

SECTION 6: HIV AND AIDS CLINICAL

As previously noted, most HIV-related conditions present in a similar way to those related to HIV-uninfected children. Management of these conditions is covered in other guidelines, e.g. IMCI. Health-care providers should have a high index of suspicion for conditions associated with HIV, such as opportunistic infections. The necessary knowledge and skills to manage these conditions is essential.

General danger signs

Every child that is examined needs to be checked for any danger signs:

- Convulsions with this illness
- Lethargic or unconscious
- Vomiting everything
- Unable to take **any** feeds

These danger signs are an indication that the child is seriously ill and requires urgent referral after appropriate intervention. Danger signs are frequently associated with other problems such as pneumonia, fever or diarrhoea, which obviously also require urgent management.

Respiratory conditions

Respiratory problems are common and in the HIV-infected child frequently pose a high risk.

Community-acquired acute pneumonia

Assess, classify and treat the child according to the IMCI guidelines and the SA National Essential Drug List (EDL).

Severe recurrent bacterial pneumonia suggests moderate to severe immune suppression (WHO Stage III).

MANIFESTATIONS AND COMPLICATIONS

This algorithm applies to children aged 2 months up to 5 years.

Severe pneumonia or very severe disease	
<ul style="list-style-type: none">■ Any general danger sign OR <ul style="list-style-type: none">■ Chest indrawing OR <ul style="list-style-type: none">■ Stridor in calm child	<ul style="list-style-type: none">■ Give first dose ceftriaxone IM (p. 12)■ Give first dose co-trimoxazole (p. 8)■ Give oxygen (p. 13)■ If stridor: give nebulised adrenaline (p. 12)■ Test for low blood sugar, then treat or prevent (p. 13)■ Keep child warm, and refer URGENTLY
Pneumonia	
<ul style="list-style-type: none">■ Fast breathing (see p. 34 of these Guidelines)	<ul style="list-style-type: none">■ Give amoxicillin for 5 days (p. 8)■ Soothe the throat and relieve the cough (p. 11)■ If coughing for more than 14 days, refer for possible TB or asthma■ Advise mother when to return immediately (p. 21)■ Follow up in 2 days
Cough or cold	
<ul style="list-style-type: none">■ No signs of pneumonia or very severe disease	<ul style="list-style-type: none">■ Soothe the throat and relieve cough (p. 11)■ If coughing for more than 14 days, refer for possible TB or asthma■ Advise mother when to return immediately (p. 21)■ Follow up in 5 days if not improving

Page references are for the *IMCI Chart Booklet*, unless otherwise stated.

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Chest indrawing means subcostal or lower chest wall recession.

Fast breathing:	
If the child is:	Fast breathing is:
2 months up to 12 months	50 or more breaths per minute minute
12 months up to 5 years	40 or more breaths per minute

Management

See the *Chart Booklet*, page 2.

- i. The child with 'Severe Pneumonia or Very Severe Disease' requires referral for admission. Pre-referral treatment includes: ceftriaxone IM, oxygen, check for hypoglycaemia.

Co-trimoxazole in therapeutic doses (Table 4 on the following page) must be given in addition to the above to all children with suspected symptomatic HIV-infection and those who are HIV-infected, confirmed on serology.

Many of these patients will have *Pneumocystis jiroveci* pneumonia (PCP), which causes severe distress and requires immediate and correct management (see below).

- ii. The children with 'pneumonia' are given amoxicillin according to the schedule on the following page (Table 3). They also require co-trimoxazole in therapeutic doses for 5 days.

Here it is important that the child is seen again after 2 days. The mother must be warned that the condition may change suddenly. In that case she must return immediately.

Table 3: Amoxicillin

Amoxicillin Given 3 times a day					
Weight kg	Approx. age	Dose mg	Syrup 125 mg/5 ml	Syrup 250 mg/5 ml	Caps 250 mg
3–6 kg	0 to 3 months	125	5 ml	—	—
6–10 kg	3 to 12 months	187.5	7.5 ml	—	—
10–18 kg	1 to 5 years	312	12.5 ml	—	—
18–25 kg	5 to 8 years	500	20 ml	10 ml	2 caps

Table 4: Co-trimoxazole

Co-trimoxazole treatment for PCP Given 6-hourly		
Weight	Approx. age	Co-trimoxazole dose 6-hourly
Less than 5 kg	6 weeks to 2 months	2.5 ml
5–9.9 kg	2 up to 12 months	5 ml
10–14.9 kg	12 up to 24 months	7.5 ml
15–21.9 kg	24 up to 60 months	10 ml or 1 tablet
>22 kg	>60 months	15 ml or 1 ½ tablets

See page 41 for co-trimoxazole prophylaxis.

iii. Infants aged less than 2 months (see the *Chart Booklet*, page 28):

- Fast breathing (60 or more breaths per minute)
- Severe chest indrawing
- Apnoea
- Convulsions
- Nasal flaring or grunting
- Lethargic or unconscious
- Movement less than normal
- Bulging fontanelle

Any of these signs suggest severe bacterial infection and require urgent referral.

Table 5: Ceftriaxone

Ceftriaxone given once daily			
Weight	Approx. age	Ceftriaxone dose in mg	Ceftriaxone dose in ml
3– <6 kg	0 up to 3 months	250 mg	1.0 ml
6– <10 kg	3 up to 12 months	500 mg	2.0 ml
10– <15 kg	1 up to 24 months yrs	750 mg	3.0 ml
15–25 kg	24 up to 60 months	1g	4.0 (give 2 ml in each thigh)

Hospital management

- Treat according to local hospital guidelines (see following page for suggested management).
- Apply guiding principles of palliative care.
- Reassure family.

Pneumocystis jiroveci (carinii) pneumonia (PCP)

N.B.

PCP is an AIDS-defining disease.

PCP occurs most commonly in children under 1 year of age. It is characterised by the following features:

- Tachypnoea (fast breathing)
- Hypoxaemia (oxygen deprivation characterised by cyanosis) – the infant appears to be ‘hungry’ for air
- Sudden onset of fever (not always present)
- Absent or low-grade pyrexia

Clinical findings on chest auscultation may be negligible and thus not in keeping with the degree of respiratory distress.

On chest X-ray one might see a diffuse interstitial infiltrate.

Early and appropriate treatment, before the disease has advanced, improves the prognosis significantly.

Suspect PCP if the child:

- Is less than 12 months old
- Has tachypnoea (fast breathing – 50 or more breaths/minute in infants 2 to 12 months, 40 or more breaths/minute in children 12 months up to 5 years)
- Is dyspnoeic (with severe difficulty in breathing)
- Has few crackles relative to the degree of dyspnoea, and decreased breath sound intensity on auscultation
- Has cyanosis

Begin treating for PCP immediately on suspicion (in addition to usual treatment of pneumonia) (see Tables 4 and 5), even if the HIV status of the child has not been established as yet.

N.B.

All infants and children with suspected PCP should be treated in hospital.

It is recommended that the following box be copied, enlarged and pinned up at appropriate places in your establishment.

Inpatient management of suspected PCP

Apply principles of palliative care with emphasis on relieving respiratory distress.

Investigations

- Check oxygen saturation:
 - If PCP is present, oxygen saturation is usually less than 90% on pulse oximetry (in room air).
- Chest X-ray:
 - Diffuse bilateral alveolar or interstitial infiltrate (findings can vary).

Treatment

- Oxygen **AND**
- Co-trimoxazole (20 mg/kg/day of trimethoprim component) 6 hourly IV for 5 days changing to orally for 3 weeks if response adequate **AND**
(**Note:** this is a higher dose than that used for prophylaxis)
- Consider adding clindamycin 30–40 mg/kg for severe disease
- Prednisone (if PCP confirmed or in presence of hypoxia) 1–2 mg/kg daily for 2 weeks, **AND**
- Paracetamol 10–15 mg/kg 6 hourly for pain or fever >37.5°C
- Morphine must be given if severe respiratory distress is not responding to other medical management.

Morphine oral starting doses (only if ICU is not available):

<1 year: 0.2–0.4 mg 4 hourly

1–5 years: 0.5–5 mg 4 hourly

6–12 years: 5–7.5 mg 4 hourly

(See palliative care.) Remember constipation as side effect of morphine.

Co-trimoxazole can cause erythema multiforme/Stevens-Johnson syndrome. If this occurs, stop co-trimoxazole.

N.B.

PCP prophylaxis should continue after discharge as per guidelines (see co-trimoxazole prophylaxis).

Co-trimoxazole prophylaxis for PCP

- There is overwhelming evidence that co-trimoxazole prophylaxis prevents PCP.
- Co-trimoxazole prophylaxis also protects against invasive bacterial disease. In addition, it protects against other opportunistic infections that include non-typhoid salmonella, toxoplasmosis and *Strep. pneumoniae*.
- It has also been shown to protect against attacks of diarrhoea.

Who should receive co-trimoxazole prophylaxis?

- All HIV-exposed infants from 4–6 weeks of age.
- Any child identified as HIV-infected.

How long should co-trimoxazole be given?

Co-trimoxazole needs to be given as follows:

- HIV-exposed children: until HIV-infection has been ruled out **AND** the mother is no longer breastfeeding.
- HIV-infected children: indefinitely if not on ART.
- HIV-infected children on ART: co-trimoxazole can be stopped only when clinical and immunological indicators confirm restoration of the immune system for no less than 6 months. (Also see below.)

When can co-trimoxazole prophylaxis be stopped?

- Severe adverse drug reaction such as Stevens-Johnson Syndrome, renal or hepatic insufficiency or severe haematological toxicity.
- HIV-exposed child: only once HIV-infection has been confidently excluded.
- HIV-infected child: do not stop co-trimoxazole if ART is not given.
- HIV-infected child on ART: stop co-trimoxazole only when there is evidence of immune reconstitution – i.e. in a child 18 months or older with a CD4 count of >15% on 2 occasions no less than 3 months apart. If CD4 count is not available consider stopping co-trimoxazole only after 6 months of good ART adherence with clinical evidence of immune reconstitution. Co-trimoxazole may be of benefit even with clinical improvement.

Drug dosage

Co-trimoxazole syrup should be administered **once** daily, on **every** day of the week.

If syrup is unavailable, crushed tablets may be used. A switch from syrup to tablets can be made to ensure ongoing access to medication.

The recommended dose is trimethoprim 6–8 mg/kg and sulphamethoxazole 20 mg/kg per day. The common preparations of co-trimoxazole have the following formulation: trimethoprim 40 mg and sulphamethoxazole 200 mg per 5 ml.

The approximate doses are listed in Table 6.

Table 6: Co-trimoxazole prophylaxis

Co-trimoxazole prophylaxis		
Weight	Approx. age	Co-trimoxazole daily dose
6 weeks to 2 months	Less than 5 kg	2.5 ml
2 up to 12 months	5–9.9 kg	5 ml
12 up to 24 months	10–14.9 kg	7.5 ml
24 up to 60 months	15–21.9 kg	10 ml or 1 tablet
>60 months	>22 kg	15 ml or 1½ tablets

If the child is allergic to co-trimoxazole, dapsone is a good alternative (1 mg/kg daily to a maximum of 100 mg).

Tuberculosis (TB)

Diagnosing TB in children can be difficult. It is easy to over-diagnose TB, but it is also easy to miss it. Due to immune deficiency HIV-infected infants and children are particularly susceptible to TB.

When to consider TB

Suspect TB if the child has:

- Contact with an adult who has pulmonary TB. This is often the first indication of childhood TB.
- Fever for more than 1 week.
- A chronic cough (for more than 3 weeks).
- Ongoing weight loss or poor weight gain (crossing percentiles on the Road-to-Health Chart).

Investigations

- Mantoux test: Induration ≥ 5 mm represents a positive test. A negative test does not exclude TB.
- Gastric washings and/or induced sputum for culture of *Mycobacterium tuberculosis* (MTB). Also culture other body fluids or tissue obtained by fine needle aspiration.
- Radiological: Chest X-ray features are the same in HIV-infected children as in HIV-uninfected children. Interpretation is more difficult in HIV-infected children because of other concurrent lung diseases or other HIV-related conditions presenting in the same way.
- Radiological features: alveolar consolidation or hilar lymphadenopathy or cavitation/‘breakdown’, or atelectasis or effusion and/or miliary TB.

N.B.

Adequate analgesia should be given to prevent procedural pain e.g. for pleural tap, intercostal drains.

Management, support and prophylaxis

Directly observed treatment short course (DOTS) in accordance with Department of Health guidelines for pulmonary or primary TB:

Table 7: Anti-tuberculosis drugs

Pre-treatment body weight	2 months initial phase – treatment given 5 times a week	4 months continuation phase – treatment given 5 times per week
	RHZ 60, 30, 150	RH 60, 30
3–4 kg	½ tab	½ tab
5–7 kg	1 tab	1 tab
8–9 kg	1½ tabs	1½ tabs
10–14 kg	2 tabs	2 tabs
15–19 kg	3 tabs	3 tabs
20–24 kg	4 tabs	4 tabs
25–29 kg	5 tabs	5 tabs
30–35 kg	6 tabs	6 tabs

(RHZ = Rifampicin Isoniazid Pyrazinamide)

In those circumstances where children cannot take treatment 5 times a week in the continuation phase and there is guarantee of strict supervision, treatment can be taken 3 times weekly in the continuation phase only. The following table shows the suggested drugs and doses for continuation phase treatment.

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Pre-treatment body weight	2 months initial phase – treatment given 5 times a week	4 months continuation phase – treatment given 5 times per week
	RHZ 60, 30, 150	RH 60, 60
3–4 kg	½ tab	½ tab
5–7 kg	1 tab	1 tab
8–9 kg	1½ tabs	1½ tabs
10–14 kg	2 tabs	2 tabs
15–19 kg	3 tabs	3 tabs
20–24 kg	4 tabs	4 tabs
25–29 kg	5 tabs	5 tabs

(RHZ = Rifampicin Isoniazid Pyrazinamide)

Fixed-dose combination tablets available for children

RHZ (60, 30, 150 mg), RH (60, 30 mg) and RH (60, 60 mg) only used for the three times weekly regimen. All fixed-dose combination tablets for children are soluble.

Recommended dose ranges in mg/kg		
	5 times a week	3 times a week
Isoniazid	4–6 (5)	8–12 (10)
Rifampicin	8–12 (10)	8–12 (10)
Pyrazinamide	20–30 (25)	30–40 (35)
Streptomycin	12–18 (15)	12–18 (15)
Ethambutol	15–20 (15)	25–35 (30)

COMPLICATIONS

- All children with severe forms of TB, such as TB meningitis, miliary TB, or other extra-pulmonary TB should receive in-patient hospital therapy initially and subsequently be considered for referral to TB hospitals for maintenance treatment. These children require at least 9 months of TB treatment.
- Give paracetamol or tilidine (Valaron®) to all children with meningitis for relief of headache (see pain management on pages 68–69).
- As recurrence may occur, all children with pulmonary TB should be carefully re-evaluated both clinically and radiologically before discontinuing therapy after 6 months.

Support

Caregivers need to receive accurate and detailed information about:

- The diagnosis
- The need to complete the full course of treatment
- The possibility of other family members or close contacts having TB

Prophylaxis

- Routine TB prophylaxis for HIV-infected children is not recommended currently.
- Prophylaxis with INH is needed for 6 months if there has been close contact with an adult with pulmonary TB (just as for HIV-negative children) especially if child is less than 5 years of age.

N.B.

For more on TB refer to: South African Tuberculosis Control Programme Practical Guidelines 2003.

Lymphoid interstitial pneumonitis (LIP)

Lymphoid interstitial pneumonitis (LIP) is a slowly progressive interstitial lung disease of unknown aetiology. LIP is often asymptomatic, but at times presents with symptoms.

It is common and occurs in 40% of HIV-infected children.

When to consider LIP

HIV-positive child aged more than 1 year with the following:

- Recurrent low-grade bacterial infections, chronic lung disease and bronchiectasis
- Slowly progressive hypoxia, tachypnoea and exertion fatigue
- Clubbing of fingers and/or toes
- Enlarged parotid gland
- Hepatomegaly

Suggestive chest X-ray findings:

- Bilateral reticulonodular infiltrates and mediastinal lymphadenopathy

Children with LIP often have episodes of intermittent acute pneumonia necessitating antibiotic treatment or admission to hospital.

Distinguishing this problem from TB can be difficult.

Management

- No therapy is required for the asymptomatic child.
- Treatment is required for hypoxic children (oxygen saturation consistently <92%) and/or those developing signs of cor pulmonale (right-sided heart failure).
- ART is important for the severely affected child.
- Prednisone 2 mg/kg daily for 4 weeks for severe cases may also be of help. Thereafter wean to the lowest dose required to maintain oxygen saturation $\geq 92\%$.

- Exclude any acute lower respiratory tract infection and pulmonary TB prior to treating children thought to have LIP with steroids.
- The child will usually be maintained on this lowest dose for life, however, with ART, they may recover and no longer require steroids.
- All children started on steroids should also be given PCP prophylaxis (see page 40) for as long as they are on steroid therapy.
- Management of severe or progressive LIP should be carried out in consultation with a specialist HIV clinic, although there is seldom an indication for admission to hospital.
- Relieve any respiratory distress (see Section 8: Paediatric palliative care).
- Once treatment has been initiated at the referral level, follow-up and maintenance treatment can be provided at the PHC clinic.

Gastro-intestinal conditions

Acute gastroenteritis

Dehydration is a common cause of mortality and morbidity in children with an acute diarrhoeal episode. It is therefore recommended that the process of assessment and management follows the structure below:

Assess dehydration → general history and examination → consider risk factors → consider special types of diarrhoeal illness.

Use the IMCI algorithm on the following page and rehydrate immediately where indicated.

IMCI Algorithm

1. Assess hydration. Start by looking to see if enough signs are present to classify as 'severe dehydration'. If not, try for 'some dehydration'. If still not, then classify 'no visible dehydration'.			
Signs	2 of the following signs	2 of the following signs	
Level of consciousness	Lethargic or unconscious	Restless and irritable	Alert
Sunken eyes	Sunken	Sunken	Not sunken
Ability to drink	Poor or unable	Eager, thirstily	Normal, not thirstily
Skin pinch (turgor)	Very slow return >2 seconds	Returns slowly <2 seconds	Returns immediately
Hydration classification	Severe dehydration	Some dehydration	No visible dehydration

Plan A: Treat for diarrhoea at home

Counsel the mother on the 3 rules of home treatment:

Give extra fluid, continue feeding and know when to return.

a. Give extra fluid (as much as the child will take)

■ Counsel the mother:

- Breastfeed frequently and for longer at each feed.
- If the child is exclusively breastfed, provide sugar-salt solution (SSS) in addition to breastmilk.
- If the child is not receiving breastmilk or is not exclusively breastfed, give one or more of the following: food-based fluids such as soft porridge, amasi (maas) or SSS or oral rehydration salts (ORS).

It is especially important to give ORS at home when:

- The child has been treated with Plan B or Plan C during this visit.
- The child cannot return to a clinic if the diarrhoea gets worse.

■ Teach the mother how to mix and give SSS or ORS:

- To make SSS: 1 litre boiled water + 8 level teaspoons of sugar + ½ a level teaspoon of salt.
SSS is the solution to be used at home to **prevent** dehydration.
- The contents of the ORS sachet is mixed with clean water and administered to **correct** dehydration.

COMPLICATIONS

- Show the mother how much fluid to give in addition to the usual fluid intake:

- Up to 2 years – 50 to 100 ml after each loose stool
- 2 years or more – 100 to 200 ml after each loose stool

Counsel the mother to:

- Give frequent small sips from a cup.
- If the child vomits, wait 10 minutes. Then continue, but more slowly.
- Continue giving extra fluid until the diarrhoea stops.

b. Continue feeding

c. When to return

Plan B: Treat for some dehydration with ORS

Give the clinic-recommended amount of ORS over 4-hour period:

Age*	Up to 4 months	4 months up to 12 months	12 months up to 2 years	2 years up to 5 years
Weight	<6 kg	6– <10 kg	10– <12 kg	12–19 kg
MI for 4 hours	200–450	450–800	800–960	960–1600

*Use the child's age only when you do not know the weight. The amount of ORS needed each hour is about 20 ml for each kg weight. Multiply the child's weight in kg multiply by 20 for each hour. This multiplied by four is the total number of ml over the first four hours. One teacup is approximately 200 ml.

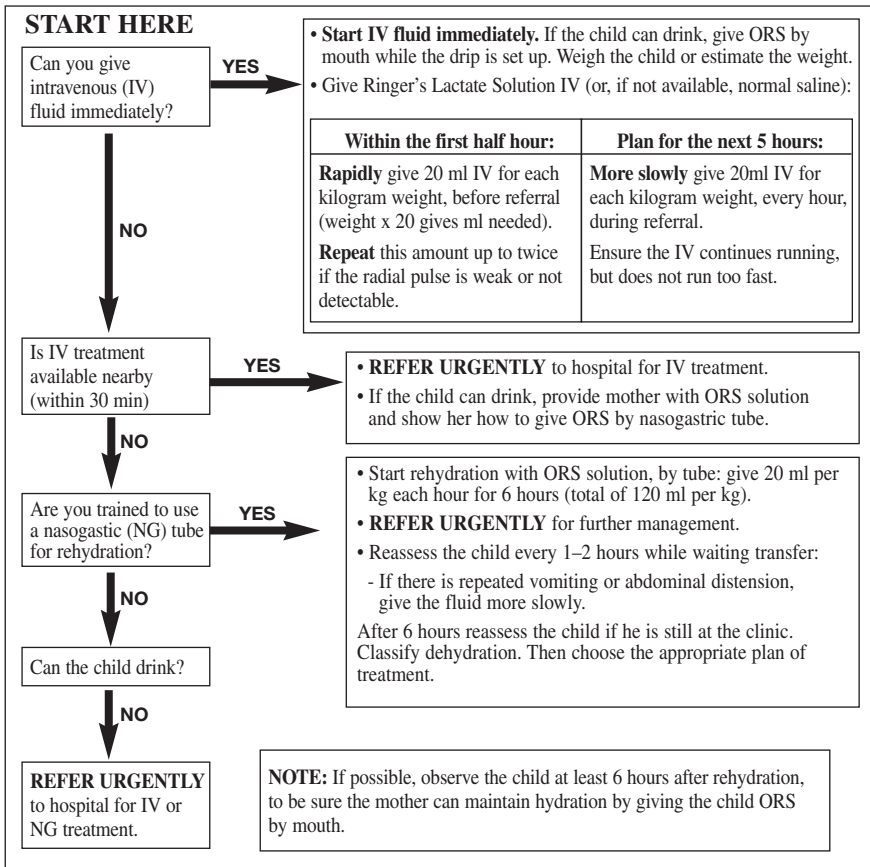
- Show the mother how to give ORS.
 - Give frequent small sips from a cup.
 - If the child vomits, wait 10 minutes. Then continue, but more slowly.
 - Continue breastfeeding whenever the child wants.
 - If the child wants more ORS than shown, give more.
- After 4 hours:
 - Reassess the child and classify the child for dehydration.
 - Select the appropriate plan to continue treatment.
 - Begin feeding the child in clinic.

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- If mother must leave before completing treatment:
 - Refer if possible. Otherwise:
 - Show her how to prepare ORS at home.
 - Show her how much ORS to give to finish the 4-hour treatment at home
 - Show her how to prepare SSS for use at home.
 - Explain the 3 rules of home treatment:
 - Give extra fluid, continue feeding and know when to return.**

Plan C: Treat severe dehydration quickly

Follow the arrows. If answer is YES, read across. If NO, read down.



2. Carry out the normal history taking and examination.

3. Look for special risk situations

The following groups of children should be managed in inpatient wards:

- infants under 1 month old
- malnourished children
- children with other danger signs such as:
 - convulsions with this illness
 - altered level of consciousness
 - persistent vomiting
 - respiratory distress
 - persistent diarrhoea with dehydration
 - hypothermia
 - abdominal distension
 - dysentery in child <12 months

These children should not be managed at primary health-care establishments, but should be referred. Give pre-referral treatment: first dose of antibiotic (IM ceftriaxone) and start rehydration, as required.

4. Look for special types of diarrhoea

Bloody diarrhoea: consider dysentery. Give ciprofloxacin
Diarrhoea with high fever/very ill – Consider typhoid: refer
Persistent diarrhoea (more than 14 days) – consider referral
(see pages 52–54)

General management

- Continue feeding.
- Educate the family on hygiene.
- Review in 5 days, but earlier if the child gets sicker.
- Advise caregiver when to return immediately, and on home care and prevention of diarrhoea.

Fluid management for inpatient care

Knowledge about how much fluid is required is essential even when a child is not ill. Maintenance fluids can be given orally or intravenously. Usual fluid requirements for maintenance can be calculated from body weight. Provide 100 ml/kg for the first 10 kg of body weight, 50 ml/kg for the next 10 kg, and 25 ml/kg/day thereafter.

Nutritional management

- If breastfed, continue breastfeeding throughout rehydration and maintenance phases of treatment.
- If formula fed, restart formula feeds after completion of rehydration (after 4 hours).

Drug therapy

- Antidiarrhoeal agents are not beneficial and may be harmful.
- Diarrhoea episodes do **not** require antibiotic treatment – except in cholera.
- Antibiotic treatment may be required in the neonate, in cases of severe malnutrition, severe systemic illness (toxic) or if there is dysentery.

Dysentery

Dysentery presents with blood in the stool with or without mucus.

Outpatient management

- Refer for inpatient care if:
 - Child is dehydrated
 - Child is <12 months
 - Child unable to tolerate oral medication
 - No improvement after 2 days of antibiotic
 - Child is deteriorating
- Assess hydration and manage as explained above (acute gastroenteritis).
- Continue feeding.
- If possible, send stools for microscopy and culture.
- Treat with ciprofloxacin as an outpatient
 - ciprofloxacin dosage: 5–10 mg/kg/dose 12 hourly for 3 days.
- Educate the family on hygiene.
- Review after 2 days but earlier if there is deterioration.
- Advise caregiver when to return immediately, and on home care and prevention of diarrhoea.

Hospital management

Ceftriaxone: 20–80 mg/kg/day IM daily for 3–5 days.

Persistent diarrhoea

(>3 liquid stools per day for 14 days or more)

This problem is associated with an 11-fold increase in risk of death. Up to 70% of diarrhoeal deaths in HIV-infected children are due to persistent diarrhoea.

Outpatient management

- Assess and treat for dehydration (see acute gastroenteritis, pages 47–52).
- Continue feeding: optimal nutritional therapy is a vital component of the management. Nutritional therapy consists of providing easily available, inexpensive and culturally acceptable foods. (See box below.)
- Give an additional dose of Vitamin A. (Omit this if the child has had a dose during the previous month.)

Feeding recommendations for persistent diarrhoea

- If still breastfeeding, give more frequent, longer breastfeeds, day and night.
- If taking other milk:
 - 1st choice is to: replace with fermented milk products, such as amasi (maas) or yoghurt
 - 2nd choice is to: replace half the milk with nutrient-rich semisolid food (like mashed fruit or vegetables).
- For other foods, follow feeding recommendations for the child's age.
- Avoid very sweet foods or drink.
- Give small, frequent meals at least 6 times a day.
- After recovery give one extra meal a day.

Follow up in 5 days

- Refer for inpatient management if:
 - Persistent diarrhoea has not improved 5 days after first presentation to health service, despite the child being fed appropriate foods at home.
 - Child now shows some malnutrition.
 - Child shows some or severe dehydration.

Hospital treatment for persistent diarrhoea

Persistent diarrhoea in HIV-infected children is difficult to manage, particularly if the child is also malnourished.

The following management strategies may be attempted:

- Correct any dehydration, electrolyte or acid-base abnormalities.
- Refer for admission if there is any dehydration.

Investigations

- Assess for infections elsewhere, e.g. urinary tract infection.
- Send a fresh stool for microscopy and culture to the laboratory, to identify atypical or unusual organisms.
- Do a lactose test on stools. A simple method of checking stools for reducing substances is to test for the presence of glucose on a urine dipstick of a stool specimen.

Feeding

- If reducing substance is present (>0.5% on Clinitest), try a non-lactose containing feed (e.g. a soya-based formula).
- Provide yoghurt (or a similar fermented milk product, e.g. maas) if available. This reduces by one-half the amount of lactose in the child's diet.

Give frequent small meals, at least six times a day (see Section 5: Nutrition).

‘Bowel cocktail’

A ‘bowel cocktail’ (Bowie’s regimen) may be tried, although there is inadequate evidence that it is effective:

- Cholestyramine 1 g 6 hourly orally for 5 days
- Gentamicin 50 mg/kg/day 4 hourly for 3 days given orally

Small doses of oral morphine may be useful for intractable diarrhoea (see Section 8: Paediatric palliative care), or Immodium® if no cause has been identified.

Candidiasis (thrush)

Oral candidiasis

This is a very common problem in HIV-infected children. If it persists beyond 30 days despite treatment, it is strongly suggestive of HIV-infection. It is at times accompanied by candidial napkin rash.

Description

This may be confined to the tongue and buccal mucosa and/or extend into the pharynx and/or oesophagus. If it is extensive, it is painful and interferes with eating and swallowing.

Outpatient management

- Give nystatin (Mycostatin®) drops 1 ml 6 hourly \pm 30 mins after feed for 7 days. If the child is breastfed, check for breast thrush and treat the mother accordingly. If the response is poor, add miconazole (Daktarin®) oral gel and apply 4–6 hourly to oral mucosa for 7–14 days.
- Use Gentian Violet, if above medications are unavailable.
- Apply medication after meals.
- Relieve pain with paracetamol. Topical analgaesia may be of benefit. Use choline salicylate gel (Tegel®, Bonjela®) or benzylamine mouthwash (Andolex®).
- Refractory oral candidiasis, or if oesophageal candidiasis is suspected (see page 56): treat with fluconazole 3 mg/kg/day for 21 days.

Refer if:

- Appropriate medication is unavailable.
- The child is unable to feed or is vomiting all feeds.

Oesophageal candidiasis

This is an AIDS-defining illness.

Suspect oesophageal candidiasis if a child with oral candidiasis:

- Refuses feeds
- Has swallowing difficulty
- Drools
- Has a hoarse voice or stridor

Oesophageal candidiasis may occur in the absence of oral candidiasis.

- Treat with fluconazole 3 mg/kg/day for 21 days IV changing to oral if tolerating feeds.
- Relieve pain.

Skin conditions

Herpes simplex virus

This illness is usually part of an acute primary infection with extensive ulcers in and around the mouth. There may be recurrent infections and at times secondary bacterial infection.

Description

Painful ulcers 4–5 mm in diameter can be seen on the tongue, lips and all mucosal surfaces of the mouth. They cause severe pain and interfere with feeding. The child often salivates and drools excessively. Chronic extensive ulcers around mouth and/or nose may also occur.

Outpatient management

- Oral acyclovir: 2 years and over, give 400 mg 8 hourly for 5 days; under 2 years, give 200 mg 8 hourly for 5 days.
- Repeated courses may be required.
- If superinfected, give amoxycillin (10–25 mg/kg 8 hourly and flucloxacillin 12–25 mg/kg per dose 6 hourly max 500 mg per dose) and topical antibiotics may be indicated as well.
- Pain relief, as for oral candidiasis.

COMPLICATIONS

Refer if:

- Appropriate medication is unavailable.
- Disseminated infection is suspected (pneumonia, jaundice, abnormal neurological findings).
- The child is unable to ingest fluids.
- The child is dehydrated.

Inpatient management

Acyclovir IV 250 mg/m² 8 hourly or 5 mg/kg 8 hourly

$$BSA = \sqrt{\frac{\text{Height (cm)} \times \text{weight (kg)}}{3600}} \text{ m}^2$$

Chickenpox (varicella)

Chickenpox presents with vesicles, which start as papules and eventually become crusted, distributed over face, trunk and limbs. The child with immune suppression may have large and extensive vesicles. Vesicles appear in crops over several days. Mucosal surfaces may also be involved.

The child is infectious until all lesions have crusted, therefore they need to be isolated for some weeks. This is particularly important to avoid infecting other HIV-infected children or adults.

N.B.

HIV-infected children, who have been exposed to chickenpox, should be given varicella immunoglobulin.

Outpatient treatment

- Acyclovir: 80 mg/kg per day orally in 3–4 divided doses for 7–14 days.
- If secondary bacterial infection develops, add amoxicillin 10–25 mg/kg 8 hourly and oral flucloxacillin 12–25 mg/kg per dose 6 hourly, with a maximum of 500 mg per dose.
- Refer to higher level of care if appropriate medication is not available.
- Refer for inpatient management if disseminated infection is suspected (pneumonia, jaundice, abnormal neurological findings), or the child is unable to ingest fluids or the child is dehydrated.

Treatment for disseminated infection

Acyclovir IV (500 mg/m² per dose per day in 3 divided doses for 7–14 days or 10 mg/kg/dose in 3 divided doses for 7–14 days).

Oral or intravenous antibiotics may be needed if vesicles have secondary bacterial infection.

Herpes zoster

This is a reactivation of varicella. Vesicular lesions usually occur in the region of a dermatome unilaterally and are associated with pain and fever. As zoster is uncommon in children one must suspect HIV-infection.

N.B.

If more than one dermatome is affected, it is an AIDS-defining condition.

Outpatient treatment

- Acyclovir (80 mg/kg per day orally in 3–4 divided doses for 7–10 days) may hasten healing of lesions.
- Pain control/relief with paracetamol.
- Refer to a higher level of care if appropriate medication is unavailable or disseminated disease is suspected.
- Treatment for disseminated infection is as above.

Seborrhoeic dermatitis

This is characterised by eczematous lesions, often with diffuse scaling of scalp ('cradlecap'), erythema and scaling of the intertriginous folds and napkin areas. It tends to be severe in HIV-positive children.

Secondary bacterial and candidial infection of the rash is common.

Outpatient management

- Aqueous cream (UEA) as soap.
- 1% hydrocortisone cream twice daily to affected areas.
- If more severe, try betamethasone valerate 1:10 or 1:4 in UEA and nystatin and terramycin ointment together with steroid cream.
- If still unresponsive, add oral antibiotics or prednisone.

Molluscum contagiosum

Papular umbilicated lesions usually occurring around eyes but may be generalised. They may become severe or develop large forms with immunosuppression. Often does not require treatment if mild.

Treatment

If severe, refer to a specialist centre for:

- Liquid nitrogen
- Cantharidin paint
- Pricking with injection needle
- Surgical excision/curettage or electro-surgery with adequate analgesia

Extensive lesions respond to nothing except ART.

Warts

There are widespread common and plane warts. Large genital warts are frequent and extremely refractory to usual modalities of treatment (salicylic paint, cryotherapy, podophyllin, chloroacetic acid).

Mild warts may be left alone, refer for management if severe.

Treatment

- Liquid nitrogen is the main therapy
- Topical retinoid gels (Adapalene®) for extensive flat warts
- Application of 50% trichloroacetic acid once monthly
- Genital warts: 25% podophyllin in Tinct. Benz. Co. applied every two weeks

HIV ARV drugs are indicated in severe cases, often resulting in clearing of the warts and decreasing the chance of recurrence.

Impetigo

Crusting superficial sores usually occur around mouth or nose. Deeper lesions can be seen on the legs (ecthyma). They are usually caused by *Staph. aureus* or *Strep pyogenes*. Lesions can be more severe and recurrent in HIV-positive children.

The underlying cause may be insect bites or abrasions that are scratched and become septic.

Treatment

- Oral erythromycin 10 mg/kg/dose 6 hourly, or cloxacillin 12–25 mg/kg/dose 6 hourly orally, or cefalexin 25–50 mg/kg/day 8 hourly
- Terramycin or Bactroban® ointment
- Antiseptic soaps are helpful – especially for handwashing
- Clean, short fingernails
- Apply simple antiseptic to abrasions to prevent infection

Tinea (ringworm)

Tinea corporis presents as circular lesions with a raised edge and central clearing on the body. They are itchy at times.

Tinea capitis: circular lesions on scalp with alopecia. Extensive infections seen with HIV.

Treatment

- Whitfield's ointment is effective for *Tinea corporis*
- Oral griseofulvin 20 mg/kg/d in two doses for 1–3 months is indicated for *Tinea capitis* and severe *Tinea corporis*
- Topical imidazole creams

Dry skin and itching

Aggravated by soaps

Treatment

- Use UEA or UE (emulsifying ointment) instead of soap
- Emulsified bath oils

Drug-related skin reactions

Lesions are very varied ranging from somewhat pigmented patches to extensive shallow ulceration or necrotic skin lesions. The conditions may be severe and life threatening.

Types

- Maculopapular erythema
- Urticaria
- Erythema multiforme major (Stevens-Johnson Syndrome [SJS]): target lesions, bullae, skin sloughing, involves mucosal surfaces
- Toxic epidermal necrolysis (TEN) (sloughing of epidermis)
- Fixed eruption

Causative agents

- Antibiotics (co-trimoxazole, penicillins, sulphonamides, antiTB drugs)
- Phenolphthaleine laxatives
- NSAIDs
- Antiretrovirals
- Anticonvulsants

Treatment

This depends on the severity and the need for the implicated drug. Discontinue suspected drug. Response to stopping drug should be seen within 3–5 days.

Refer for admission

- Erythema multiforme
- Stevens-Johnson Syndrome
- Toxic epidermal necrolysis

Outpatient treatment

- Topical or oral steroids
- Promethazine 0.125 mg/kg 6 hourly orally as needed until the skin rash disappears