102

Sepsis - severe	Ceftriaxone plus flucloxacillin	Amoxycillin (or benzylpenicillin) plus gentamicin OR Chloramphenicol (and refer)	102
Osteomyelitis, septic arthritis, pyomyositis	Flucloxacillin	If MRSA confirmed, or poor response despite adequate source control: Vancomycin OR Chloramphenicol (and refer)	106
Otitis media - acute	Cotrimoxazole	Amoxycillin	107
Otitis media - chronic	Boric acid in alcohol ear drops		108
Pertussis	Azithromycin or Septrin	Also give Clarithromycin if severe pertussis pneumonia	114
Pigbel	Benzylpenicillin (crystalline penicillin), plus gentamicin plus metronidazole Plus Albendazole, tinidazole	Chloramphenicol	112
Pneumonia - severe	Amoxycillin (or benzylpenicillin) plus gentamicin	If signs of Staph infection: empyema, cellulitis, skin pustules, abscess Cloxacillin or Flucloxacillin OR, Ceftriaxone if severe with signs of sepsis	94
Pneumonia - moderate	Amoxycillin (oral) or benzylpenicillin		115
Rheumatic fever treatment	Benzylpenicillin (or Amoxycillin)	Penicillin V – OR - In Children with Penicillin allergy use Azithromycin	123
Rheumatic fever prophylaxis	Benzathine penicillin (monthly) OR Penicillin (oral) daily		124

Sexually transmitted infections	Azithromycin, plus Amoxycillin, plus Augmentin (amoxycillin plus clavulanic acid), plus Probenecid		125
Syphilis	Benzylpenicillin if signs of congenital syphilis	Benzathine penicillin if mother VDRL / TPHA positive but baby asymptomatic	125
Skin diseases – boils or abscess	Flucloxacillin	Chloramphenicol	129
Skin diseases – Impetigo	Gentian violet, plus Amoxycillin OR flucloxacillin	Cotrimoxazole OR Erythromycin	19
Skin diseases – Grille (tinea, ringworm)	Benzoic acid compound ointment (Whitfield's ointment), OR Tinidazole or Clotrimazole ointment	Griseofulvin	129
Skin diseases – scabies	Permethrin cream OR Scabies lotion	Oral Ivermectin	129
Skin diseases – sores and ulcers	Amoxycillin OR flucloxacillin	Cotrimoxazole plus Tinidazole	129
Snake bite	Amoxycillin		131
Typhoid	Ciprofloxacin OR Amoxicillin	Ceftriaxone if severe sepsis	142
Urinary tract infection	Cotrimoxazole	Amoxycillin plus gentamicin if severe pyelonephritis	144
Yaws	Benzylpenicillin OR Azithromycin		145

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 OR TOO SICK signs.	P.18
↓		
STEP 2	Does the child have COUGH or DIFFICULT BREATHING? Check for fast breathing and chest indrawing.	P.114
↓		
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.59 76, 102
↓		
STEP 5	Does the child have MEASLES now or had it in the last 3 months? Look for signs of measles.	P.99
↓		
STEP 6	Does the child have EAR PAIN OR DISCHARGE? Look for signs of otitis media or ear discharge	P.107, 108
↓		
STEP 7	Check all children for PALLOR. Check of the Palmer or conjunctiva for pallor.	P.20
↓		
STEP 8	Check if the child is MALNOURISHED. Check MUAC & plot the weight on the WFA curve in the Clinic Book. IS the Z-Score below - 3SD Is the Z-score below - 2SD	P.84
↓		
STEP 9	Assess FEEDING for all children age < 2 YEARS and those children with Malnutrition and Anaemia.	P.37, 84 20

↓		
STEP 10 A	Assess BREAST FEEDING if aged less than 6 months. Ask about EXCLUSIVE BREAST FEEDING:	P. 37
STEP 10B	- Any Feeding problem? Check for breast feeding techniques check attachment / positioning	
↓		
STEP 11	Does the child have COUGH or other illnesses for more than 2 WEEKS? (Think about possible TUBERCULOSIS infection).	P.113 133
STEP 12	Does the child have fever or DIARRHOEA for more than a month? CHECK FOR POSSIBLE HIV Was the mother tested for HIV?	
	Skip this Step if child is on ART	
↓		
STEP 13	Does the child need IMMUNIZATION? Check immunization record in the clinic book	P. 68, 70
STEP 14	Ask are there any other problems or skin infections? 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. 18, 114, 127
STEP 2	ASK ABOUT FEVER Look for signs of bacterial infection or malaria	P. 59
STEP 3	LOOK FOR JAUNDICE Look for yellow eyes and yellow feet	(benzyl penicillin and Gentamycin)
STEP 4	Onset of jaundice? Treat and refer CHECK FOR POSSIBLE HIV Skip this step if the baby is on ART	
STEP 5	ASSESS BABY'S WEIGHT Weigh the baby and assess the growth curve What is the baby's birth weight? Is the baby gaining weight?	See weight chart centre P. 87, 88
STEP 6	ASK ABOUT BABY'S FEEDING Check feeding pattern: emphasize exclusive breast feeding	P. 37
STEP 7	ASSESS EXCLUSIVE BREAST FEEDING TECHNIQUES Look for Good Positioning, Attachment and effective suckling	
STEP 8	CHECK FOR MALFORMATIONS Check mouth for cleft, feet for clubbing, genitalia and anus Give appropriate treatment and urgent referral where possible	(Benzylpenicillin and Gentamycin)

STEP 9	ASK ABOUT IMMUNISATIONS Check the immunisation record and give vaccines due	p. 68,70
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STEP 10	ASK ABOUT FAMILY PLANNING FAMILY PLANNING IS EVERY OPPORTUNITY	p. 98
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Always discuss with mother/parents the problems that you have found, the treatment that you will give and what they should do.

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

PAEDIATRIC RULES

1. Immunise: Always check the health record book and immunise if the child is due for it.

- There is no contra-indication to giving measles/rubella vaccine.
- Pentavalent, pneumococcal and hepatitis B vaccines should not be given if the child has a fever above 38°C. They should be given when the temperature has settled.
- Check the child's siblings 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. Admit or Refer babies and children who have any of the following:

Severe chest in-drawing or respiratory distress - Including stridor	Severe dehydration
Sudden onset of paralysis	Swelling of limb or joint
Snake bite	Swallowed poison
Oedema (swelling)	A child unable to feed and has a fever
Convulsions with a fever	Drowsiness or confusion, or unconscious after head injury
Abdominal pain and severe vomiting, especially when vomiting blood or green bile	Neonates with any sign of serious bacterial infection
Blood in urine or stool	Suspicious injuries that do not fit the given history
Weight for age (WFA) less than 60% line or less than -3 SD line, and/or flat or falling weight curve	

3. Weigh: Always weigh the child **AND PLOT ON WEIGHT GRAPH** in the health record book. Give the correct dose of medicine for this weight.

4. Refer to hospital (level 3, 4, or 5 facility):

Imperforate anus	Meningitis
Severe jaundice	Sepsis not improving after 2 days treatment
Frequent vomiting and lots of saliva in the first few hours of life, including bile-stained vomiting	Ambiguous genitalia (where you are not sure baby is a girl or boy)

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 joint that not improving after 2 days treatment
- Blood in the urine, who do not improve after 2 days treatment
- Kwashiorkor or oedematous malnutrition
- Distended, tender abdomen
- Sudden onset of paralysis
- Polyuria (passing a lot of urine), dehydration and sweet smelling breath (they may have diabetes)
- Cholera

Non-urgent but important referral for children with:

- Slow development or who are poorly responsive and who have an umbilical hernia.
- Persistent heart murmur
- Frequent asthma
- Malnutrition that does 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 antimalarial for fever

7. Always Remember to:

Talk to both the mother and the father about family planning options and the benefits of birth spacing

ANAEMIA

Anaemia is a haemoglobin < 10g/dL for infants and children or less than 15 for neonates.

a. Usually treat as an outpatient: Admit to hospital if the child:

- looks very sick
- or looks very pale / severe palmar pallor
- has shortness of breath
- or has oedema
- or feels dizzy when standing up

b. Whenever possible do:

- has shortness of breath haemoglobin
- peripheral blood film where possible
- reticulocyte count
- RDT for malaria

TREATMENT

a. Antimalarials

Treatment i) For antimalarial course (see p. 76).

Prophylaxis ii) Give antimalarials once a week for 3 months if possible (See p.83).

- iii) 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 12 tablets.

d. Iron

Give iron orally every week for 4 weeks, and then check the Hb again. Give iron in the form of Fefol tablets to older children and ferrous fumarate suspension to infants (p. 151)

Anaemia (continued)

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)
 - heart failure (big liver and pulse rate over 160 per minute)
 - Kwashiorkor (oedematous malnutrition)

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.

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

REMEMBER:

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

Note: Children with recurrent or persistent anaemia should be referred to hospital for investigation. Some may have thalassaemia, and children with this condition should avoid repeated doses of iron.

Anaemia (continued)

Note on Blood Transfusion – Make certain the correct bag of blood is given to the patient

1. Only use blood that has been properly grouped and cross-matched.
2. Give furosemide (Lasix) IM or IV at the beginning of the transfusion.
3. When giving blood to children <10 kg use a measuring burette (Medical Stores Catalogue No. 5277).
4. Only remove a bag of blood from Blood Bank refrigerator when you can start transfusing it immediately.
5. Never transfuse blood that has been out of the refrigerator for more than 6 hours.
6. All patients receiving blood transfusion should receive antimalarials (p. 76).
7. If the patient develops fever, skin rash, or becomes ill then:
 - Stop the blood transfusion → Give promethazine IM and 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 > 18 months of age is usually due to asthma. Children younger than 18 months of age can have asthma, especially with recurrent wheezing. If the child is wheezing and less than 12 months of age, treat for bronchiolitis (See p.113).

TREATMENT OF MILD ASTHMA

a. Salbutamol (Ventolin)

- Use a Metered Dose Inhaler ("puffer") and a spacing device.
- Children < 7 years of age cannot coordinate breathing with a puffer so a "spacing device" is required. Get this from a pharmacy or make it from plastic bottle with a hole in the bottom for the puffer.
- Give 2-6 puffs of salbutamol (Ventolin) 4 times a day.
- If you don't have a "puffer" use Salbutamol tablets as dosed in the following table

Weight	6-14.9 kg	15-29.9 kg	30 kg or more
Salbutamol tablet (4 mg)	1/4 tab (1 mg)	1/2 tab (2 mg)	1 tab (4 mg)

TREATMENT OF SEVERE ASTHMA

b. Oxygen – remember you may need to give more oxygen if the child is not improving

- Start out giving ½ -2 L/min by nasal prongs or by nasal catheter, or 4-6 litres/min face mask in older children. You can increase the flow over time (and decrease the flow)

How to prepare salbutamol neb	Amount of 0.5% salbutamol respiratory solution	Amount of Normal Saline
Less than 9 kg	1/2 ml	4 ml
9 kg or more	1 ml	4 ml

Give by a face-mask every 1-3 hours until better. If nebulised salbutamol (or a salbutamol puffer) is not available, give salbutamol (Ventolin) tabs 4 times per day (same dose as for Mild Asthma above. Foot operated nebulisers may be available through your Provincial Health Office and Area Medical Stores

A good alternative is to use an MDI with spacer. 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 1-2 hours if the patient is severely distressed before the next due dose

ASTHMA (cont)

c. **Prednisolone (5mg tabs).** Give daily for 3-5 days and start AS SOON AS POSSIBLE

Weight	Number of tabs (5 mg tab)	Weight (kg)	Number of tabs (5 mg tab)
3 – 5.9 kg	1.5 tabs (7.5 mg)	20 – 29.9 kg	7 tabs (35 mg)
6 – 9.9 kg	2.5 tabs (12.5 mg)	30 – 39.9 kg	8 tabs (40 mg)
10 – 14.9 kg	4 tabs (20 mg)	40 – 49.9 kg	9 tabs (45 mg)
15 – 19.9 kg	6 tabs (30 mg)	50 kg or more	10 tabs (50 mg)

d. If the child is too sick to take tablets give IV or IM Hydrocortisone every 6 hours.

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

e. **I.V. fluid (Hartman's solution or 0.45% NaCl +5% dextrose)**

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

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

Use a burette if you have one. If the child is not improving after salbutamol and prednisolone (or hydrocortisone), or if nil stock salbutamol → **give Aminophylline IV (250 mg/10 ml ampoule)**

NOTE: **Do NOT use 0.5gm/2ml Ampoule !!**

Every 6 hours put the dose of aminophylline into the burette and add Hartman's solution up to the hourly maintenance amount (p.156). Run over 1 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. ***Aminophylline is dosed on the following page***

ASTHMA (cont)

Aminophylline intravenously (250 mg/10 ml ampoule): The dose is 0.2ml/kg (5mg/kg):

Weight	6 – 9.9 kg	10 – 14.9 kg	15 – 19.9 kg	20 – 29.9 kg	30 – 49.9 kg
Dose (ml)	1.5 ml	2 ml	3 ml	4 ml	6 ml

Remember: IV Aminophylline can be dangerous

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

g. Benzylpenicillin (Crystalline)

If the temperature is more than 38°C give IV every 6 hours while giving IV fluids. (see p.160)

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. 155).
- Continue this until the chest is free of wheeze.

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 (more than 4-6 attacks/year) should be seen by a paediatrician

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°C

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) | * Respiratory rate > 60 |
| ● Hypothermia (rectal temp below 35.5°C)
OR very cold skin of arms and legs | * Severe chest indrawing |
| ● Not able to suck | * Cyanosis of tongue |
| ● Severe abdominal distension | * membranes ruptures > 12 hrs |
| ● Fitting | * Maternal fever |
| ● Skin pustules - give flucloxacillin | * Offensive liquor |
| ● Apnoea (stopping breathing for more than 10 seconds) | * Infected cord |

Give ampicillin (or crystapen or amoxicillin) plus gentamicin. If skin infection give flucloxacillin. See Babies– Neonatal infections (p. 30)

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. Check blood glucose level (low is < 2.5 mmol/L) if low place IV cannula and give stat glucose; 1ml/kg of 50% Dextrose or 5mls/kg of 10% Dextrose, followed by preferably 0.9% saline made up to 10% glucose as maintenance; can use 4.3% Dextrose saline made up 10% or plain 10% dextrose, if 0.9 % saline nil stock

j. If no risk factors carefully observe without antibiotics for 24-48 hours and discharged if remains well; discuss danger signs with mother and encourage her to return quickly if baby develops any of the signs.

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 – Kangaroo Mother Care (KMC)

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), which can be safely done at all levels of our health care system.

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 careful not to burn the baby.

b. Start breast-feeds as soon as possible after birth – aim to breastfeed within 30-60 min after birth As much as possible use only breast milk (See table below). Use expressed breast milk by cup if the baby cannot suck well. Use a nasogastric or orogastric 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 breast milk 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 (KG)	Day of Life							
	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. 28)

e. If pushed for space or other social issues, babies can be discharged at a weight of 1.6kg or more provided mum is confident with breastfeeding, baby is sucking well on the breast and baby has been gaining at least 10-20 grams per day for the last 3-4 days; baby should be reviewed once or twice weekly to monitor feeding and weight

NOTE: 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* 37.2°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
- moderate-severe jaundice
- apnoea (stop breathing for > 10 sec)
- grunting or respiratory rate > 60
- severe chest indrawing
- cyanosis of tongue or gums
- membranes ruptured more than 12 hrs
- maternal fever during labor
- offensive liquor
- Inactivity
- infected cord

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 76)

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 32)
- For babies with high fever (T>38 C) from malaria endemic areas, consider congenital malaria. Treat only if RDT or blood slide is positive. PR, IMI or IV artesunate should only be given to babies 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

BABIES – Neonatal Infections (continued)

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

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; use Gentian Violet paint if Chlorhexidine unavailable.

Note

Give extra attention to high risk neonates who have a much greater chance than most infants, of developing complications such as hypothermia, hypoglycemia, apnoea, infection and death in the newborn period; includes babies born preterm or post term, LBW (weight <2.5kg), Small for date babies (SFD/IUGR), Birth asphyxia (Apgar <7), Meconium stain, BBA, PROM (>12 hours) and Chorioamnionitis and mothers with complicated pregnancy, labour and delivery.

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

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)	See P. 62. HIV Infection and prevention (PMTCT)					
Oral						
Amoxicillin or ampicillin injection 250mg vials Add 1ml sterile water. IM or IV (30mg / kg / dose)	1/4	1/4	1/4	1/2	1/2	1/2
- less than 7 days old – give twice a day - more than 7 days old – give 4 times a day						
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	0.5 ml 0.8 ml	0.8 1.0	1.0 1.2	1.2 1.5	1.5 1.8 2.0	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	1/4	1/4	1/4	1/2	1/2	1/2
Diazepam. Amp 10mg / 2ml. Mix with 2 ml sterile water. Give slowly IV or rectally (p. 41) (0.25mg / kg / dose)						
IM						
	Every 2nd day Once daily dose	Once daily dose Twice daily dose	Once daily dose Twice daily dose	Once daily dose Twice daily dose	Once daily dose Twice daily dose	Once daily dose Twice daily dose
	To stop convulsions use paraldehyde					
	1/4	1/4	1/4	1/4	1/2	1/2

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

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	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)	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)	¼	¼	½	¾	1	1
Gentamicin Amp 20mg / 2ml. IM once daily (NOT 80mg / 2ml)						
<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)	¼	¼	½	½	¾	1
Nevirapine Infant suspension (or <i>break</i> 200mg tabs)						
Paraldehyde amp 5ml IM (0.2ml/kg) Use only glass syringe	¼	¼	½	½	½	¾

See P. 62. HIV Infection and prevention (PMTCT)

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

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)	¼	¼	¼	½	½	½
- less than 7 days old - give twice a day - more than 7 days old - give 4 times a day						
Diazepam. Amp 10mg / 2ml. Mix with 2 ml sterile water. Give slowly IV or rectally (p. 36) (0.25mg / kg / dose)	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)	¼	¼	½	¾	1	1
Gentamicin Amp 20mg / 2ml. IM once daily (NOT 80mg / 2ml)						
<1week: 3mg / kg / dose	½	¾	1			
>1 week: 7.5mg / kg / dose	¾	1	1½			
<1 week: 5mg / kg / dose				1½	1¾	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)	¼	¼	½	½	¾	1
Nevirapine Infant suspension (or break 200mg tabs)	See P. 62. HIV Infection and prevention (PMTCT)					
Paraldehyde amp 5ml IM (0.2ml/kg) Use only glass syringe	¼	¼	½	½	½	¾

BREAST FEEDING AND NUTRITION

Breast milk is safe, simple, readily available, and cheap. It contains all the nutrients that the baby needs for optimal growth and development. Breastfeeding protects the life of the baby and the mother

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

Exclusive breast feeding also assist in spacing pregnancy through lactation amenorrhoea.

GENERAL - begin breastfeeding within one (1) hour after birth,

- Skin-to-skin (or Kangaroo-mother care) encouraged at all deliveries to initiation feeding
- For most babies, the easiest and best schedule is 'on-demand' breast feeding.
- Infants who cannot demand feed (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 (p.28)
- 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. Except for oral medication.

Breastfeeding policies should be supported, promoted and upheld.

- 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

BREASTFEEDING AND NUTRITION (continued)

INTRODUCING COMPLEMENTARY FEEDS

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.

Up to 6 months	- Breast feed as long as the baby wants. At least 8 times a day. - Do not give fluids and water except for oral medications
6 completed months	- Breast feed as long as the child wants. - Add complementary feeds about 1 to 2 times a day after breast feed
7 to 12 months	- Breast feed as often as the child wants. - Give adequate servings of nutritious foods 4 to 6 times per day. - Give additional nutritious snacks 1-2 times per day in between feeds
12 months to 2 years	- Breast feed as often as the child wants - Give adequate servings of nutritious diet 4 to 6 times per day. - Give additional nutritious snacks 1-2 times per day
2 years or more	- Give family food at 3 meals per day. - Also two times between meals give nutritious foods and fruits

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.60)
- 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.

FAILURE TO BREAST FEED

a. Check the baby for underlying causes

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

b. Check the mother for any problems.

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

PROBLEMS WITH MILK SUPPLY AND BREAST FEEDING

1. Check to see that the baby is properly positioned and attached at the breast during breastfeeding (see table and figure c next page)

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. If so give the mom

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

OR,

Chlorpromazine (Largactil) 25mg oral TDS

4. Continue until an adequate milk supply is established (usually within one week).

Mothers given chlorpromazine should be warned that it may make them sleepy.

5. Once the mother begins taking Maxolon 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.

c. A baby well attached to his mother's breast



Good
attachmen

d. A baby poorly attached to his mother's breast



Poor attachment
with only lips on
nipple

Proper position:

- Infants head and body must be in line
- Infant facing the breast
- Infant held close to mother
- Infants whole body supported, not just the head and neck
- Infants mouth is wide open
- Infants chin touching the breast
- Infants lower lip turned outward
- More areola seen above baby's moth

EFFECTIVE SUCKLING SIGNS

- Baby takes slow deep sucks, sometimes pausing and swallowing

BURNS AND SCALDS

FIRST AID

As a first aid treatment, immediately immersing the burnt area in water will reduce the severity of the burn. Keep immersed for a minimum of 20 minutes.

- a. Give pethidine IM every 6 hours for severe pain (see p. 154)
- b. Give tetanus toxoid 1/2 ml IM
- c. Give extra fluids

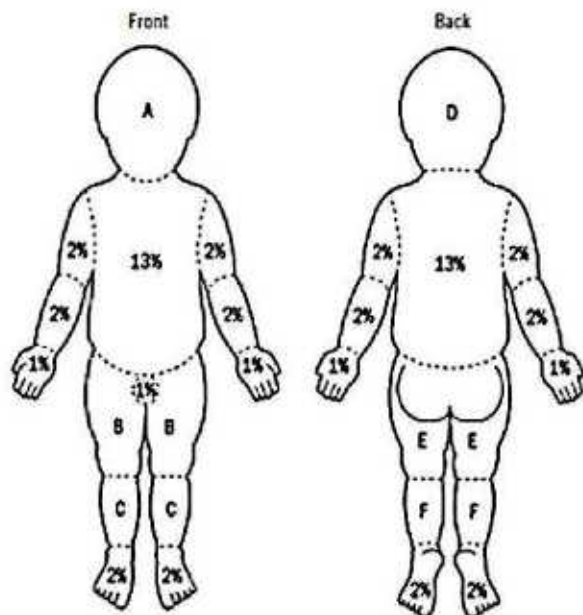
If the burn is more than 10% (one tenth) of the body area, give intravenous fluids. Start with 0.9% sodium chloride (normal saline) in the Health Centre.

Weight	Quickly (10-20 min)	Later fluid rate	Drops/min*
3 – 5.9 kg	100 ml	25 ml/hr	7 drops/min
6 – 9.9 kg	150 ml	50 ml/hr	13 drops/min
10 – 14.9 kg	250 ml	75 ml/hr	20 drops/min
15 – 19.9 kg	350 ml	100 ml/hr	25 drops/min
20 – 29.9 kg	500 ml	100 ml/hr	25 drops/min
30 – 50 kg	700 ml	150 ml/hr	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.
 - more than 10% of their body area.
 - the axilla, groin, elbow, digits, perineum, neck, face, burns encircling the torso
 - or if there is a history of being trapped in an enclosed space during a fire,
 - anyone who is unconscious or a history of loss of consciousness.
- 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 sulfadiazine cream to the burnt area each day.



If there is dirt or pus in the burn:

- Clean away dirt and dead tissue with antiseptic solution e.g. chlorhexidine (Savlon) or sterile Normal Saline.
- Apply an antiseptic dressing to the burnt area, and change it once or twice a day.
- Give benzylpenicillin (Crystapen) IM or IV 4 times a day until the inflammation goes away (p.154), then Amoxicillin orally TDS for 5 days (see p.148).

When the burnt area is clean:

- Change the dressing every 3 days OR Apply silver sulfadiazine cream daily.

Calculate burn percentage By age in years				
AGE	0 years	1 years	5 years	10 years
Head (A/D)	10%	9%	7%	6%
Thigh (B/E)	3%	3%	4%	5%
Leg (C/F)	2%	3%	3%	3%

<https://www.researchgate.net/publication/319994658/figure/fig1/A5:699930838581250@1543887924847/Paediatric-Lund-and-Browder-Chart.png>

**REFER URGENTLY TO HOSPITAL
CHILDREN WHO HAVE BURNS 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 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
- KNOW 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

SEXUAL ABUSE OF CHILDREN rape (or sexual abuse)

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.

Child abuse (continued)

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 genitals or anus
- Abnormal slackness of the anal sphincter.

In all cases of confirmed sexual abuse:

- Explain to the caregiver 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.125)
- Consider providing a course of prophylactic Antiretroviral treatment . Talk to your HIV clinic
- prevent pregnancy in older (postmenarchal) girls
- 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 authorities such as the Child Welfare Department. (Sexual abuse is a mandatorily reportable condition). Make every effort to follow up on the child's condition

RAPE

Admit child rape victims where possible. They require careful examination which might only be possible under 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 (continued)

Child abuse - of any kind and particularly child sexual abuse is an unpleasant matter to deal with. A natural response is often to be shocked but not to get involved in trying to deal properly with the situation. Remember that if the Health Worker does not 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	Augment 50 mg/kg oral x 1 Amoxicillin x 1 day normal dose
Metronidazole	30 mg/kg x 1 dose (max 750 mg dose)	Tinidazole 50 mg/kg x 1 dose (max 2,000 mg)
Azithromycin	10 mg/kg x 1 dose (max dose 500 mg)	

**** ANTIRETROVIAL PROPHYLAXIS SHOULD BE GIVEN****

(See National HIV Guidelines for how to give)

**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.**

COLDS AND URTI

(Upper Respiratory Tract Infection, Simple Cough or cold)

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.76
- If otitis media is present, treat as on p.107.
- If pus is present on the tonsils treat with amoxicillin for 10 days (p.148)

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 not indications for antibiotics unless fast breathing or another condition is also present.

TEACH PARENTS THE WARNING SIGNS OF PNEUMONIA:

FAST BREATHING AND CHEST INDRAWING

Use a flip chart if you have one

CONJUNCTIVITIS

a. Mild conjunctivitis – Treat as outpatient

1. 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) - Admit

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.125).

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: 1/4 ml
 - 2.5 kg or more: 1/2 ml

Give Benzylpenicillin IM 3 times a day for 5 days (p.154)

- Gentamicin daily dose: see Babies: Drug Doses (p. 32)

Treat the mother and father and contacts for STIs (p.125)

**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 for a dose of 0.1 mg/kg, or IM paraldehyde

Weight	Diazepam dose (rectal, ml)	Diazepam dose (IV, ml)	Paraldehyde dose (IM, ml)
3 – 5.9 kg	1/4 ml	1/4 ml	1 ml
6 – 9.9 kg	1/2 ml	1/2 ml	1.5 ml
10 – 14.9 kg	1 ml	1/2 ml	2.5 ml
15 – 19.9 kg	1.5 ml	3/4 ml	3 ml
20 – 29.9 kg	2 ml	1 ml	4 ml
30 kg or more	2 ml	2 ml	5 ml

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 child is still convulsing after another 10 min, give phenobarbitone:

- Give a loading (starting) dose of phenobarbitone as shown in the table below
- It is best to give this dose IM if possible.

Weight	Phenobarbitone IM (200 mg/ml ampoule)	Phenobarbitone oral (30 mg tab)
3 – 5.9 kg	1/4 ml	2 tabs
6 – 9.9 kg	1/2 ml	3 tabs
10 – 14.9 kg	3/4 ml	5 tabs
15 – 19.9 kg	1 ml	6 tabs
20 – 29.9 kg	1 ml	7 tabs
30 kg or more	1 ml	7 tabs

3. Reduce temperature if febrile (see Fever p.59).

4. Treat initially for severe malaria, stop if test negative (see p. 76)

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

- If the child has signs of meningitis, start treatment immediately (p.101)
- If CSF result is clear - treat for cerebral malaria (see p.76).
- If CSF is cloudy, blood stained or you cannot get CSF then treat for cerebral malaria (see p.76) and meningitis (see p.101).

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 for 4 hours, work up fever

Convulsions (continued)

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 (below 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

DAILY MAINTENANCE DOSE OF ANTICONVULSANTS		
Weight	Phenobarbitone oral (30 mg tab)	Phenytoin 30 mg capsule or tab (NOT 100 mg cap/tab)
3 – 5.9 kg	1/2 tabs	1 capsule
6 – 9.9 kg	1 tabs	2
10 – 14.9 kg	2 tabs	2
15 – 19.9 kg	3 tabs	3
20 – 29.9 kg	4 tabs	4
30 kg +	5 tabs	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 	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 	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 	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 	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 	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.56), persistent diarrhoea (p.54), or cholera (p.57)

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 kg	6-9.9 kg	10-14.9 kg	15-19.9 kg	20-29.9 kg	30-50 kg
ml/hour	100 ml	150 ml	250 ml	350 ml	500 ml	700 ml

2. Review the child immediately after Step 1 and repeat the fast IV fluid if severely dehydrated still.

3. When improved, give slower IV fluid at normal maintenance rate:

Weight (kg)	3 – 5.9 kg	6 – 9.9 kg	10 – 14.9 kg	15 – 29.9 kg	30 - 49.9 kg
Mls/hour	25 mls	50 mls	75 mls	100 mls	150 mls
Drops/min (normal set)	8 drops	16 drops	25 drops	33 drops	50 drops
Drops/minute (paediatric burette)	25 drops	50 drops	75 drops	100 drops	150 drops

Number of drops calculated based on IV giving set with drip rate factor of 20 drops = 1 ml

- Do NOT use a measuring burette: *(just add drops if burette is used/not sure of rationale for no use of 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 every hour 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 and no longer dehydrated

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

Note: If you cannot get a drip in to give IV fluids, give **Oral Rehydration Solution (ORS)** or Half Strength Darrows (HSD) by nasogastric drip. Ensure tube is in the stomach and splint the child's elbows. **Give Rehydration Solution for Malnutrition (ReSoMal)** (if malnourished)

Weight (kg)	3-5.9 kg	6-9.9 kg	10-14.9 kg	15-19.9 kg	20-29.9 kg	30-50 kg
ml/hour	100 ml	150 ml	250 ml	350 ml	500 ml	700 ml

-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:** Test for malaria and treat if RDT is positive (p. 76)

c. **Zinc tablet (20 mg tab)**

Give for 10 days

Weight (kg)	Less than 10 kg	10 kg or more
# of tablets	1/2 tab	1 tab

d. **Antibiotics are not required for most severe diarrhoea:** Give antibiotics only if 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

Antibiotic choice when very sick - for bloody diarrhoea refer to page 56

- amoxicillin (or penicillin) and gentamycin (p.152). If nil stock give chloramphenicol.

e. **Tinidazole (see p. 35 for dosage)**

1. Give orally as a stat dose if the child has: Severe malnutrition or persistent diarrhoea
2. Give tinidazole daily for 3 days if: Blood is present in the stool, (see dysentery p. 56)

f. **Albendazole 200 mg tab (must be crushed or chewed)**

Weight (kg)	Dose (200 mg tab)	No oedema	Oedema
5 - 9.9 kg	1 tab	Stat dose	Daily for 3 days
10 kg 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. 48 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 or admit until the signs are no longer present.
- 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.48)
- 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 give some food
- If severe dehydration signs appear, change to IV half-strength Darrow's solution (p.49)
- Encourage mother to breast feeding. If the child vomits: wait 10 minutes, give the ORS slowly
- If the child vomits repeatedly: give IV HSD as for severe diarrhoea
- If the child's eyelids become puffy: stop ORS and review the child after 3 hours.

How to make oral rehydration solution:

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

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 for 10 days

Weight (kg)	Less than 10 kg	10 kg or more
# Zinc tablets	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. 76).

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:

- Give the child **more fluids more often** to prevent dehydration: Use home prepared fluid
 - Thin soups from boiled vegetables are good e.g. rice-water, sweet potato-water, banana
 - Boiled water that has cooled or cold tea
 - Kulau
- Give as much of these fluids as the child will drink, **after every watery stool**, until diarrhoea stops

DIARRHOEA –mild (continued)

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

ii. Give the child **plenty of food** to prevent undernutrition:

- Continue to breast feed frequently.
- Give fresh fruit or mashed banana to provide potassium.
- Give freshly prepared foods. Rice, sweet potato or taro mixed with vegetables and meat or fish are good. Cook and mash or grind food well.
- Encourage the child to eat, and 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 | - eating or drinking poorly |
| - repeated vomiting | - fever |
| - marked thirst | - blood in stool |

**PATIENTS WITH DIARRHOEA NEED TO DRINK
MORE FLUID MORE OFTEN**

DIARRHOEA – LASTING MORE THAN 14 DAYS (PERSISTENT DIARRHOEA)

TREATMENT - Admit to hospital or health center:

- 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.76). If not sick and febrile do RDT

e. Tinidazole (500mg tablet) Give a single dose orally

Weight (kg)	Number of 500 mg tablets		Weight (kg)	Number of 500 mg tablets
3 – 5.9	1/4 tablet		20 – 29.9	2 tablet
6 – 9.9	1/2 tablet		30 – 39.9	3 tablet
10 – 14.9	1 tablet		≥ 40	4 tablets
15 – 19.9	1.5 tablet			

- Repeat dose only if first dose vomited.
- Use metronidazole if tinidazole is not available

Weight (kg)	Less than 10 kg	10 kg or more
No of metronidazole (200 mg) Tab	1 tab	2 tab

f. Albendazole 200 mg tab (must be crushed or chewed)

- * No oedema: once only
- * Oedema present: daily for 3 days

Weight (kg)	Less than 10 kg	10 kg or more
No of Albendazole (200 mg) tab	1/2 tab	1 tab

DIARRHOEA LASTING MORE THAN 14 DAYS – PERSISTENT (continued)

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

Weight (kg)	Less than 10 kg	10 kg or more
Number of Zinc (20 mg) tablets	½ tablet (10 mg)	1 tablet (20 mg)

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

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

(Use IMCI Flipchart pictures to help discuss if you have one)

DIARRHOEA WITH BLOOD - DYSENTERY

- Treat as for diarrhoea (see pages 48-54).
- 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:
 - o Malnutrition
 - o Small amounts of blood in the stool for > 3 days
 - o Blood and mucus mixed throughout the stool
 - o Large amounts of blood in the stool
 - o Looks very sick.

If the child has blood in stool and abdominal pain associated with or without distension:

- possible intussusception, needs urgent admission and/or referral

Treat the child with:

- **Ciprofloxacin** 10-20 mg/kg orally twice daily for 5 days (below)
- **Amoxicillin and Gentamycin** IV (p.148, 152) if child very sick or **Ceftriaxone** at 50 mg/kg twice daily and refer asap
- **Tinidazole** - Give orally once daily for 3 days (see p.155).
- **Albendazole** (see p.148).
- **Antimalarials** (if RDT positive p.76).
- **Zinc tablets** (see p. 34). 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** 20 mg/kg stat

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

A. The common causes of fever in children are:

- upper respiratory tract infection
- malaria
- otitis media (ear infection)
- measles
- viral gastroenteritis (watery diarrhoea)
- pneumonia
- meningitis
- urinary infection
- abscess

Take a history and do a physical examination to find the cause of fever in your patient.
Collect urine for microscopy or urine dipstick (make sure it is a clean catch)

B. TREATMENT

- Treat the cause of the fever
- 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. 76).
- Paracetamol to reduce fever if temperature over 38° 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.153). If paracetamol is not available do NOT use aspirin in children less than 10 years old for fever reduction.

- Give extra fluids
- Cool sponge if the temperature is over 38° 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).

Does the child have **at least one** of the following clinical features?

1. Low weight for age
2. Persistent fever (for a month or more)
3. Enlarged lymph nodes in one or more of the following regions – neck, axillae, groin
4. Evidence of oral candidiasis (oral thrush)

YES

Suspect symptomatic HIV infection

NO

Symptomatic HIV infection unlikely

TEST CHILD FOR HIV INFECTION

- ANTIBODY TESTING IF ≥ 18 MONTHS OLD
- PCR DNA/RNA TESTING IF BETWEEN 6 WEEKS AND 18 MONTHS OLD

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 follows 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.
- 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

Current evidence states that Exclusive Breast Feeding (EBF) for the first 1st months provides the best chance of overall survival for the large majority of children, irrespective of the HIV status of mother and baby

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. Prevention of TB (TB Preventive Therapy or TPT) – see also p. 141

a) HIV Exposed Infants

All HIV exposed infants who has close contact with an adult with TB such as a family or household member (bacteriological confirmed or not) as long as the child is asymptomatic for TB and has no active TB disease should receive TB prophylaxis for six months.

b) Children Living with HIV

All children who are living with HIV who have negative TB screen and do not have active TB disease should receive TB prophylaxis for six months. The standard regime for IPT is:

- Isoniazid (INH) 10 mg/kg/day(max 300 mg/day (see p. 141)
- Vitamin B6 (Pyridoxine) 2-3 mg/kg daily - if available

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 Keoconazole or Fluconazole
Prolonged or bloody diarrhoea	Ciprofloxacin (p. 56) or azithromycin and albendazole (p.148), tinidazole, and zinc.
Pneumonia	Give the usual treatment given severity (e.g. penicillin + gentamycin) plus co-trimoxazole. If fails to respond, consider TB treatment

HIV - PREVENTION OF HIV INFECTION IN CHILDREN

If the mother is tested positive: All infant should receive ARV prophylaxis depending on the risk of mother to child transmission. ARV prophylaxis at birth depending on the risk of mother to child transmission

Infant prophylaxis regime should be chosen based on the assessment of the mother to child transmission on the table below

Infant of High Risk of MTCT are born to women who	Infant at Low Risk of MTCT are born to women who
1. Identified as HIV positive in the postpartum period and breast feeding 2. Acquire HIV infection during pregnancy or breastfeeding 3. Where VL is available, have VL > 1000 copies/ml at delivery or in the last 4 weeks of pregnancy OR 4. Where Viral Load not available have been on ART for less than 4 weeks at delivery	1. Have received at least 4 weeks of ART before delivery or 2. Have Viral Load < 1000 copies /ml within 4 weeks prior to delivery
ARV prophylaxis for infants with High MTCT	ARV prophylaxis for infant with low MTCT
AZT and NVP for the first 6 weeks of life + NVP for additional 6 weeks	NVP only for the first 6 weeks of life
Total 12 weeks	Total 6 weeks

AZT prophylaxis - Simplified dosing infant ARV Prophylaxis

Infant Age	NVP	AZT
Birth to 6 weeks		
Birth weight 2000g to 2499g	10mg or 1ml of syrup once daily	10mg or 1ml of syrup twice daily
Birth weight ≥2500g	15mg or 1.5ml of syrup once daily (10mg/ml)	15mg twice daily or 1.5 ml of syrup twice daily(10mg/ml)
> 6 weeks to 12 weeks (for high risk MTCT)		
	20mg once daily or 2mls of syrup (10mg/ml) once daily B 25mg (half 50mg) once daily	

HIV (continued)

NVP prophylaxis - Simplified dosing infant NVP prophylaxis

Infant Age	Daily Dosing
Birth* to age 6 weeks	
Birth weight 2000 – 2400g	10 mg once a day
Birthweight >2500g	15 mg once a day
* 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 (if not already on it). For the high risk mother to child transmission the ARV prophylaxis should be continued for another six weeks.
3. All infants with an initial positive PCR result should be started on ARV therapy 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. Before commencing children who are tested positive for HIV, baseline bloods including a Full blood examination, Liver function test, renal function test and a chest x ray to rule out TB should be done. However blood investigations are not a prerequisite for commencing ARV therapy in hospital settings where you are unable to do.

Preferred first line ARV regime for adults, adolescent and children

Population	Preferred 1 st line	Alternate 1 st line Regime
Adults and adolescent weighing $\geq 30\text{kg}$	TDF+3TC+DTG	ABC+3TC+DTG TDF+3TC+EFV TDF+3TC+ LPV/r (Consult HIV Physician)
Children weighing $<30\text{kg}$	ABC+3TC+DTG	ABC+3TC+LPV/r)

Simplified ARV dosing formulation according to weight bands.

Number of ARV tablets by weight band once daily								
Drug	Strength of tablet	3-5.9 kg	6-9.9 kg	10-13.9 kg	14-19.9 kg	20-24.9 kg	25-29.9 kg	>30 kg
ABC:3TC	Tablet (dispersible) 120/60 mg	1	1.5	2	2.5	3	-	-
DTG	Tablet (dispersible) 10 mg	0.5	1.5	2	2.5	Change to DTG 50 mg	-	-
ABC/3TC (600:30 mg)	Tablet 600:300 mg	-	-	-	-	-	1	-
DTG	Tablet 50mg	-	-	-	-	1	1	Change to TDF:3TC: DTG
TDF:3TC: DTG	Tablet 300:300:50mg	-	-	-	-	-	-	1

TDF (Tenofovir) 3TC (Lamivudine), DTG (Dolutegravir) , ABV (Abacavir), AZT (Zidovudine), NVP(Nevirapine)

Simplified ARV drug dose adjusted for children receiving rifampicin containing TB

A. Children living with HIV who get diagnosed with TB

- a. If the child is on DTG, they will require an additional dose of DTG in the evening. This is detailed in the dosing table on the next page

B. Children diagnosed with TB who are found to have newly diagnosed HIV

- a. Start TB treatment and then start ART as soon as possible (within 2 weeks)
 - i. See dosing table next page

Dosing of ARV when a child is on TB treatment

Continue the DTG at twice daily until 2 weeks after stopping TB treatment

Drug	Strength of tablet	3-5.9 kg		6-9.9 kg		10-13.9 kg		14-19.9 kg		20—24.9 kg		25-29.9 kg		>30kg	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	A M	P M	AM	PM
ABC:3TC	Tablet dispersible 120/60 mg	1		1.5		2		2.5		3		-		-	
DTG	Tablet dispersible 10 mg	0.5	0.5	1.5	1.5	2	2	2.5	2.5	Change to DTG 50 mg		-		-	
ABC/3TC (600:30)	Tablet 600:300 mg	-		-		-		-		-	1			-	-
DTG	Tablet 50mg	-		-		-		-		1	1	1	1	change TDF:3TC: DTG	
TDF:3TC: DTG	Tablet 300:300: 50mg	-		-		-		-		-	-	-		1	

HIV –PREVENTION OF HIV INFECTION IN CHILDREN. Continued

k. Viral Load Monitoring in Children

- All children living with HIV should have a viral load test 6 months after the commencement of antiretroviral treatment
- Children who are not virally suppressed (VL>1000 copies/ml), an enhanced adherence counseling should be done. Ensure these cases are discussed with your HIV clinic or PDCO/HIV Coordinator
- ASK your provincial disease control officer or nearby HIV clinic for guidance

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)
- Be faithful to one partner who is faithful to you
- Use a Condom

It is sad if a baby is born with HIV infection- but 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 2-8°C), 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.

IMMUNISATION Policy for Children

- All infants should be vaccinated with BCG and Hepatitis B at birth, a child health record book for the infant is provided and given to the mother at this time, with the next appointment written in the child record book.
- Immunization status should be checked at all contacts with children under 5 years
- If an infant is late for an appointment the vaccine should still be given, Do not re-start the immunization schedule
- For children under age of 5 years who have NOT been previously vaccinated (the unvaccinated/zero-dose received) -- A full course of vaccines should be given per schedule, starting on date seen.
- For Children under age of 5 years with In-Complete vaccination -- Catch Up vaccination should be done so that the child completes the full immunisation schedule
- Children with incomplete vaccination. Catch up vaccination should be done so that the child completes the full immunisation schedule. For example a child of two who has not received the third dose of Pentavalent, PCV and Sabin, should be given these vaccines plus a dose of IPV and MR vaccine. A second dose of MR vaccine should be given at some stage in the following 12 months.

Immunizing SICK infants

- Infants with a mild illness and/or fever below 38.5 C can be vaccinated as usual. This includes infants with cough and cold, diarrhoea and other mild infections without high fever. Immunisation
- Very sick infants with a fever over 38.5 C should not be vaccinated and should be treated accordingly. (vaccines should be given when temperature returns to normal)
- Malnourished and under-weight children should be vaccinated as usual.
- **ABSOLUTE CONTRAINDICATIONS FOR IMMUNIZATION**
- Anaphylaxis after a previous dose: persons with a known allergy to a vaccine.
- BCG vaccine should not be given to children who are known to be HIV infected.
 - o ---Other vaccines can be given to HIV infected children

Policy on immunizing women (Tetanus Toxoid)

- Routine Immunization Session

- All women aged 15 to 45 years whether pregnant or not should be immunized with tetanus toxoid according to their TT immunization status, with up to 5 doses of TT for full immunization status. A TT immunization card should be provided.
- Ante-natal Session: All pregnant women should be offered TT at ante-natal clinic sessions, according to their immunization status and the TT schedule.

Policy on Immunization of School Children

All school children should receive

- Tetanus toxoid and MR at school entry and on school Exit
- HPV Vaccine 1st dose for ages 9 to 13 years and 2nd dose 6 months after 1st dose.
- Always check expiry date on the ampoule or vial and the vaccine vial monitor (VVM)
- Never use vaccines that have expired. Never use vaccines with VVM stage 3 & Stage 4
- Keep all vaccines in the main compartment of the refrigerator (temperature 2-8°C), 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 with conditioned ice packs 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.
- 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 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 28 days, as long as the cold chain is working and the vaccine vial monitors

- indicate that the vaccine is in good condition. Use the opened vials first in the next immunisation session
- Discard reconstituted BCG and Measles vaccines at the end of each immunisation session.

PNG National EPI Schedule Figure

Vaccines	At Birth	1 month	2 month	3 month	6 mo	9-12 mo	18-24 month	7 years	9-13 years	13 years
BCG										
Hep B*										
bOPV										
IPV										
Penta-valent										
PCV-13										
MR										
Td										
HPV**										
Vit A***										
Albendazole****										

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 **MUST** be given within 24 hours of birth
- It is **NOT** recommended to give BCG to children >12 months of age or BCG Booster doses because it will be less effective.
- Tetanus Diphtheria (Td) is now used, formerly called Tetanus Toxoid (TT)

*** Vitamin A, given at 6 months of age, and then every 6 months thereafter

****Albendazole is given at 12 months of age, and then every 6 months thereafter.

PNG IMMUNIFICATION SCHEDULE TABLE

VACCINE	WHEN TO GIVE	WHAT DOSE	ROUTE TO GIVE	SITE
BCG	1. At Birth or as soon as possible up to 11 months of age	0.05ml	Intraderma I	Left Upper Arm
HEPATITIS B VACCINE	1. At Birth or as soon as possible Within 24hours of birth	0.5ml (10mcg)	Intra-muscular (IMI)	Right Antero-lateral mid-thigh
ORAL POLIO (bOPV)	1. One month of age 2. One month after 1 st dose 3. One month after 2 nd dose	2 drops	Orally	Oral
INACTIVATED POLIO VACCINE (IPV)	1. Three Month of age 2. Nine Month of age	0.5ml	Intra-muscular (IMI)	Right Antero-lateral mid-thigh
PENTAVALENT VACCINE	1. One month of age 2. One month after 1 st dose 3. One month after 2 nd dose	0.5ml	Intra-muscular (IMI)	Right Antero-lateral mid-thigh
PNEUMOCOCCAL CONJUGATE VACCINE (PCV-13)	1. One month of age 2. One month after 1 st dose 3. One month after 2 nd dose	0.5ml	Intra-muscular (IMI)	Left Antero-lateral mid-thigh
MEASLES /RUBELLA VACCINE (MR)	1. At 6 months of age or as soon as possible afterward 2. At 9 months of age or 3 months after 1 st dose 3. At 18 months of age	0.5ml	Sub-cutaneous (SubCut)	Right Upper Arm
TETANUS DIPHTHERIA (formerly tetanus toxoid)	1. First year Community school 2. Last year community school 3. During pregnancy (2 doses, 4 weeks apart in first pregnancy, one dose in each of the next pregnancies)	0.5ml	Intra-muscular (IMI)	Left Upper Arm
VITAMIN A CAPSULTS	6 months & 9 months: <u>100,000 units</u> (blue capsule) 18 months of age: <u>200,000 units</u> (red capsules)		Orally	Oral

IMMUNIZATION (continued)

KEY MESSAGES:

1. Explain what vaccines are to be given and what it is for: (Use language the care taker can understand)
2. Explain the possible side effects and how to treat them.
3. Advise the care taker the place and time for the next immunization
4. Always bring back a child for immunization even if he or she is ill.
5. Keep the immunization card safe and always carry it to immunization session.

SURVEILLANCE OF VACCINE-PREVENTABLE DISEASES

The following suspected vaccine-preventable diseases must be reported and investigated

- Suspected Measles or Rubella (Acute Fever and Rash (AFR): fever, rash, cough, runny nose, conjunctivitis)
- Acute Flaccid Paralysis, AFP (sudden onset of floppy paralysis in child under 15 years of age)
- Suspected Neonatal Tetanus, NNT (new born less than 28 days unable to suck and cry and has muscle spasms)
- Diphtheria (severely ill child with sore throat, tonsillitis, swollen neck)
- Pertussis (child with fits of coughing with a 'whoop' at end of cough and vomiting)

REPORTING ADVERSE EVENTS FOLLOWING IMMUNIZATION (AEFI)

DEFINITION OF AEFI

An adverse event following immunization (AEFI) is defined as a medical event or incident that takes place after an immunization, but is not necessarily caused by immunization

FIVE MAIN TYPES OF AEFI

1.Vaccine reaction	Event caused by the active components of the vaccine.
2.Programme errors	Event caused by an error in vaccine preparation, handling, or administration.
3.Coincidental	Event that happens after immunization but is not caused by the vaccine. This is due to a chance association.
4.Injection reaction	Event arising from anxiety about, or pain from, the injection itself rather than the vaccine.
5.Unknown	The cause of the event cannot be determined.

What AEFI should be reported by health workers?

- All injection site abscesses.
- All cases of BCG lymphadenitis.
- All deaths that are believed by health workers, or the public, to be related to immunization.
- All cases requiring hospitalizations that are believed by health workers, or the public, to be related to immunization.
- Other severe or unusual medical incidents that are believed by health workers, or the public, to be related to immunization

No need to report: Minor local reactions, and fever, are expected to occur after immunization, and are not normally reported as AEFI.

How to Report AEFI: Call the Provincial Disease Control Officer immediately by phone.

1.What Information to Report for AEFI

- Details for person reporting including place, time of report and telephone number
- A description of the event including date and time of onset of AEFI;
- Timing of the event in relation to immunization;
- Vaccine(s) given including manufacturer and batch number, VVM and expiry date;
- Case identifying details including address and family member contact.
- The PDCO makes an investigation and arranges for laboratory specimens to be sent to the Central Public Health Laboratory.
- A full case investigation using a case investigation form.
- Never delay in reporting because an urgent immunization response will be needed.

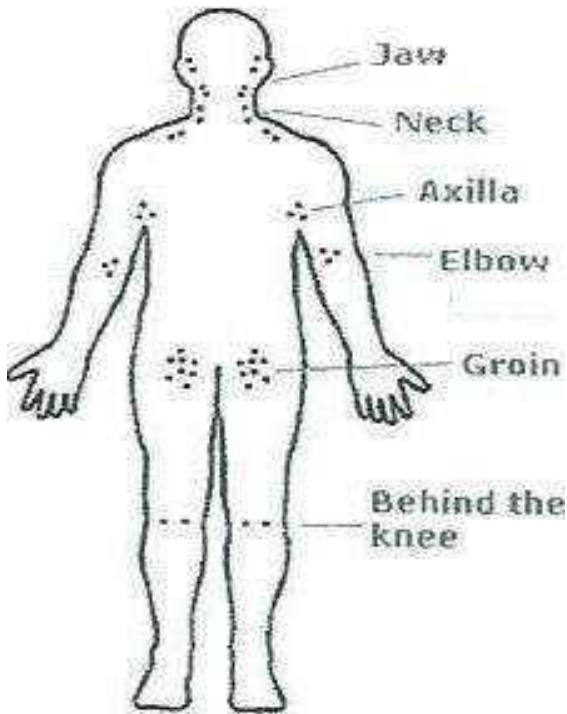
LYMPH GLAND ENLARGEMENT

Lymph nodes larger than 1cm may be caused by:

- Acute infections
- Tuberculosis
- Malignancy
- HIV

It is normal for children to have persistent and small < 1-2cm neck glands as they frequently get coughs/colds. You need to suspect something else if the lymph nodes persist and get bigger

Below is a diagram summarizing position of lymph glands:



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.148). Flucloxacillin orally for 2 weeks if cellulitis (see p.150)
- If abscess forms perform 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 for tuberculosis:

- Take a history of TB contact within the family
- Do a TB Score (see p.134). Treat for TB if score ≥ 7
- Perform a fine needle aspiration (FNA) of the lymph gland and send for GeneXpert. This can diagnose many cases of TB this way, but just inserting a needle and aspirating fluid/tissue. If you are unsure, ask your TB clinic, pathologist, or surgeon to perform an FNA
- In a high TB setting like PNG, you can treat with antibiotics. If the lymph nodes do not go down, then treat for TB on a clinical diagnosis
- If someone has very large lymph nodes and is treated for TB, educate patient the node may initially get LARGER. This is normal and a sign the drugs are killing the TB bug. Large ulcers and draining sinus tracts may form. DO NOT stop treatment
- Note that scarring may persist for years after and does not require repeated TB treatment

MALARIA

ASSESS - SIGNS	CLASSIFY	ACTION
- Any of the TOO SICK signs, OR - Stiff neck - Fever 	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 	UNCOMPLICATED MALARIA	- Give ACT (Co-artem, MALA) - Give 1st dose of paracetamol, if temp $\geq 38^{\circ}\text{C}$ - 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 	MALARIA UNLIKELY OTHER CAUSES FOR FEVER	- Do not give ACT (Co-Artem, MALA) - Give 1st dose of paracetamol if temp $\geq 38^{\circ}\text{C}$ - 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 (CO-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		

MALARIA - SEVERE

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

- Artesunate suppositories are available in 50mg & 200mg strengths. 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 – give 10 mg/kg

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

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

Malaria is not common in children with body weight lower than 3 kg

Other causes of fever must be fully looked for, and management/care should be supervised in a hospital setting

At Health Centre

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

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

MALARIA (continued)

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 if completed full course of Coartem / Mala

a. If completed full course of Artemether-Lumefantrine (AL = Coartem, MALA) and blood slide remain positive

- If able to swallow give Dihydroartemisinin-piperaquine (DP) (p. 151)
- If still very sick or unable to swallow give quinine

b. If did not complete full course of Artemether-Lumefantrine (AL = Coartem, MALA)

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

Artesunate Injection (60mg) (A)

The mixture can be given IV or IM

- IV mixture is 60 mg in 6ml
- IM mixture is 60 mg 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

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: 1 st dose & 2 nd dose (12h)	0.6ml	1ml	2ml	3ml	4ml	6ml	8ml	10ml	12m
	Day 2 onwards: once a day	0.6ml	1ml	2ml	3ml	4ml	6ml	8ml	10ml	12m
IM 60mg in 3mls	Day 1: 1 st dose & 2 nd 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 course of Artemether-Lumefantrine as in treatment for uncomplicated malaria below (p. 75-76).

MALARIA (continued)

Do a lumbar puncture if you can:

- If CSF clear: Give IM or IV artesunate injection (above table p.76)
- If CSF cloudy or bloodstained, or if you cannot get CSF: Give IM or IV artesunate and ceftriaxone for meningitis (see p.101)

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 5 ml/kg over 5-10 minutes then run Hartmann's solution + dextrose or dextrose / saline at "coma regimen" rate (see p.158).
- If IV Dextrose is not available, give N/G Full Strength Sunshine Milk (FSSM) 4 times a day (p.104)
- 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 10 mg/kg every 8 hours for 7 days (p.80)

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

MALARIA (continued)

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.

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)	1 st dose at 0 hours	1/4	1/2	1	2	3	4
	2 nd dose after 8 hours	1/4	1/2	1	2	3	4
Day 2 (AL)	3 rd dose after 24 hours	1/4	1/2	1	2	3	4
	4 th dose after 36 hours	1/4	1/2	1	2	3	4
Day 3 (AL)	5 th dose after 48 hours	1/4	1/2	1	2	3	4
	6 th 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 < 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.

MALARIA (continued)

Second line treatment

WHAT TO DO WHEN THE FIRST LINE TREATMENT FAILS

- Criteria for treatment failure:
 - Patient has completed a full course of AL
 - Did not have vomiting or diarrhoea whilst taking treatment
 - Positive PF blood slide (if microscopy available) within 14 days after full course of AL
 - No other obvious cause of fever
- All patients with treatment failure within 14 days after a full course of treatment with AL must be referred to the nearest health facility that has a microscope for parasitological confirmation.
- Treatment failure within 14 days of receiving an ACT (e.g. Artemether-Lumefantrine) is very unusual and should be confirmed by microscopy, documented and reported

TREATMENT

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

MALARIA (continued)

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	1 1/2
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.100).

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
- 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
- For children who are sick requiring admission follow the 8 steps outlined below under **inpatient treatment of severe malnutrition**, these include:
- 3 Treat infection (rule out TB, HIV, UTI and resistant malaria)
Fatten the child:
- 5
 - 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

Measuring and recording the weight *zero the scales first*

1. Weigh the child carefully on the most accurate scales available.
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 months) = 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.
5. Record all children with malnutrition in the malnutrition registry.

2. Decide the child's nutritional state: use any one of these 3 criteria

a. Weight for Age (charts on page 87-88)

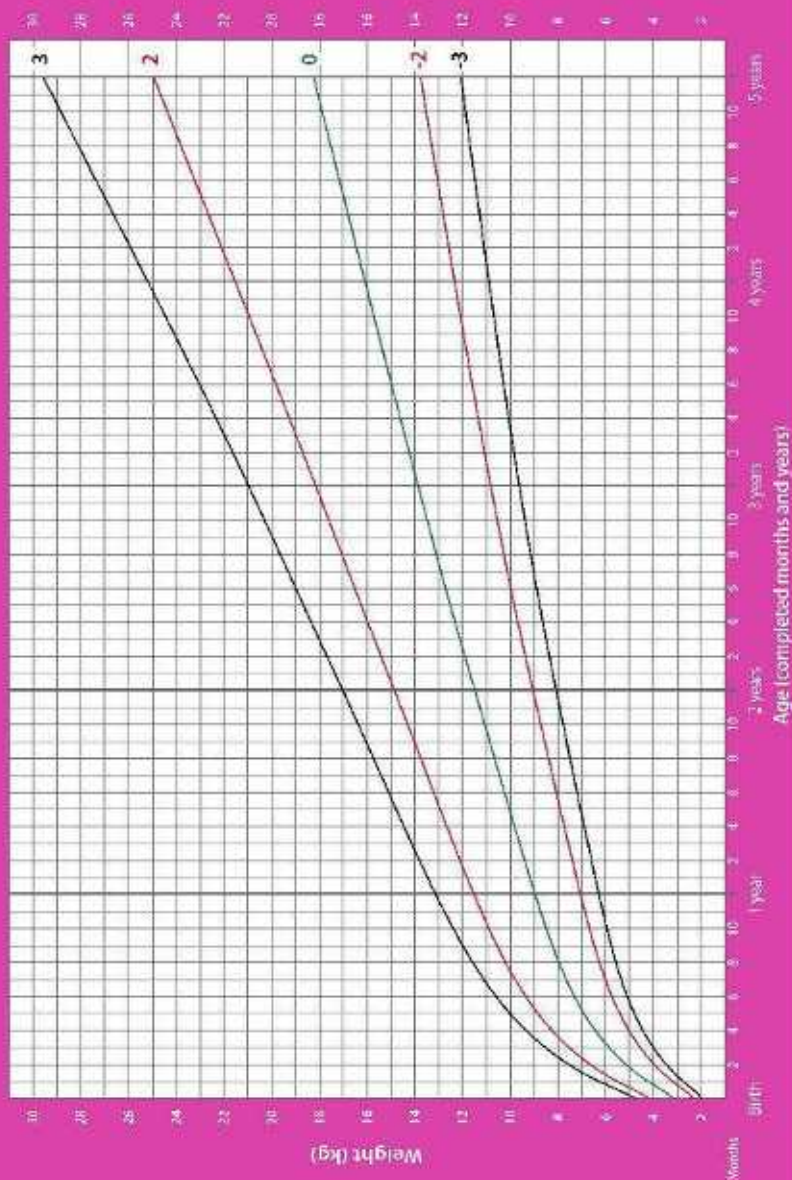
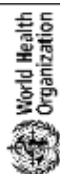
1. If the weight is above -2SD and increasing, then the child is well nourished.
2. If the weight is between -2SD and -3SD and increasing then the child is also well nourished.
3. If he is under 6 months, check that he is exclusively breast feeding
4. If he is over 6 months old, check that he is being 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.82)

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 to download at <http://pngpaediatricsociety.org/treatment>.

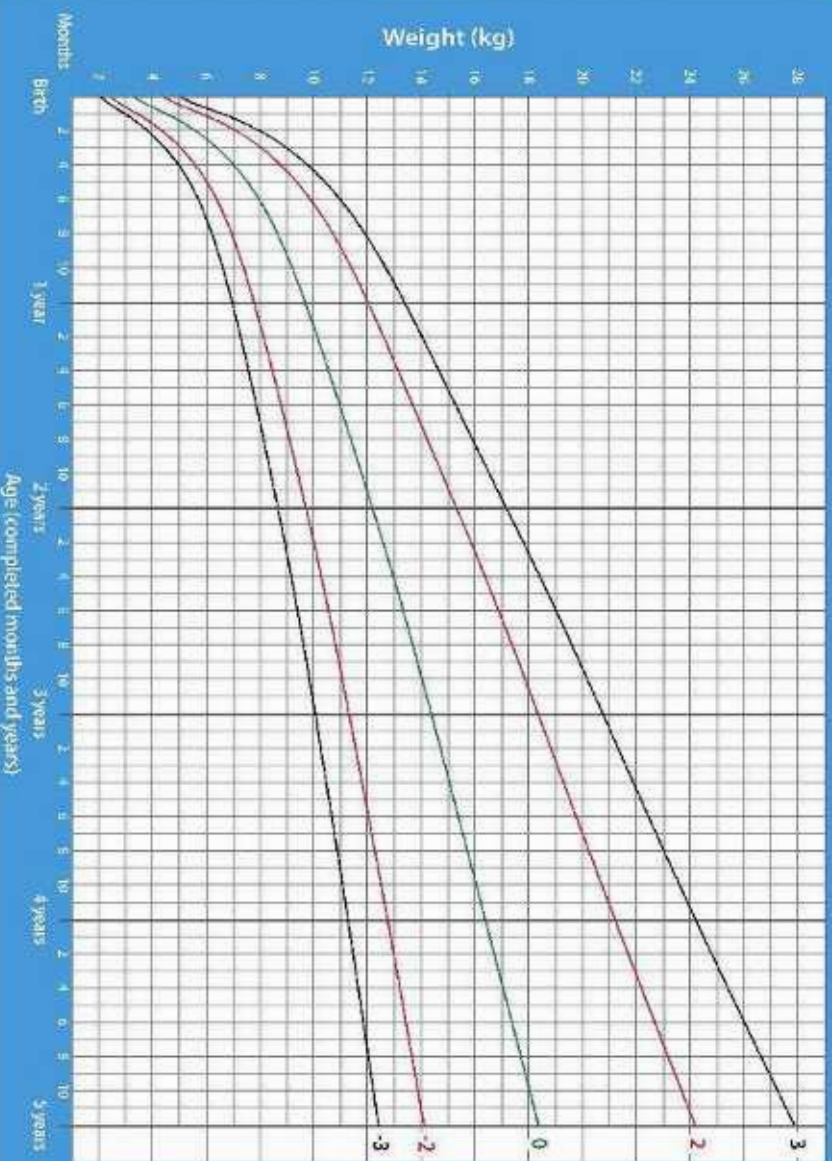
Weight-for-age GIRLS

Birth to 5 years (z-scores)



Weight-for-age BOYS

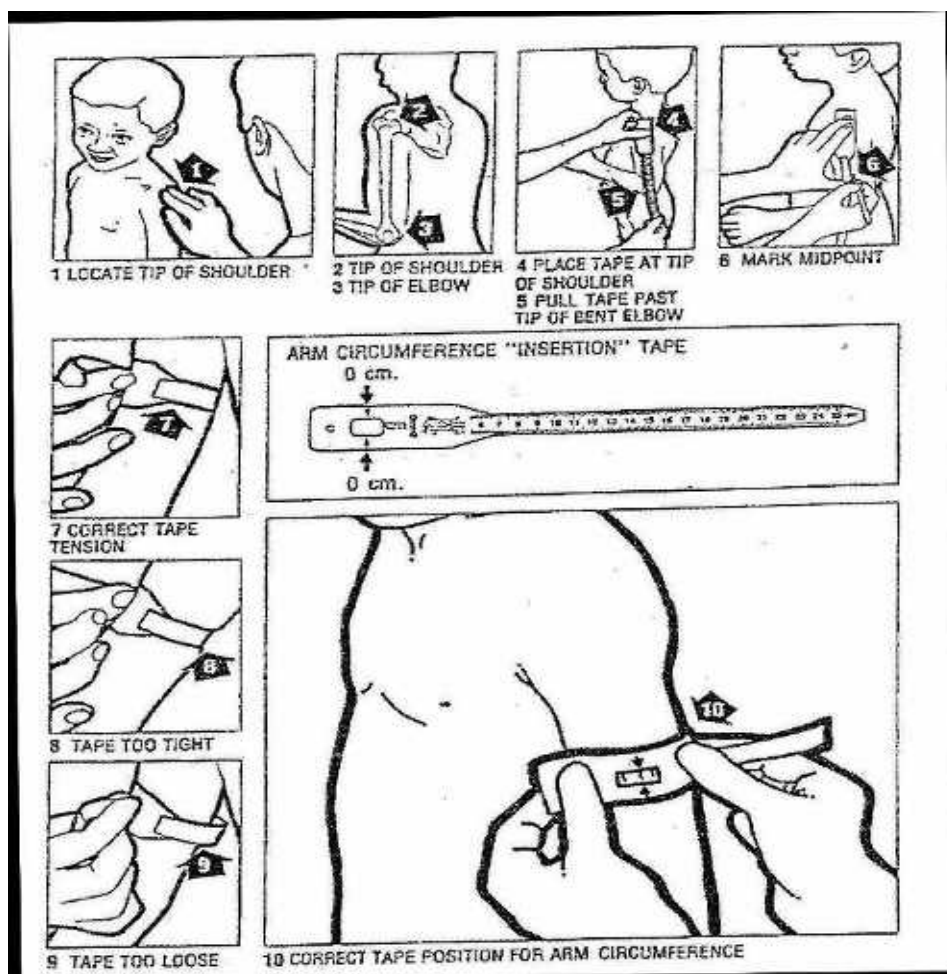
Birth to 5 years (z-scores)



C. Mid upper arm circumference (MUAC)

1. Always take the MUAC reading on the left mid upper arm for a child from 6 months

Mid-Upper Arm Circumference	Severe	Moderate	Normal
Age group	MUAC (cm)		
6 months to <6 yrs	< 11.5	11.5 to ≤ 12.5	12.5-13.5
6 years to <10 years	≤ 13.5	13.5 to ≤ 14.5	NA



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.
- Not enough meals of solid food each day (should be 4-6 every day).
- Too much "junk food" (sweet biscuits, cheese pops, lolly water)
- 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.154) or cotrimoxazole (Septrin) twice a day for 7 days (p.150)

5. Give a single dose of albendazole (see p.148)

6. Examine for anaemia (see p.20): 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.76).

Ensure the child is sleeping under an insecticide treated bed net.

9. Check for tuberculosis by performing a **TB Score** (see p.134)

You may need to reconsider TB if the child is not improving in weight after a month and has symptoms of TB. Be sure to ask about any TB contacts as this makes it higher risk of them having 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

RUTF DOSING TABLE

Weight of child	RUTF packets per day	Packets per 2-week supply
3.5 – 3.9	1.5	22
4 – 5.4	2	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 kg	5.0	70

- RUTF Instructions:
- 1) wash hands before opening RUTF package
 - 2) Finish package within 1 day
 - 3) Offer RUTF before other foods as it has better nutrition, vitamins, and micronutrients to promote healing and weight gain

13. Discharge criteria: follow the patient until one of the following criteria is met

- MUAC > 12.5 cm (this is the easiest)
- Weight for height is > -2SD (if measurement is possible)
- Weight for age is greater than the -2 line or >60%

Note: it is better to use MUAC or WFH (more accurate). Otherwise use weight for age (WFA)

- 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.21)

1. Prevent and treat hypoglycaemia: Diagnosis: blood glucose is < 3 mmol/L.

If unable to check glucose assume hypoglycaemia and treat.

Treatment: If awake and able to drink, give 50 mL of sugar water 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 hypoglycaemia:** give the first feed of therapeutic milk feeds as soon as possible

2. Prevent and treat hypothermia: A rectal temp < 35.5°C or an under-arm temp < 35°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 - REHYDRATION PROTOCOL FOR MALNUTRITION

Treat dehydration

Give extra ReSoMal or ORS in-between feeds

i) < 10kg: 50-100 ml between feeds for 6-10 hrs

ii) > 10kg: 100 ml between feeds for 6-10 hrs

* ReSoMal preferred, use ORS or modified ORS if available

* Monitor closely for signs of fluid overload

* Insert NG tube if unable to take orally

Prevent dehydration

i) 50-100 ml per loose stool if <10kg

ii) 100 ml if >10 kg

*Note: it is important child receives *something*. If milk not available, then give ReSoMal or ORS until milk becomes available to prevent dehydration

* Continue breastfeeding

If there is history of diarrhea treat according to MILD DEHYDRATION in the diarrhoea section (p.48) 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. Follow the treatment in STEP 3 or you treat according to diarrhoea section for severe dehydration (p.48)

4. Correct electrolytes and micronutrients

- Feeds that are designed based on WHO recommendations such as F75, F100 and RUTF have sufficient electrolytes and nutrients and you don't add those extra medications (i.e. no Vit A)
- If FSS or MOF are given, then the following electrolytes should be given daily if available as outlined in the next page

MALNUTRITION – INPATIENT (continued)

Electrolytes to be given if using FSS or MOF (*pre-mix F75/F100 already has them included*)

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
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Give Vitamin A if NOT using commercial F75/F100 (commercial F75 has 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 (even if using commercial F75/F100)

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.148.152)
- Crystalline penicillin may be changed to oral amoxicillin after 2 days if clinically stable
- Use flucloxacillin (p. 150) instead of crystalline penicillin if 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. 149) and flucloxacillin (or cloxacillin p.150)
- **Treat worms:** Albendazole: (must be crushed or chewed) - p. 148
- **Tinidazole** once daily for 3 days (p. 155)

MALNUTRITION – INPATIENT (continued)

- 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 (p.76): Check for enlarged spleen and ask about recurrent fevers. Test and treat for malaria if present. Give weekly prophylaxis up to 3 months if in a malarial area, or until the child well

- **Give measles and other vaccinations as required**, check immunization record.
- **Investigate for TB:** Do a TB score (p.134), Chest Xray, and GeneXpert if possible

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

- Haemoglobin
- Blood slide for malaria
- 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 (p. 96)
- Insert a naso-gastric tube if child not feeding well (eating < 75% of milk 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 after 3-5 days
- If the child has oedema: Maintain the child on F75 until the oedema fully resolves

Catch up growth Rehabilitation phase:

- After changing to F100 (or MOF) for 2 days, increase the volume slowly by 10 ml every day. Until you reach 220 mL/kg/day is reached as shown in **Feeding chart 2.**
- You must increase feeds so child gains weight. If the child is more than 6 months of age and able to tolerate the milk feeds well, then give give RUTF instead of milk feeds (e.g. 'Plumpy-nut' or 'Ezee-paste').

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 (MOF)

F-100 (or MOF) milk volumes during catch-up grown

Weight of child (kg)	Amount of milk for each feed (130 ml/kg/day)	Amount of milk for each feed (200 ml/kg/day)
	START WITH THIS VOLUME	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 as tolerated 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 - go slowly and see how child tolerates it

Note: For children with oedema, the oedema should be gone before starting F100 or MOF

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

RUTF Instructions: wash hands before opening RUTF package Finish an open package within 1 day Offer RUTF before other foods as it has better nutrition, vitamins, and micronutrients to promote healing and weight gain	Weight of child	RUTF packets per day	Packets per 2-week supply
	3.5 – 3.9	1.5	22
	4 – 5.4	2	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 kg	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

Continue nutrition support as an outpatient one of following criteria are met:

- MUAC > 12.5 cm (6 months - 5 years) (easiest) – 1st choice
- Weight-for-Height > -2 SD – 2nd choice
- Weight-for-age > -2 line or >60% - only if you can't do MUAC or WFH

If the child can be reliably followed in clinic, are in a safe home environment, they can go home and monitored every 2-4 weeks as an outpatient

Dietary education - discuss Nutritional messages (p.84)

Family planning - discuss available methods – this can save lives and is critical

If the child does not respond to the above treatment there may be some underlying cause such as TB or malignancy or other condition. Refer the child to a paediatrician if you can.

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

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
- difficulty with drinking
- stridor (noisy breathing)
- convulsions
- severe oral thrush

TREATMENT

- Give paracetamol if temperature is over 38.0 C (see p. 153).
- Extra fluids, if diarrhoea (see p.48).
- Conjunctivitis. Treat this with antibiotic eye ointment. (see p.44).
- Treat pneumonia (see p.114) and otitis media (see p.108) if present.
- 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

- 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 them measles vaccine as well.
- Vaccinate all children in the ward > 6 months age who have not had measles vaccine.
- Treat oral thrush if present: **Nystatin** 1 mL TID or Gentian Violet BD x 7 days – OR – **Fluconazole** PO 6 mg/kg day 1 then 3 mg/kg/day x 7 days

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)
- Folic acid
- Salbutamol
- ORS
- phenobarbitone (phenobarb)

1. Make sure that you are giving the correct medicine and the correct dose.

Carefully check this book.

2. Only put one kind of medicine into a bottle

- do not mix two different types of medicine in the same bottle.

3. Explain to the mother:

- When she should give the medicine to the child.
- That she should store the medicine out of reach of the child.

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

Note: Empty penicillin bottles are very useful.

Before the clinic commences:

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

MEDICINES MUST ALWAYS BE LABELED

MENINGITIS OR SEVERE SEPSIS

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

The signs of meningitis or severe sepsis are high fever, severe headache, neck stiffness, severe vomiting, repeated convulsions, lethargy or unconsciousness, bulging fontanelle, severe respiratory distress, shock (weak 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. 76).

If there are any signs of **skin sepsis** (boils, pustules, swollen joints) give **flucloxacillin** (p.150) 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.

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 (SpO₂) using a pulse oximeter, if SpO₂<94% give oxygen

MENINGITIS (continued)

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 table below

CEFTRIAZONE DOSING TABLE (50 mg/kg IV twice daily)

Weight	No of mls given <u>TWICE</u> a day	Weight	No of mls given <u>TWICE</u> 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)

If ceftriaxone, cefotaxime or ceftazadime are unavailable give chloramphenicol 25mg/kg IM or IV every 6 hours for 14 days and refer the child when safe. Chloramphenicol dosing p. 149

If you do not have either ceftriaxone or chloramphenicol, give benzyl (crystalline) penicillin IM every 3 hours and refer to hospital immediately. (p.154)

2. Anticonvulsants – dosing next page

- Give oxygen

- Check the **blood glucose** if you can and give 5 ml/kg 10% dextrose IV or sugar under tongue if confirmed or suspected hypoglycaemia.
- Give rectal diazepam (see p.150)
- Prevent further fits with **phenobarbitone**. Give loading (starting) dose IM (15-20mg/Kg) and then daily maintenance dose (5mg/Kg/day) 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	Weight (kg)	No of ml
3 - 5.9	100 ml	15 - 19.9	250 ml
6 - 9.9	150 ml	20 - 29.9	300 ml
10 - 14.9	200 ml	30 - 49.9	

- **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.
- *In children with meningitis, only give 1/2 or 2/3 maintenance fluid requirement.*

4. Blood transfusion:

If the child has a haemoglobin less than 6g/dL, give a transfusion of packed cells if you can (see Anaemia p.20)

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:

- Whenever you use these milk mixtures, give 1ml multiple vitamin liquid each day.
- If unable to keep the milk cold in refrigerator, only make enough milk for one feed
- Always try to stimulate mother's milk supply with chlorpromazine or Maxalon if mother's milk is drying up OR the mother is adopting and not lactating

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.

If a child is MALNOURISHED, it is recommended they be given commercial F-75 or F-100 based formula. This is better formulated to meet the needs of a malnourished child. If not available then you may give Full Strength Sunshine Milk (FSS) or Milk Oil Formula (MOF)

GENERAL RULES:

- **Milk must be used within 2 hours of making it** - the rest must be discarded. Even though this seems like a waste it prevents digestive problems.
- No need to add extra vitamins or minerals if using WHO provided F75/F100
- Add CMV to FSS/MOF if available, it has all the nutrients inside (Vitamin A, Zinc, Iron)

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, and sometimes malignancy)

Generalised oedema may be due to:

- a. Low protein in blood:
 - Kwashiorkor
 - Intestinal parasites
 - Nephrotic Syndrome
 - Liver disease
- b. Reduced excretion of water: Renal Disease (most often glomerulonephritis)
- c. Heart failure
- d. Sudden leak of fluid from the blood vessels In anaphylactoid (allergic) shock (p.127)

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. 152) and treat with digoxin (p. 151). 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.85) 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.148) and refer urgently
- If the child has mild swelling and is not "sick" treat with a 3 day course of albendazole (p. 148 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 and 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. If the child has fever and a swollen, tender or hot limb, always give flucloxacillin/cloxacillin (p. 150) 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 needed

- If available at your center, a pus swab for MCS and **GeneXpert** (for TB) may be helpful. Chronic osteomyelitis of the hip can be due to TB

TREATMENT

1. Flucloxacillin or Cloxacillin for 4 weeks (p. 150)

- Give IM or IV every 6 hours if: very sick, vomiting, or < 6 months old
- 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 refer to a paediatrician or orthopaedist

Most common cause is *Staphylococcus aureus*. (Paediatricians should be aware there is increasing resistance to Flucloxacillin (oxacillin) (cloxacillin), which is called MRSA and requires treatment with vancomycin or other antibiotics. Sometimes chloramphenicol works

2. Blood transfusion: transfuse if Hb < 6 g/dL (p.21)

3. Investigations (to be done if possible)

- | | |
|---|--------------------------------|
| a. Hb and WCC | d. Blood culture |
| b. X-ray of bone — to assess progress. | e. Pus swab for GeneXpert (TB) |
| c. Culture pus — to see whether the antibiotic should be changed. | |

In bone and joint infections, malnutrition may occur. Make sure the child is well nourished

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	WEIGHT	Tab dose
3 — 9.9kg:	5ml	½ tab	15 — 19.9kg:	1 tab
10 — 14.9kg:	7.5ml	¾ tab	20 — 29.9kg:	1½ tab

2. **If fever present:**

- Test for malaria and treat appropriately (see p.76)
- Antipyretics (see Fever p. 59)

3. **If pus discharging:**

- Ear cleaning with toilet tissue (see next page, p.108)

4. **If pus still discharging after one week of treatment:**

- Cotrimoxazole (Septrin) BD orally for 5 days (see p.150).

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 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.
- 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.

OTITIS MEDIA - CHRONIC (CONTINUED)

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 otoscope. 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 (WHOOPIING 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 - convulsions
 - heart failure - 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 septrin 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 siblings

INPATIENT TREATMENT

1. If the child goes blue with a cough spasm, give **oxygen** if available and **gentle and brief suction**.
2. Give **azithromycin**. This stops the child from infecting others, and treats pneumonia
 - Azithromycin daily for 5 days as follows:
child 6 months or older: 10 mg/kg up to 500 mg orally, on day 1,
then 5 mg/kg up to 250 mg daily for a further 4 days (total duration of treatment is 5 days)
neonate and child younger than 6 months: 10 mg/kg orally, daily for 5 days
 - If not available give Septrin twice a day orally for 7 days. (p.150)
3. Treat heart failure if present (p.114 section on pneumonia)
4. Treat convulsions if they occur (see p45).
5. Encourage the mother to feed the child immediately after vomiting.
6. Treat malnutrition if present (see p.84).

PIGBEL

1. Children with pigbel have some of the features:

- Severe abdominal pain starting up to 5 days after eating a protein meal (often pig meat).
- Epigastric (upper abdominal) pain after eating
- Abdominal swelling and tenderness
- Fever
- Black-flecked or coffee ground vomit
- Diarrhoea with blood (but sometimes constipation).

2. Assess each case of possible pigbel for severity

- Mild cases can be treated at health centres.
- Severe cases should be sent to hospital immediately.

Signs of Pigbel	Mild	Severe
Abdominal swelling	Some	A lot
Epigastric pain	Some	A lot
Black-flecked vomit	No	Yes
High fever, toxic, fast breathing, fast or weak pulse, or cold hands and feet	No	Yes

TREATMENT OF MILD PIGBEL

1. Intravenous fluid: Half strength Darrow's solution or Hartmann's solution

Weight (kg)	IV fluid in ml per hr
3 — 5.9 kg:	20 ml/hour
6 — 9.9 kg:	30 ml/hour
10 —14.9 kg:	45 ml/hour
15 kg or more:	60 ml/hour

2. Pass a nasogastric tube if the child is vomiting. Aspirate the NG tube then leave on free drainage. Splint the arms.

3. Albendazole oral once (see p. 148), or mebendazole oral once (see p.153) then nothing to eat or drink.

4. Tinidazole oral once (see p.155) if child is malnourished.

5. Benzylpenicillin (crystalline penicillin) (see p.154)

PIGBEL – continued

- 6. If the child gets sicker**, or there is no improvement within 2 days – add metronidazole and gentamicin to benzylpenicillin and send to hospital
- 7. If the child improves** (reduced abdominal swelling and pain, no vomiting, feels hungry and has normal 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.104) over the next 24 hours.
 - then give soft food, gradually introducing solid food
 - reassess regularly to check if the abdomen is less swollen, pain less, fever reduced,

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.154) **plus**
- **Metronidazole** (p.153) **plus** **gentamycin** (p.152)
 - OR
- chloramphenicol IV every 6 hours (p.149).
- Do not give albendazole or tinidazole to patient with severe pigbel if there is severe abdominal Distention
- Refer to hospital
- Notify all cases of pigbel to 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 URGENTLY 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 -1 litre per minute if the child is:

- cyanosed
- drowsy
- grunting
- stopping breathing
- in heart failure
- oxygen saturation less than 90% on pulse oximetry
- restless

-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.

5. If the child is drowsy (silip tumas) on admission, do a lumbar puncture when he improves to check for meningitis. Do not do lumbar puncture while 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.149)

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

Weight	No. of mls	Weight	No. of mls
3— 5.9kg:	1 ml	20—29.9kg:	2 ml
6— 9.9kg:	1.5 ml	30—39.9kg:	2 ml
10—14.9kg:	2 ml	40—49.9kg:	2 ml
15—19.9kg:	2 ml	50kg or more	2 ml

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

Weight	No. of mls	Weight	No. of mls
3— 5.9kg:	0.75 ml	20—29.9kg:	3.5 ml
6— 9.9kg:	1.25 ml	30—39.9kg:	5 ml
10—14.9kg:	2 ml	40—49.9kg:	6 ml
15—19.9kg:	2.5 ml	50kg or more	6 ml

- IF the child does not improve after 2 days of amoxicillin and gentamycin, change to Ceftriaxone (see p.102)
- If staphylococcus pneumoniae is suspected then add flucloxacillin (p.150)

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:

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

Weight	No. of mls	Weight	No. of mls
3— 5.9kg:	5 ml	20—29.9kg:	2 capsules
6— 9.9kg:	7.5 ml	30—39.9kg:	2 capsules
10—14.9kg:	10 ml or 1 capsule	40—49.9kg:	2 capsules
15—19.9kg:	10 ml or 1 capsule	50kg or more	2 capsules

PNEUMONIA OR BRONCHIOLITIS — SEVERE

- If the child vomits up the oral amoxicillin or will not take it, give intramuscular (IM)
- 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.76).

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.21)

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 SpO₂ <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

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. 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

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

**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. How long ago this 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. 92).

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.

- if he does not vomit, give Syrup of Ipecac. 15ml
- 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 no vomiting after 10 minutes rub the back of his mouth (throat) again with a spatula or handle of a spoon.

Do not make the child vomit if he is unconscious. Transfer as soon as possible.

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

Activated Charcoal, by mouth or nasogastric tube:

- Medicoal 5g packet in 100ml drinking water or
- Charcoal tab 200mg 25 tabs crushed in 100ml drinking water or
- Locally prepared powdered charcoal, 5g to 100ml water can be used.

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

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

Give 3 doses, 20 minutes between each dose.

POISONING (continued)

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.
 - Is in severe respiratory distress or cyanosed
 - Becoming drowsy or semiconscious.
 - Is cyanosed
 - Has burns of the mouth and throat.
 - Has signs of heart failure
- e. If you have a poisons book available — check for any special treatment required.

PREVENTION

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

RESUSCITATION

1. General

Remember the ABCD of resuscitation:

Airways, Breathing, Cardiac, Drugs

A. Airways

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

B. Breathing

- Put oxygen or air into the lungs:
- Ventilation bag or
- Use mouth to mouth resuscitation
- Inflate the lungs about 20 times per minute.

C. Cardiac

- Start external cardiac massage if no response to ventilation
- Squeeze the heart against the backbone by pressing with your hand over the sternum using

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 0.5 ml adrenaline (**1 in 1000**) with 4.5 ml of water for injection to make 5 ml
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.

2. RESUSCITATION OF BABIES

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

A. Clear the airways

- (suction, and lift the chin and pull the jaw forward).

B. Get oxygen or air into the lungs

- Use a baby ventilation bag and mask or
- Frog breathing (using a nasal catheter and oxygen at 2-4 litres/minute) or
- Mouth to face resuscitation

A + B are far more important than giving drugs.

C. Cardiac

- not usually required in neonatal resuscitation.

D. Drugs – most babies do not need drugs.

- Drugs are only given if the baby is not breathing on his own when he is pink and has a good pulse rate (more than 100/min) after doing Steps A and B above.
- If mother has been given morphine or pethidine (p153 , 154) within four hours of delivery, give the baby:
 - o **narcan injection** (0.4 mg/ml) 0.5 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 heart disease can follow streptococcus pyogenes infection of the throat or skin. Some children present with fever and pains or swellings 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). Children with mild disease may not have a heart murmur. Severe disease can present with fever, fast or difficult breathing, lethargy and a murmur. They may have chest pain or fainting. Children are usually over 5 years of age. Children in heart failure have a fast heart rate, respiratory distress and a large liver.

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)*	
Major criteria (2 major)	Minor criteria (1 minor + 2 major)
New heart murmur	Fever
Polyarthrititis - swelling and pain of many joints	Polyarthralgia - painful joint but not swollen
Chorea - abnormal movements	Raised white cell count
Subcutaneous nodules - raised swellings in the skin	Increased ESR
Erythema marginatum - pale pink center surrounded by slightly raised red border. Usually on body but not face	Prolonged PR interval on ECG
	Previous history of rheumatic fever

If available, echocardiography is useful in confirming RHD

*ARF diagnosed either with 2 major criteria, or 1 minor + 2 major criteria

MANAGEMENT

1. Admit to hospital

2. Give Benzathine benzylpenicillin G (BPG) 1,200,000 units:

- child < 20kg give 600,000 units IM stat
- child > 20kg 1,200,000 IM stat.

This will treat any remaining streptococcal infection and provide prophylaxis for first month.

Alternatively can give Penicillin V 15mg/kg up to 500mg orally bd for 10 days

In Children with Penicillin allergy use **Azithromycin 12mg/kg** (up to 500mg) orally daily for 5 days can be used in children with Penicillin hypersensitivity.

3. Panadol 15mg/kg orally qid for analgesia while awaiting diagnostic confirmation.

4. 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.

5. If in heart failure: give

- Furosemide 1mg/kg 12 hourly or daily doses orally depending on severity of heart failure.
- Spironolactone orally: 6.25 mg bd if weight <10kg; weight 11-20kg give 12.5mg bd and more than 21 kg- give 25 mg bd
- Enalapril 0.1mg/kg orally daily if echo confirms aortic regurgitation
- Discuss with Cardiology Paediatrician for further heart failure management if not improving.

6. Give oxygen 0.5-2L/min via nasal prongs if in respiratory distress or oxygen sat's are <93%.

7. Check for anaemia and give a blood transfusion if the Hb<8 mg/dL.

8. If heart failure is severe give prednisolone (1 mg/kg/day) orally instead of aspirin

9. Refer to specialist if not improving

Follow-up care: All children will need ongoing antibiotic prophylaxis. Give **benzathine penicillin IM** every 28 days

- Child >20 kg give 1,200,000 units
- Child >20 kg give 600,000 units
- OR -
- Pen V 250 mg orally twice a day
- In Penicillin allergy use Erythromycin 250mg orally twice a day

10. Ensure vaccinations are up-to-date

11. Review monthly if in heart failure otherwise every 3-6 months review

SEXUALLY TRANSMITTED INFECTIONS (STIs)

All STIs should be reported to the Provincial Health Office

Certain STIs (eg. Gonorrhea, Syphilis, HIV, Chlamydia & trichomoniasis) if acquired after neonatal period strongly indicate sexual contact

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:** 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.
 - Check that both mother and father have been treated.
 - If pale check Hb (many are anaemic)

SEXUALLY TRANSMITTED INFECTIONS (STIs) (continued)

If baby has any **signs of congenital syphilis**:-

- Give single (stat) dose of benzathine penicillin IM. (see p.154). **AND**
- benzyl penicillin IM twice daily for 10 days (see p.154).

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 STI's

2. Genital discharge in young children - Send a swab for culture if you can.

Suspect vulvovaginitis in girls with purulent vaginal discharge. Pain on passing urine may also be present.

TREATMENT FOR CHILD

Give one dose of azithromycin plus amoxicillin and augmentin, (amoxicillin and clavulanic 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

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.

HIV infection See National HIV Guidelines for possible post-exposure

SHOCK

A life-threatening condition occurring when the body is not getting enough blood and oxygen

Causes

- diarrhoea and dehydration (hypovolaemic shock)
- bacterial or viral infections such as dengue, influenza, or malaria (septic shock)
- bleeding (haemorrhagic shock)
- severe anaemia
- toxins envenomation, drugs poisons
- heart disease (cardiac shock)
- other abdominal surgical emergencies, or other causes of systemic inflammation

Children who have shock generally have the following signs:

- cold hands and feet
- a weak and fast pulse
- capillary refill >3 seconds
- low blood pressure (see table below)

Children in shock should receive Emergency treatment

- Give high-flow oxygen
- IV access, give 10-20 ml/kg normal saline or Hartmann's solution over 30-60 minutes
- If severe anaemia (severe palmer or conjunctival pallor), give blood as soon as possible
- Give antibiotics for bacterial sepsis +/- antimalarial if in malaria endemic area
- Monitor the effect of fluid *
- Fully assess to look for an underlying cause of shock

If the child is still in shock after initial fluid therapy, urgently contact the provincial paediatrician and consider:

- further infusion of 10 ml/kg over 30 minutes.
- other emergency treatments.
- if blood pressure low - give adrenaline: put 1mg (1 ml of 1:1000) in 1000ml (a 1L bag of normal saline) and run at 5 ml/kg/hour (0.1 mcg/kg/min) until BP is within the normal range, and other signs of shock improved.
- if any signs of anaphylaxis: blotchy red rash (hives), severe respiratory distress, stridor, wheeze - give adrenaline IM.
- if no improvement after adrenaline - give hydrocortisone (1 mg/kg 6 hourly) OR prednisolone (1 mg/kg 6 hourly)
- if signs of snakebite - give antivenom (see snakebite section)
- if signs of heart failure - give furosemide 1mg/kg iv.
- if abdominal emergency or trauma - urgent surgical review
- tranexamic acid if there is continuing haemorrhage causing shock - 20 mg/kg 8 hourly oral or IV.

If shock as resolved:

- give maintenance fluid (p.156)
- Continue oxygen, antibiotics, and other treatments
- Decide on the best location of ongoing treatment and monitoring, in consultation with the provincial paediatrician

If, at any time during fluid infusions, the child develops eyelid or body swelling, heart failure, or neurological deterioration then the infusion of fluids should be stopped, and no further intravenous infusions of fluids should be given until these signs resolve.

Table: Normal vital signs in children

Normal temperature 36-37.5 Normal oxygen saturation (SpO₂) >96% on room air	Age	Normal pulse rate (range)	Normal respiratory rate (range)	Minimum normal systolic blood pressure
	Term – 3 mo	100-140	30-60	>60
	4-12 months	100-140	30-50	>65
	1-4 years	80-140	20-30	>70
	5-11 years	70-120	16	>80
	12 years +	60-100	16	>100

Children with any sign of *impaired* circulation i.e.

1. cold extremities -**or**-
2. weak and fast pulse -**or**-
3. prolonged capillary refill (but not in shock)

Should have full assessment and other treatments (treatment of the underlying cause and other possible treatments above), and reassessed within one hour

SKIN DISEASES

BOILS OR ABSCESSSES

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. 150) or chloramphenicol (p. 149)
 - when pus has formed → incise and drain.

c. Remember:

A febrile child with a hot, swollen and tender limb probably has osteomyelitis (see p. 85).

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.148) or
If no improvement after 5 days;
Change to cotrimoxazole (septrin)(p. 150) or erythromycin (see p.151).

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

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 and then repeat in 2 weeks to kill any remaining infestation

SKIN DISEASE (continued)

4. For severe disease, oral ivermectin given for 3 days may be used
5. 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
6. 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.145).
5. If there are many infected sores: give amoxicillin oral 3 times daily for 5 days (see p.148).
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.150) and tinidazole orally once daily for 3 days (see p.155).
8. If the ulcer is bigger than a one Kina coin, it needs skin grafting when it is clean.

PREVENTION OF SKIN DISEASES

Skin diseases can often be prevented by good skin hygiene. Educate to use soap and water
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.

Signs and symptoms of poisoning (envenomation)		
General signs	Neurological signs	Coagulation (blood clot) problems
Nausea and vomiting	● Drooping eyelids	● Vomiting blood (haematemesis)
Abdominal pain	● Dribbling of saliva	● Coughing blood (haemoptysis)
Painful lymph glands	● Difficulty seeing properly	● Blood In urine (haematuria)
	● Difficulty with breathing	● Cuts continue to bleed
	● Unable to move eyeballs	
	● Unable to open mouth wide	
	● Unable to push tongue out	
	● Weakness of limbs	

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.148).

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 1/4 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.158).
- Give tetanus toxoid ½ml IM stat.
- Do not touch the site of the bite.
- Give crystapen IV (p.154) or amoxicillin for 5 days (see page148).

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

- Give promethazine IM (see p 154)
- 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 100 mg IV
- Give oxygen if available, and use an Ambu bag if patient stops breathing

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

Note: Nursing care is very important. Keep the airway clear and nurse the child in the left lateral position. Early referral of severely envenomated patients, patients who are deteriorating after antivenom, and in situations where antivenom 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, HIV, and malnutrition

The diagnosis of TB in children is usually clinical and based on

1. A good and thorough clinical history
2. Clinical signs and symptoms - including the TB score,
3. X-ray changes where available and
4. GeneXpert test when available (Note: does not rule out TB)

Chronic symptoms suggestive of TB > 2 weeks:

- Cough, especially if persistent and fails to improve
- Weight loss or failure to gain weight
- Prolonged fever and/or night sweats
- Less active or less playful

Exam signs highly-suggestive of TB

- TB potts of the spine
- Ascites
- Very enlarged lymph gland on the neck or axilla

A strong contact history of an adult with TB within last 2 years

- Most children develop TB within 1-2 years after exposure/infection
- Ask about family, visiting relatives or anyone in the household who are sick/coughing

Importance of follow-up assessments

- Most children with suspected TB present as outpatients and are not severely sick. So it is not always necessary to establish a diagnosis on first presentation. If not severely ill and you are unsure, document weight and symptoms and follow-up in 2-4 weeks

Use of GeneXpert to confirm the diagnosis of TB – Xpert does not rule out TB

1. Sputum
2. Gastric aspirate (GA)
3. **Stool**. The use of stool may be easier to collect and test for Xpert
4. Fine needle aspiration biopsy (FNAB)
5. Cerebral spinal fluid (CSF)

- Xpert detects the presence of TB (MTB detected/not detected) and the presence of rifampicin resistance (RR present/absent). Xpert still misses many cases of TB. Therefore if the child has **clinical TB** (but a negative Xpert) you still must treat for TB.
- If Xpert shows MTB detected, *RR indeterminate*. This does not mean they have MDR. Ask about MDR risk factors (p. 140). If no risk factors start first-line drugs (FLD) while trying to repeat the Xpert test. Note the repeat Xpert may be negative, continue FLD
- Xpert **CAN NOT** be used to monitor response to treatment. Dead TB bacilli may be present and in sputum even after patient has completely recovered from TB. This gives a “false positive” TB test, as it is detecting dead TB bacilli. Only AFB smear detects live bacilli

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

Feature	0	1 pt	2 pt	3 pt	4 pt	Score
Length of illness (weeks)	< 2	2-4		> 4		
Nutrition status (weight for age) - Can also use MUAC	Above the -2 line	Between the -2 and -3 line		Less than the -3 SD 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 IS ON THE NEXT PAGE						

Remember HIV testing – for all children with TB

- Children on dolutegravir (DTG) need to have an additional DTG dose. See p.65–66 dosing table on HIV

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

TB SCORE CHART – If child has a score of 7 or more, and has no other disease more likely to explain the illness, then commence TB treatment	
Length of illness	How long the child has been sick with the particular symptom e.g. cough, diarrhoea, Previous episodes should not be counted if the child recovered completely
Nutritional status:	You may use weight-for-age or MUAC. A) Children < 5 years old MUAC <11.5 cm = severe; 11.6-12.5 cm = moderate. B) Children > five years MUAC cut-offs are: <13.5 cm severe ; 13.6-14.5 cm moderate
Family contact history of TB:	Most children develop TB within 1-2 years of exposure. If they give a convincing story of a close family relative or contact that was thin and coughing up blood, then score 1. If written evidence of positive sputum in a contact then score 3. If child is in contact with an adult MDR case, then evaluate child for MDR
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. <u>If the glands STILL PERSIST despite antibiotics, try to arrange for a fine needle aspirate (FNA) and send for Xpert. However, you should still treat for TB if clinically suspected and the enlarged lymph glands persist.</u> 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:	If no weight gain after 1 month of nutrition rehabilitation or weight loss after 14 days score 3. This is after being on extra nutrition and has been treated for infections and anaemia. It is not counted for the initial TB score, only after nutrition treatment.
Firm non-fluid non-traumatic swelling of a joint:	TB arthritis is not acutely painful. If pain is present always consider and treat for septic arthritis. Chronic arthritis of the hip joint is TB until proven otherwise. If in doubt sent to hospital.

Unexplained abdominal swelling (ascites)	Large spleen or liver should be excluded as the cause, 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 and vomiting needs urgent referral as the child may have obstruction,
Coma for longer than 48 hours	TB Meningitis or brain tuberculoma (TB abscess) can lower the 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.

Treatment Guidelines for Childhood Tuberculosis in PNG

The following are highlights for the treatment of childhood TB

1. **Treatment duration:** Pulmonary TB is 6 months, EPT is 9 months. If a patient has both PTB and EPTB – then treat for 9 months
2. **Children with HIV** Remember to **add additional DTG** while on TB treatment and *until after 2 weeks of stopping TB treatment*. Treat for 9 months (2RHZE/7RH) no matter what type of TB they have. See dosing table p. 46
3. **Register all children receiving TB treatment:** Register as soon as possible and regardless of when they started treatment. For a child in their 6 month of treatment who isn't registered for some reason, may be registered in their 6 month of treatment. This is important for drug stock
4. **Children who are in contact with an adult MDR:** If they have clinical TB symptoms they need to receive MDR treatment. Refer or ask a paediatrician.
5. **TB Preventive Therapy (TPT)** – Children in contact with an adult who have no symptoms and is otherwise well should be offered TPT. You can now use 3 months of daily RH (75/50) instead of 6 months of INH. This cuts the duration in half
6. **How to dose children up to 30 kg.** Use the Child FDC up to 30 kg. If the Child FDC is not available for any reason, you may use the adult FDC using the dosing table below. If you do not have INH 100 mg tab, then use the INH 300 mg tab and give as directed

TB TREATMENT DURATION

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, pleural effusion)	2 RHZE	7 RH
All children with HIV		

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

The pharmacokinetics of TB 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

DOSING TB MEDICATIONS USING THE CHILD FDC			
NEW FDC DRUG TABLE	Numbers of tablets		
	Intensive Phase		Continuation Phase
	RHZ (dispersible tabs) 75/50/150	E 100	RH (dispersible tab) 75/50
4-7.9 kg	1	1	1
8-11.9 kg	2	2	2
12-15.9 kg	3	3	3
16-29.9 kg	4	4	4
30 kg+	Go to adult dosages and preparations		

For children weight 11-30 kg using **ADULT FDCs** with additional INH.

Intensive Phase: ADULT (RHZE)-H for 2 months			If using 300 mg tab**
Weight bands (in kgs)	Rif: INAH:PZA:E tabs 150mg: 75mg: 400mg: 275mg	Additional INH 100mg tab	Additional INH 300 mg tab
11 – 15.9	1 tab	1 tab	1/4 tab
16 – 20.9	2 tabs	1 tab	1/2 tab
21-29.9	2 tabs	2 tabs**	1/2 tab
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 INH 100mg tab**	Additional INH 300 mg tab
11 – 15.9	1 tab	1 tab	1/4 tab
16 – 20.9	2 tabs	1 tab	1/2 tab
21 – 29.9	2 tabs	2 tabs**	1/2 tab
**IF INAH 100 mg tab is not available, then use INAH 300 mg as shown. Do not use both 100 mg and 300 mg tab at the same time			

For children in weight bands of 30 kg and more, use **adult kits** as follows

Category I for all TB cases (PTB & EPTB)

Regimen	Initial Phase (2 months)	Continuation Phase (4 months)
	2 (HRZE) Daily – 56 total doses Drugs per adult FDC tablet (Isoniazid[H] 75mg + Rifampicin[R] 150mg + Pyrazinamide[Z] 400mg + Ethambutol[E] 275mg)	4 (HR) Daily – 112 total doses (Isoniazid [H] 75mg + Rifampicin [R] 150mg)
Patient's Weight		
30 -39 kg	2	2
40-54kg	3	3
55-70kg	4	4
Over 70kg	5	5

Contact your PDCO or The National TB Program if you are running out of stock

TB - ADDITIONAL TREATMENT CONSIDERATIONS

Steroids – use in the following conditions:

- TB meningitis, TB pericarditis (pericardial effusion), or airway obstruction from TB glands.
- Prednisolone (or prednisone) orally 2-4 mg/kg/day for 2 weeks, then decrease the dose over 4 weeks (can lower by 0.5 mg/kg/week)
- 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

The child with TB and HIV co-infection

- Treatment duration is 9 months even if PTB
- **For a known HIV child (child living with HIV) on DTG, you must double the dose of DTG while on TB treatment. This is done by giving an additional DTG in the evening so they take it twice daily. *The double dose is continued until 2 weeks after stopping TB treatment.*** (see p. 66)
- If a child with TB is found to be newly diagnosed with HIV start → Start ART after 2 weeks of TB treatment
- If the child is a known HIV patient (CLHIV) and already on ART → then no 2-week lead in is required. Start TB treatment immediately. No need to “pause” ART.

Failure to Respond to Treatment

1. Poor adherence to TB medications
Ask who gives the medicine and if they watch child swallow. Remember children and certainly teenagers, should never take medicines by themselves
2. TB is not the diagnosis, or not the *only* diagnosis
Not all chronically ill children have TB. Other diagnoses (HIV, malignancy, etc) should be investigated. This is especially true for clinical TB patients who do not respond to treatment
 - Children who are non-adherent to their HIV will become sick. Ask about compliance and if needed get a viral load.
3. Drug resistant TB (DR-TB)
If a patient is failing first line TB drugs - notify PDCO and refer to a paediatrician for assessment

Tuberculosis (continued)

Steps to consider MDR TB in children

- MDR is a laboratory diagnosis made by GeneXpert in most cases
- Contact with a known case of MDR. These children should be investigated with a GeneXpert and a CXR. If they have active TB disease they should be treated as a case of MDR, even if the Xpert is "MTB not detected"
- If a patient remains sputum AFB smear-positive after 3 months treatment.
- Not responding or gets worse on RHZE over 2 months - even though patient is adherent
- Recurrence of TB after adherence to treatment

If GeneXpert is not available, refer suspected and confirmed MDR cases to a paediatrician. You can always call the Provincial TB Officer or PDCO

TB Counseling – JUST AS CRITICAL AS THE DRUGS

- Many children default due to lack of awareness and proper education. Encourage them that they will be cured if they take the medicines properly. If they fail to complete their medications they can die

Mothers and infants with TB

- If a mom is diagnosed with TB – please refer her to obstetrics for family planning information. If she is on TB drugs she may need her family planning medications adjusted as the TB drugs affect contraception
 1. Rule out TB in the newborn (large liver/spleen, sick). If possible perform a gastric aspirate or stool test for GeneXpert. If well give TB preventive therapy
- If an infant is diagnosed with TB – check the mother & family members closely for signs of TB (Xray and Xpert)
- Make sure mother knows that TB medicines are safe to take during pregnancy. That untreated TB can lead to her or her baby's death.

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

TB PREVENTIVE THERAPY (TPT)

Previously known as INH prophylaxis or IPT. Latent tuberculosis infection (LTBI) means a child is infected **but is not sick with active TB disease**. Giving TB Preventive Treatment (TPT) will prevent the development of active TB disease

Give TPT to ASYMPTOMATIC children with a close TB adult contact

1. less than 10 years old
2. HIV-infected, irrespective of age, and not symptomatic for TB

Evaluate the child for TB symptoms. If child has no symptoms – start TPT

- no fever, no cough, no weight loss,
- no large lymph nodes
- Normal WFA or a normal MUAC (>12.5 cm)
- Children are normal/ active/playful

Children in contact with an MDR patient – you may discuss with the pediatrician your options

Note: A CXR is not needed to rule out active TB disease in a an otherwise well child < 10 years old before starting TPT.

TB PREVENTIVE THERAPY - options		
Weight bands	HIV negative*	ALL CHILDREN (including HIV positive)
	3 months daily RH 3RH	6 months daily INH 6H
	RH (75/50) (dispersible tabs)	INH 100 mg tablet
< 4 kg	1/2 tab (half tab)	1/4 tab (25 mg)
4-7.9 kg	1	1
8-11.9 kg	2	2
12-15.9 kg	3	3
16-30 kg	4	4
30 kg+	Use adult formulations	

TYPHOID

A child may have typhoid if he/she:

- a. comes from an area where typhoid is common
- b. has persisting fever
- c. has one or more of the following:
 - headache
 - diarrhoea (with or without blood).
 - abdominal pain
 - confusion
 - abdominal tenderness
 - talking nonsense
 - abdominal distension
 - dehydration
 - constipation
 - 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. **Ciprofloxacin for 2 weeks; 3 weeks if possible.**

If you do not have ciprofloxacin, give ampicillin/amoxicillin and change to amoxicillin when well (p.148) for 3 weeks, or cotrimoxazole (p.150) for at least 2 weeks.

2. **Antimalarials** Test and treat if positive (see p.76).

3. **Fluids**

If dehydrated: rehydrate with either ORS or intravenous ½ strength Darrow's Solution. (p.49)

TYPHOID (continued)

b. If not dehydrated:

If vomiting or the child has a distended, tender abdomen

- give intravenous maintenance fluids. (see p.158).

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. 150) 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 hospital or health centre for investigation and treatment.
- If oedema is present, start treatment with amoxicillin oral daily for 10 days (see p.148).
- Measure the blood pressure if you can. If more than 120/90, discuss problem with a doctor.
- If there is no oedema, start treatment with Cotrimoxazole (see p. 150). 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 30mg/kg oral stat if you have it Notify your provincial health office.

TABLE OF DRUG DOSES

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
Elixir 25mg/5ml every 6 hours, oral	ml	—	6	10	15	—	—	—	—
Tab. 100mg, every 6 hours, oral	tab	—	¼	½	¾	1	1	1	1
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. 74, 75							
Artesunate injection		See malaria section p. 71, 72							
Artesunate suppository		See malaria section p. 70							

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. 74, 75								
Artesunate injection		See malaria section p. 71, 72								
Artesunate suppository		See malaria section p. 70								

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	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
Elixer 25mg/5ml every 6 hours, oral	ml	—	6	10	15	—	—	—
Tab. 100mg, every 6 hours, oral	tab	—	¼	½	¾	1	1	1
Amoxicillin Tabs 250 mg. 3 times daily. oral	tab	½	½	1	1	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
Artemether 20mg/ Lumefantrine 120 mg tab (Coartem or Mala-1)						See malaria section p. 81		
Artesunate injection						See malaria section p. 77		
Artesunate suppository						See malaria section p. 77		

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	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
Elixer 25mg/5ml every 6 hours, oral	ml	—	6	10	15	—	—	—
Tab. 100mg, every 6 hours, oral	tab	—	¼	½	¾	1	1	1
Amoxicillin Tabs 250 mg. 3 times daily. oral	tab	½	½	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
Artemether 20mg/ Lumefantrine 120 mg tab (Coartem or Mala-1)								
Artesunate injection								
Artesunate suppository								

See malaria section p. 74, 75

See malaria section p. 71, 72

See malaria section p. 70

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. 74, 75							
Artesunate injection		See malaria section p. 71, 72							
Artesunate suppository		See malaria section p. 70							

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. 74, 75				
Artesunate injection					See malaria section p. 71, 72				
Artesunate suppository					See malaria section p. 70				

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. 74, 75							
Artesunate injection		See malaria section p. 71, 72							
Artesunate suppository		See malaria section p. 70							

See malaria section p. 74, 75

See malaria section p. 71, 72

See malaria section p. 70

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
Elixir 25mg/5ml every 6 hours, oral	ml	—	6	10	15	—	—	—	—
Tab. 100mg, every 6 hours, oral	tab	—	¼	½	¾	1	1	1	1
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. 74, 75							
Artesunate injection		See malaria section p. 71, 72							
Artesunate suppository		See malaria section p. 70							

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	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
Elixer 25mg/5ml every 6 hours, oral	ml	—	6	10	15	—	—	—
Tab. 100mg, every 6 hours, oral	tab	—	¼	½	¾	1	1	1
Amoxicillin Tabs 250 mg. 3 times daily. oral	tab	½	½	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
Artemether 20mg/ Lumefantrine 120 mg tab (Coartem or Mala-1)								
Artesunate injection								
Artesunate suppository								

See malaria section p. 74, 75

See malaria section p. 71, 72

See malaria section p. 70

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. 139						
Rifampicin							
Quinine	See malaria section p. 73-74						
Salbutamol (ventolin)							
Tab 4mg. 4 times daily oral	tab	—	¼	½	½	1	1
Respirator Solution dilute with 4ml of normal saline	ml	½	1	1	1	1	1
Septrin: see cotrimoxazole)							
Tinidazole Tab. 500mg (see p. 56)	tab	¼	½	1	1½	2	3
Valium: see diazepam							
Ventolin: see salbutamol							

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	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
Elixer 25mg/5ml every 6 hours, oral	ml	—	6	10	15	—	—	—
Tab. 100mg, every 6 hours, oral	tab	—	¼	½	¾	1	1	1
Amoxicillin Tabs 250 mg. 3 times daily. oral	tab	½	½	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
Artemether 20mg/ Lumefantrine 120 mg tab (Coartem or Mala-1)								
Artesunate injection								
Artesunate suppository								

See malaria section p. 74, 75

See malaria section p. 71, 72

See malaria section p. 70

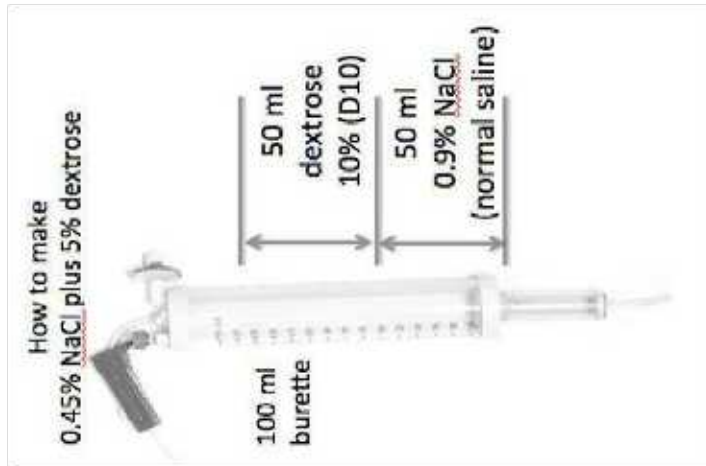
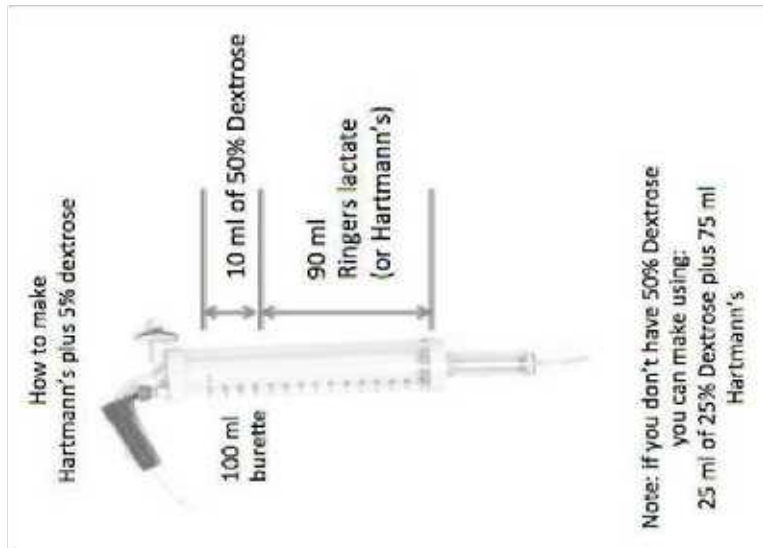
TABLE OF DRUG DOSES		WEIGHT (Kilograms)							
		3-5.9	6-9.9	10-14.9	15-19.9	20-29.9	30-39.9	40-49.9	Adult
Adrenalin Amp. 1/1000 in 1ml Subcutaneous	ml	—	—	—	0.25	0.25	0.25	0.5	0.5
Albendazole Tab 200mg (must be crushed or chewed)	tab	1	1	2	2	2	2	2	2
Aminophylline Amp. 250mg/10 ml IV over 1 hour (put 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. 74, 75							
Artesunate injection		See malaria section p. 71, 72							
Artesunate suppository		See malaria section p. 70							

V 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	30	45	55	65	75	90	120		
	drops/min	8	11	14	16	19	23	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	20	30	36	44	50	60	80		
	drops/min	5	8	9	11	13	15	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 — then	ml	100	150	250	350	500	700	900	1000
	ml/hr	25	50	75	100	100	150	150	150
	drops/min	7	13	20	25	25	40	40	40
<u>Burns</u> Hartmann's solution (Ringer's Lactate) or 0.9% Sodium Chloride — quickly if more than 10% burn — then	ml	100	150	250	350	500	700	900	1000
	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
<u>Diarrhoea with dehydration</u>									
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
<u>Meningitis, heart failure, coma.</u> 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



ANTIMICROBIAL RESISTANCE (AMR)

AMR happens when bacteria change to protect themselves from antibiotics. This means that antibiotics that previously would have killed the bacteria no longer work. An example is chloramphenicol, which because of overuse is no longer effective against the bacteria that cause meningitis.

What is this a problem?

Resistance is developing against common antibiotics. If nothing is done, common infections will no longer be able to be treated with available antibiotics.

Some common causes of AMR?

- Using antibiotics when they are not needed
- Not taking antibiotics at the doses and times that a doctor prescribes
 - this allows time for the bacteria in your system to become resistant.

What can you do?

Prescribe responsibly – Make sure you confirm the diagnosis and determine whether antibiotics are truly needed.

Dispensing – Dispense antibiotics with clear advice, and packed in dispensing bags with correct labels

Proper advice to patients – Talk to patients about how to take antibiotics correctly (when, how and how long) and the dangers of misuse

Wash your hands – this will prevent transmitting resistant bacteria from one patient to another, or becoming a carrier of resistant bacteria

Main Facts on AMR

Fact 1: Antibiotics don't work for all infections: antibiotics only work on bacteria, not other infections like viruses that cause colds and flu.

Fact 2: It is bacteria that become resistant to antibiotics, not your body. The more antibiotics are used or not taken correctly, the more chance bacteria have to change and become resistant. Mutated bacteria can also pass their resistant genes to other bacteria, forming a new antibiotic resistant 'strain' of the bacteria, making treatment much harder.

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Copies of this book can be obtained from:

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