

Chapter 1: Dental and oral conditions

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Chapter 1 Dental and oral conditions

1.1 Abscess and caries, dental

1.1.1 Abscess, dental

K04.7

Description

Acute or chronic suppuration related to teeth, due to infection. It is characterised by:

- » acute, severe, throbbing pain
- » swelling adjacent to the tooth, or on the face
- » pain worsened by tapping on affected teeth
- » restriction in mouth opening or difficulty in swallowing
- » pus collection and drainage either intra-orally or on the face

Drug treatment

Initiate treatment before referral.

- Amoxicillin, oral, 10–20 mg/kg 8 hourly for 5 days

Weight kg	Dose mg	Use one of the following:			Age Months/ years
		Syrup		Capsule 250 mg	
		125 mg/ 5 mL	250 mg/ 5 mL		
≥ 11–20 kg	250 mg	10 mL	5 mL	1 capsule	≥ 18 months–7 years
≥ 20 kg and above	500 mg	–	–	2 capsules	≥ 7 years to adult

Penicillin–allergic patients:

- Erythromycin, oral, 10–15 mg/kg/dose 6 hourly for 5 days

Weight kg	Dose mg	Use one of the following:		Age Months/years
		Syrup 125 mg/5 mL	Tablets 250 mg	
≥ 11–14 kg	150 mg	6 mL	–	≥ 18 months–3 years
≥ 14–17.5 kg	200 mg	8 mL	–	≥ 3–5 years
≥ 17.5–25 kg	250 mg	10 mL	1 tablet	≥ 5–7 years
≥ 25–35 kg	375 mg	15 mL	–	≥ 7–11 years
≥ 35 kg and above	500 mg	–	2 tablets	≥ 11 years and adults

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- Metronidazole, oral, 7.5 mg/kg/dose 8 hourly for 5 days

Weight kg	Dose mg	Use one of the following:			Age Months/years
		Susp 200mg / 5mL	Tablets 200mg	Tablets 400mg	
≥9–11 kg	80 mg	2 mL	–	–	≥ 12–18 months
≥11–14 kg	100 mg	2.5 mL	½ tablet	–	≥18 months–3 years
≥14–17.5 kg	120 mg	3 mL	–	–	≥ 3–5 years
≥17.5–25 kg	160 mg	4 mL	–	–	≥ 5–7 years
≥25–35 kg	200 mg	5 mL	1 tablet	½ tablet	≥7–11 years
≥35–55 kg	300 mg	7.5 mL	1½ tablets	–	≥11–15 years
≥55 kg and above	400 mg	–	2 tablets	1 tablet	≥ 15 years and adult

- Paracetamol, oral, 15 mg/kg/dose 4–6 hourly when required to a maximum of 4 doses per 24 hours.

Weight kg	Dose mg	Use one of the following:		Age months/years
		Syrup 120 mg/5mL	Tablet 500 mg	
≥ 11–14 kg	120 mg	5 mL	–	≥ 18 months–3 years
≥ 14–17.5 kg	180 mg	7.5 mL		≥ 3–5 years
≥ 17.5–35 kg	240 mg	10 mL	½ tablet	≥ 5–11 years
≥ 35–55 kg	500 mg	–	1 tablet	≥ 11–15 years
≥55 kg and above	Up to 1 000 mg	–	Up to 2 tablets	Adults

Referral

- » All cases on diagnosis

1.1.2 Caries, dental

K02

To be managed by a dentist.

For local anaesthesia for dental procedures:

- Xylocaine (Dentist only)
- Xylocaine with adrenaline (Dentist only)

1.2 Candidiasis, oral (thrush)

B37.0

Description

An infection of the mouth and sometimes of the pharynx caused by species of the *Candida* fungus. Presents as painful creamy white patches that can be scratched off the tongue and buccal mucosae.

Often occurs in otherwise healthy babies up to one month of age.

Risk factors for candida include:

- » poor oral hygiene
- » immunosuppression (severe cases are common)
- » prolonged use of broad spectrum antibiotics or corticosteroids (also inhaled)
- » certain chronic diseases, e.g. diabetes mellitus
- » trauma e.g. poorly fitting dentures

General measures

- » Identify underlying diseases (e.g. diabetes or HIV) or medication (such as steroid inhaler or long-term antibiotics)
- » Improve oral hygiene
- » Cup feeding in preference to bottle feeding
- » Ensure proper fitting dentures

Drug treatment**Infants**

- Nystatin suspension, oral, 100 000 IU/mL, 1 mL after each feed for 7 days
or
Gentian violet, 0.5%, topical aqueous solution, applied to the inside of the mouth three times daily
 - Continue for 48 hours after cure.

Adults

- Antifungal lozenges (troches), e.g. amphotericin B, oral, one lozenge (troche) sucked 6 hourly for 5 days.
 - Treatment may need to be repeated.

Note:

HIV infected patients with oral candidiasis and painful or difficult swallowing have oesophageal involvement and need fluconazole – See section 11.3.3: *Candida* oesophagitis.

Referral

- » No improvement
- » Uncertain diagnosis
- » Pharyngeal spread

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1.3 Gingivitis and peridontitis

K05

1.3.1 Gingivitis, uncomplicated

K05.0

Description

Inflammation of the gum margin causing the gums to separate from the teeth. Pockets form between the gums and the teeth. Pus and bacteria can collect in these pockets, eventually causing periodontitis, a disease in the tissue that surround and supports the teeth – See section 1.3.2: Peridontitis.

Characteristics of uncomplicated gingivitis:

- » change in the normal gum contour
- » redness
- » watery exudate/bleeding
- » may be recurrent
- » may be painful
- » swollen gums
- » gum recession may occur

Prophylaxis and general measures

Oral hygiene is usually adequate to prevent superficial mouth and gum infection:

- » Oral hygiene after each meal to remove plaque and food debris.
- » Frequent thorough brushing of teeth, at least twice daily.
- » Dental flossing at least once a day.
- » Homemade salt mouthwash may help, e.g. ½ medicine measure of table salt in a glass of lukewarm water. Rinse mouth for one minute twice daily.

Drug treatment

- Paracetamol, oral, 15 mg/kg/dose 4–6 hourly when required to a maximum of 4 doses per 24 hours

Weight kg	Dose mg	Use one of the following:		Age months/years
		Syrup 120 mg/5mL	Tablet 500 mg	
≥ 11–14 kg	120 mg	5 mL	–	≥ 18 months–3 years
≥ 14–17.5 kg	180 mg	7.5 mL		≥ 3–5 years
≥ 17.5–35 kg	240 mg	10 mL	½ tablet	≥ 5–11 years
≥ 35–55 kg	500 mg	–	1 tablet	≥ 11–15 years
≥55 kg and above	Up to 1 000 mg	–	Up to 2 tablets	Adults

- Chlorhexidine 0.2%, 15 mL as a mouthwash, 2–4 times daily for 5 days after brushing and flossing

1.3.2 Periodontitis

K05.3

Description

Progressive gingivitis to the point where the underlying bone is eroded and is characterised by loose teeth in their sockets.

It is a cause of tooth loss in adults. See section 1.3.1: Gingivitis, uncomplicated.

General measures

- » Advice on improving and maintaining oral hygiene.
- » Frequent thorough brushing of teeth (at least twice daily).

Drug treatment

- Chlorhexidine 0.2%, 15 mL as a mouthwash, 2–4 times daily for 5 days after brushing

Referral

- » All cases

1.3.3 Necrotising periodontitis

K05.5

Description

An acute very painful infection of the gingival margin characterised by:

- » foul smelling breath
- » loss of gingiva and supporting bone around teeth
- » presence of underlying disease, e.g. HIV

May lead to loss of surrounding lips and cheeks if not adequately treated.

Management

- Relieve pain
- Improve oral hygiene

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Drug treatment

- Metronidazole, oral, 7.5 mg/kg/dose 8 hourly for 5 days

Weight kg	Dose mg	Use one of the following:			Age Months/years
		Susp 200 mg/ 5mL	Tablets 200 mg	Tablets 400 mg	
≥ 9–11 kg	80 mg	2 mL	–	–	≥ 12–18 months
≥ 11–14 kg	100 mg	2.5 mL	–	–	≥ 18 months–3 years
≥14–17.5 kg	120 mg	3 mL	–	–	≥ 3–5 years
≥17.5–25 kg	160 mg	4 ml	–	–	≥ 5–7 years
≥25–35 kg	200 mg	5 ml	1 tablet	½ tablet	≥7–11 years
≥35–55 kg	300 mg	7.5mL	1½ tablets	–	≥11–15 years
≥55 kg and above	400 mg	–	2 tablets	1 tablet	≥ 15 years and adult

- Chlorhexidine 0.2%, 15 mL as a mouthwash, 2–4 times daily 30 minutes after brushing.
 - Continue for 5 days
- Paracetamol, oral, 15 mg/kg/dose 4–6 hourly when required to a maximum of 4 doses per 24 hours

Weight kg	Dose mg	Use one of the following:		Age months/years
		Syrup 120 mg/5mL	Tablet 500 mg	
≥ 11–14 kg	120 mg	5 mL	–	≥ 18 months–3 years
≥ 14–17.5 kg	180 mg	7.5 mL	–	≥ 3–5 years
≥ 17.5–35 kg	240 mg	10 mL	½ tablet	≥ 5–11 years
≥ 35–55 kg	500 mg	–	1 tablet	≥ 11–15 years
≥ 55 kg and above	Up to 1 000 mg	–	Up to 2 tablets	≥ 15 years and adults

Referral

For dental treatment:

- » No improvement within 5 days

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1.4 Herpes stomatitis

B00.2

Description

Acute, painful vesicular eruptions of the lips and mouth caused by *Herpes simplex* virus characterised by:

- » Shallow painful ulcers on the lips, gingiva and tongue
- » Pain exacerbated on eating
- » It is a self-limiting infection with symptoms subsiding within 10 days

General measures

- » Homemade salt mouthwash may help, e.g. ½ medicine measure of table salt in a glass of lukewarm water. Rinse mouth for one minute twice daily
- » Improve nutrition
- » Ensure adequate hydration
- » Fluid diet for children
- » Avoid acidic drinks, e.g. orange juice or soft drinks as they may cause pain
- » Cover lesions on the lips with petroleum jelly

Drug treatment

- Paracetamol, oral, 15 mg/kg/dose 4–6 hourly when required to a maximum of 4 doses per 24 hours
 - In children under six months calculate dose by weight

Weight kg	Dose mg	Use one of the following:		Age months/years
		Syrup 120 mg/5mL	Tablet 500 mg	
≥ 3.5–5 kg	48 mg	2 mL	–	≥ 1–3 months
≥ 5–7 kg	60 mg	2.5 mL	–	≥ 3–6 months
≥ 7–9 kg	96 mg	4 mL	–	≥ 6–12 months
≥ 9 – 14 kg	120 mg	5 mL	–	≥ 12 months–3 years
≥ 14 –17.5 kg	180 mg	7.5 mL	–	≥ 3–5 years
≥ 17.5 – 35 kg	240 mg	10 mL	½ tablet	≥ 5–11 years
≥ 35 – 55 kg	500 mg	–	1 tablet	≥ 11–15 years
≥ 55 kg and above	Up to 1 000 mg	–	Up to 2 tablets	Adults

Extensive oral herpes:

- Tetracaine 1 %, oral, topical, applied every 3 to 4 hours.
 - Apply a thin layer on the affected areas only.

Note:

Children with extensive oral herpes should be treated with aciclovir if this can be started within 72 hours of onset of symptoms.

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HIV infected patients with Herpes stomatitis:

- Aciclovir, oral, 8 hourly for 7 days. (Doctor initiated)
 - Paediatric dose: 250 mg/m²/dose

Weight kg	Dose mg	Use one of the following:			Age Months/ years
		Susp 200 mg/ 5mL	Tablet 200 mg	Tablet 400 mg	
≥ 3.5–7 kg	80 mg	2 mL	–	–	≥ 1–6 months
≥ 7–11 kg	100 mg	2.5 mL	–	–	≥ 6–18 months
≥ 11–14 kg	120 mg	3 mL	–	–	≥ 18 months–3 years
≥ 14–25 kg	160 mg	4 mL	–	–	≥ 3–7 years
≥ 25–35 kg	200 mg	5 mL	1 tablet	½ tablet	≥ 7–11 years
≥ 35–55 kg	300 mg	7.5 mL	1½ tablets	–	≥ 11–15 years
≥ 55 kg and above	400 mg	–	2 tablets	1 tablet	≥ 15 years and adults

Referral

- » Severe condition with complications
- » Dehydrated patients
- » No improvement after 1 week of treatment

1.5 Aphthous ulcers

K12.0

Description

Painful ulcers in the oropharynx. Minor ulcers (<1 cm diameter) usually heal within 2 weeks. Major ulcers (>1 cm diameter) are very painful, often very deep and persist.

Drug treatment

Minor aphthous ulcers:

- Choline salicylate/cetalkonium chloride 8.7/0.01% oral gel, applied 6 hourly until healed

Referral

- » Major aphthous ulcers for further diagnostic evaluation

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- 2.1 Abdominal pain**
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- 2.11 Irritable bowel syndrome**
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2.1 Abdominal pain

R10.4

Description

Abdominal pain is a common symptom, which may be non-specific. It is frequently benign, but may indicate a serious acute pathology. A thorough evaluation is necessary to exclude a surgical abdomen or other serious condition.

The history should include:

- » duration, location, type, radiation and severity of pain
- » relieving or aggravating factors e.g. food, antacids, exertion
- » associated symptoms e.g. fever or chills, weight loss or gain, nausea, vomiting, diarrhoea, cramps fresh blood per rectum, melaena stools, jaundice, change in stool or urine colour
- » past medical and surgical history
- » medication history
- » alcohol intake
- » family history of bowel disorders
- » menstrual and contraceptive history in women
- » associated vaginal discharge in women with lower abdominal pain

Examination should emphasise detection of:

- » tachycardia
- » fever
- » jaundice
- » abdominal masses, distension, tenderness
- » signs of peritonitis (rebound tenderness and guarding)

Drug treatment

Symptomatic treatment if no specific cause or indication for referral is found.

Urinary tract infection

See chapter 8: Kidney and urological disorders

Dyspepsia

See section 2.2: Dyspepsia, heartburn and indigestion

For pain relief (adults)

Analgesia as appropriate.

Renal and biliary colic, or acute surgical abdomen

- Morphine, IM/IV, 10–15 mg as a single dose and refer
 - For IV morphine:
 - Dilute in 10 mL sodium chloride 0.9%
 - Administer slowly over 4–5 minutes

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Abdominal pain with cramp-like pains

- Hyoscine butylbromide, oral, 10–20 mg 6–8 hourly for a maximum of 3 days

Cancer pain e.g. pancreatic, gastric cancer

See section 20.3: Chronic cancer pain.

Referral

- » Severe pain with no confirmed cause treatable at primary healthcare level
- » Signs of acute abdomen
- » Associated bloody non-diarrhoeal stools
- » Associated abdominal mass

2.2 Dyspepsia, heartburn and indigestion

K30/R12

Description

Dyspepsia, heartburn and indigestion are common conditions, which often present with epigastric discomfort and minimal change in bowel habits.

Intermittent indigestion, heartburn or dyspepsia may be associated with:

- » use of NSAIDs, e.g. aspirin, ibuprofen, pain powders
- » spicy food, alcohol, carbonated drinks
- » smoking

Consider the possibility that dyspeptic symptoms may be due to acute coronary syndrome.

General measures

- » Stop smoking.
- » Limit alcohol intake.
- » Eat small frequent meals.
- » Check haemoglobin.
- » Check for a drug cause likely to be associated with dyspeptic symptoms.

Drug treatment

Initiate drug therapy only after full assessment.

- Aluminium hydroxide 250 mg/magnesium trisilicate 500 mg, oral, 1–2 tablets to be chewed 1 hour before and 3 hours after meals and at night when needed.
 - Maximum of 16 tablets daily or continuous treatment for 7 days

If there is no response

- Cimetidine, oral, 400 mg at bedtime for 14 days

! CAUTION !

Cimetidine has a high potential for drug interactions when used concomitantly with other drugs.

Referral

- » Presence of warning signs:
 - weight loss

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- persistent vomiting
- dysphagia
- anaemia
- haematemesis
- palpable abdominal mass
- » No response within 7 days of starting cimetidine treatment
- » Recurrence of symptoms:
 - especially in age over 50 years
 - family history of gastric carcinoma
 - previous gastric surgery

2.3 Nausea and vomiting, non-specific

R11

Description

There are many possible causes of nausea and vomiting. Some important causes to **exclude** are:

- » gastro-intestinal disease
- » liver disease
- » renal failure
- » alcohol abuse
- » early pregnancy
- » medicines

Establish if the vomiting is associated with:

- » abdominal pain
- » diarrhoea
- » headache
- » constipation

General measures

- » Maintain adequate hydration with clear fluids
See section 2.8: Diarrhoea
- » In children in whom feeds are stopped, this should not be for more than 1 hour and restart feeding in smaller more frequent amounts

Drug treatment

Do not use anti-emetics in children.

Adults

- Metoclopramide, IV/oral, 10 mg 6–8 hourly

Referral

Urgent

- » Severe dehydration
- » Shock
- » Diabetes

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- » Features of sepsis
- » Jaundice
- » Infants with projectile vomiting
- » Signs of intestinal obstruction, i.e. no stool or flatus passed
- » Associated abdominal tenderness with guarding and rigidity
- » Vomiting with digested or fresh blood present

2.4 Anal conditions

2.4.1 Anal fissures

K60.2

Description

Painful small cracks just inside the anal margin. It is often seen together with a sentinel pile or external haemorrhoids and may cause spasm of the anal sphincter.

General measures

- » Dietary advice to promote soft stools.

Drug treatment

- Bismuth subgallate compound, ointment, topical, applied 2–4 times daily
or
Lignocaine 2%, cream, topical, applied after each bowel action
- Lactulose, oral, 0.5 mL/kg/dose once daily
 - If poor response, increase frequency to 12 hourly

Weight kg	Syrup 3.3 g/5 mL	Age years
≥ 5–9 kg	2.5 mL	≥ 3 months–1 year
≥ 9–17.5 kg	5 mL	≥ 1–5 years
≥ 17.5–25 kg	7.5 mL	≥ 5–7 years
≥ 25–35 kg	10 mL	≥ 7–11 years
≥ 35–55 kg	10 – 20 mL	≥ 11–15 years
≥ 55 kg and above	10 – 20 mL	≥ 15 years and adult

Referral

- » Severe pain
- » Recurrent episodes
- » Poor response to symptomatic treatment

2.4.2 Haemorrhoids

I84.9

Description

Varicose veins of the ano-rectal area, usually accompanied by a history of constipation.

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In older patients consider a diagnosis of underlying carcinoma.

General measures

- » High-fibre diet.
- » Counsel against chronic use of laxatives.
- » Avoid straining at stool.

Drug treatment

Symptomatic treatment for painful haemorrhoids

- Bismuth subgallate compound, ointment, topical, applied 2–4 times daily
or
Lignocaine 2%, cream, topical, applied after each bowel action

Constipation

See section 2.7: Constipation

Referral

- » For surgical intervention if necessary
 - if the haemorrhoid cannot be reduced
 - if the haemorrhoid is thrombosed
- » Children

2.5 Appendicitis

K35.9

Referral

- » All patients with suspected appendicitis:
 - right iliac fossa tenderness
 - right iliac fossa rebound pain
 - severe persistent abdominal pain

2.6 Cholera

A00.9

Note: notifiable condition.

Description

Very acute severe watery diarrhoea due to infection with the micro-organism *Vibrio cholerae*.

Clinical features include:

- » rice water appearance of stools:
 - no blood in stools
 - no pus in stools
 - no faecal odour
 - possible vomiting
 - rapid severe dehydration

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Note:

The prime objective is to prevent and treat dehydration.

General measures

» Rehydrate aggressively with ORS.

Drug treatment

Dehydration

Children

Treat dehydration – See Section 2.8.1: Diarrhoea, acute in children

Adults

Oral treatment

- Oral rehydration solution (ORS)
or
Homemade sugar and salt solution (see section 2.8: Diarrhoea)
The volume of fluid required for oral rehydration depends on the severity of the dehydration.

Oral rehydration is preferable to IV. In stuporose patients administer ORS by nasogastric tube.

IV treatment

- Sodium chloride 0.9%, IV and refer

For the management of severe dehydration during cholera outbreaks, replace sodium chloride 0.9% with:

- Ringer–Lactate, IV and refer

Do not administer ceftriaxone to patients receiving Ringer–Lactate, or who have received Ringer–Lactate intravenously in the previous 48 hours.

Ringer–Lactate should only be available at PHC level during cholera outbreaks.

Cholera epidemics or where cholera is confirmed on culture

Antibiotics may vary according to sensitivities in epidemics. Consult the NICD for the latest recommendations. Current recommendations are:

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- Doxycycline, oral, as a single dose
 - Adults (including pregnant women)
 - Children: 4 mg/kg/dose

Weight kg	Dose mg	Use one of the following:		Age Months / years
		Capsules 50 mg	Capsules 100 mg	
≥ 7–14 kg	50 mg	1 capsule	–	≥ 6 months–3 years
≥ 14–25 kg	100 mg	2 capsules	1 capsule	≥ 3–7 years
≥ 25–35 kg	150 mg	3 capsules	–	≥ 7–11 years
≥ 35–55 kg	200 mg	–	2 capsules	≥ 11–15 years
≥ 55 kg and above	300 mg	–	3 capsules	≥ 15 years and adults

- Contra-indicated in children less than 8 years. However, in confirmed cases or during epidemics, where the organism is not sensitive to other antibiotics, a single dose may be administered.

Referral

- » Severely ill patients
- » According to provincial and local policy
- » Children under 6 months of age

2.7 Constipation

K59.0

Description

A condition characterised by a change in usual bowel habits and dry, hard stools. There is a decreased frequency of bowel action and patients should be assessed individually.

Constipation may have many causes, including:

- » incorrect diet (fibre and fluid)
- » pregnancy
- » drugs, e.g. opiates and anticholinergics
- » hypothyroidism
- » lower bowel abnormalities
- » chronic use of enemas and laxatives
- » behavioural problems in children
- » lack of exercise
- » old age
- » ignoring the urge
- » neurogenic
- » psychogenic disorders
- » cancer of the bowel

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! CAUTION !

In adults be especially suspicious of a change in bowel habits, as there is a possibility of cancer of the large bowel.

General measures

- » Encourage exercise.
- » Increase intake of fibre-rich food, e.g. vegetables, coarse maize meal, bran and cooked dried prunes.
- » Ensure adequate hydration.
- » Encourage regular bowel habits.
- » Discourage continuous use of laxatives.

Drug treatment

Children over 12 months

- Lactulose, oral, 0.5 mL/kg/dose once daily
 - If poor response, increase frequency to 12 hourly

Weight kg	Syrup 3.3 g/5 mL	Age years
≥ 5–9 kg	2.5 mL	≥ 3 months–1 year
≥ 9– 17.5 kg	5 mL	≥ 1–5 years
≥ 17.5–25 kg	7.5 mL	≥ 5–7 years
≥ 25–35 kg	10 mL	≥ 7–11 years
≥ 35–55 kg	10–20 mL	≥ 11–15 years
≥ 55 kg and above	10–20 mL	≥ 15 years and adult

Adults

- Sennosides A and B, oral, 7.5 mg, 2 tablets at night.
 - In resistant cases increase to 4 tablets.
- or**
Lactulose 10–20 mL once or twice daily

! CAUTION !

Prolonged severe constipation may present with overflow “diarrhoea”.
Rectal examination should be done in all cases.

Referral

- » Recent change in bowel habits
- » Faecal impaction
- » Poor response to treatment
- » Uncertain cause of constipation

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2.8 Diarrhoea

A09

! CAUTION !

There is no place for antidiarrhoeal preparations in the treatment of acute diarrhoea in children or dysentery.

2.8.1 Diarrhoea, acute in children

Description

A sudden onset of change in consistency and frequency of stools with or without vomiting in children.

It is commonly caused by a virus but may be caused by bacteria or parasites. The cause of these conditions cannot be diagnosed without laboratory investigation.

It may be an epidemic if many patients are infected at the same time.

Special risk situations

Diarrhoea in infants less than 2 weeks, malnourished babies, and babies with other danger signs such as:

- » convulsions
- » altered level of consciousness
- » persistent vomiting
- » respiratory distress
- » persistent diarrhoea
- » hypothermia
- » surgical abdomen

Refer these babies urgently for treatment. Before referral, administer:

- Ceftriaxone, IM, 50–80 mg/kg/dose immediately as a single dose

Weight kg	Dose mg	Use one of the following injections mixed with water for injection (WFI):			Age Months/ years
		250 mg WFI 2 mL	500 mg WFI 2 mL	1 000 mg WFI 3.5 mL	
≥ 2–2.5 kg	125 mg	1 mL	0.5 mL	–	
≥ 2.5–3.5 kg	200 mg	1.6 mL	0.8 mL	–	Birth–1 month
≥ 3.5–5.5 kg	250 mg	2 mL	–	–	≥ 1–3 months
≥ 5–7 kg	375 mg	3 mL	–	–	≥ 3–6 months
≥ 7–9 kg	500 mg	4 mL	2 mL	–	≥ 6–12 months
≥ 9–11 kg	625 mg	5 mL	2.5 mL	–	≥ 12–18 months
≥ 11–14 kg	750 mg	6 mL	3 mL	–	≥ 18 months–3 years
≥ 14–17.5 kg	1 000 mg	–	4 mL	3.5 mL	≥ 3–5 years
≥ 17.5 kg and above	1 000 mg	–	4 mL	3.5 mL	≥ 5 years and adults

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! CAUTION !

Do not administer calcium containing fluids, e.g. Ringer-Lactate, within 48 hours of administering ceftriaxone.

Contra-indicated in neonatal jaundice.

Annotate the dosage and route of administration in the referral letter.

Special types of diarrhoea

- » Bloody diarrhoea
 - consider dysentery – See section 2.9: Dysentery
- » Diarrhoea with high fever or very ill
 - consider typhoid – See section 2.12: Typhoid fever
- » Persistent diarrhoea, more than 14 days
 - refer patient
- » Diarrhoea in children in the context of an adult epidemic
 - consider cholera – See section 2.6: Cholera

Treatment according to hydration classification

Assess hydration

Identify signs present to classify dehydration as (beginning from the left column):

- severe dehydration – C
- some dehydration – B
- no visible dehydration – A

	C Severe dehydration	B Some dehydration	A No visible dehydration
Signs of classification	2 of the signs below	2 of the signs below but not severe dehydration	None of the signs of dehydration
Level of consciousness	» lethargic or unconscious	» restless or irritable	» well alert
Sunken eyes	» eyes sunken	» eyes sunken	» eyes not sunken
Ability to drink	» drinks poorly or not able to drink	» thirsty, drinks eagerly	» drinks normally, not excessive thirst
Skin pinch (Turgor)	» severe decrease in skin turgor » skin pinch returning over 2 seconds or more	» moderate decrease in skin turgor - by slow skin pinch, returning in less than 2 seconds	» skin pinch goes back immediately

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Gastro-intestinal conditions

	C Severe dehydration	B Some dehydration	A No visible dehydration
Treatment	<p>Give rapidly:</p> <ul style="list-style-type: none"> Sodium chloride 0.9%, IV, 20 mL/kg <p>Repeat up to twice if radial pulse is weak or undetectable.</p> <p>Continue with 20 mL/kg every hour for the next 5 hours.</p> <p>Then:</p> <p>Refer urgently for continued management continuing with 20 mL/kg every hour for the next 5 hours during urgent referral unless the child is reclassified as B: Some dehydration.</p> <ul style="list-style-type: none"> » Reassess every 2 hours while awaiting transfer. » If hydration status does not improve, give IV fluids more rapidly. <p>As soon as the child can drink, usually after 3–4 hours in infants and 1–2 hours in children, also give:</p> <ul style="list-style-type: none"> ORS, oral, 5 mL/kg/hour <p>If IV administration is not possible, insert a nasogastric tube and while awaiting and during urgent transfer give:</p> <ul style="list-style-type: none"> ORS, 20 mL/kg/hour over the next 6 hours via the nasogastric tube <p>If only oral administration is possible, or the condition is not improving, transfer the child urgently giving ORS during transfer.</p> <p>Reassess every 4 hours for classification – if improves to classification B: Some dehydration – treat as such</p>	<p>Give:</p> <ul style="list-style-type: none"> ORS, oral, 80 mL/kg over 4 hours, e.g. 5 mL/kg every 15 minutes <p>Give more if the child wants more.</p> <p>Show the caregiver how to give ORS with a cup and spoon using frequent small sips.</p> <p>If child vomits wait 10 minutes and then continue more slowly.</p> <p>Encourage the caregiver to continue feeding the child especially breastfeeding.</p> <p>If after 4 hours there are:</p> <ul style="list-style-type: none"> no signs of dehydration – treat as A: No visible dehydration still some dehydration signs – continue as above signs of severe dehydration – treat as C: Severe dehydration 	<p>Show the caregiver how to give ORS with a cup and spoon using frequent small sips.</p> <p>Encourage caregiver to give 10 mL/kg after each diarrhoeal stool until diarrhoea stops, i.e.</p> <ul style="list-style-type: none"> » child age up to 2 years, 50–100 mL » child age 2 years or more, 100–200 mL after each loose stool. <p>Continue at home.</p> <p>Encourage the caregiver to continue feeding the child, especially breastfeeding.</p> <p>Instruct the caregiver how to make ORS/SSS at home and to continue treatment.</p>

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Child should return immediately if:

- » no improvement
- » condition deteriorates
- » poor drinking or feeding
- » blood in stool
- » fever develops
- » sunken eyes
- » slow skin pinch

In all children who are able to take oral medication

- Zinc (elemental), oral for 14 days:
 - If < 10 kg give 10 mg/day
 - If > 10 kg give 20 mg/day

Homemade sugar and salt solution may be used if oral rehydration formula is not available and is promoted for home use pending primary health care consultation:

Homemade sugar and salt solution (SSS)
½ level medicine measure of table salt
plus
8 level medicine measures of sugar
dissolved in 1 litre of boiled (if possible) then cooled water
(1 level medicine measure = approximately 1 level 5 mL teaspoon)

Referral

- » Severe dehydration with other complications
- » Dysentery in children under 12 months of age
- » Malnourished children
- » Children with general danger signs, e.g. altered level of consciousness, convulsions, inability to feed or drink, intractable vomiting.
- » Suspected acute surgical abdomen

2.8.2 Diarrhoea, persistent in children

K52.9

Description

Diarrhoea for 7–14 days.

General measures

- » Assess for possible HIV infection, and manage appropriately.
- » Prevent dehydration using Homemade sugar and salt solution (See Section 2.8.1: Diarrhoea, acute in children – Plan A)

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Gastro-intestinal conditions

- » Counsel mother regarding feeding.
 - If breastfeeding, give more frequent, longer feeds.
 - If replacement feeding replace milk with breast milk or with fermented milk products such as amasi (maas) or yoghurt, if available.
 - Continue with solids - give small, frequent meals at least 6 times a day.
- » Follow-up 5 days. If diarrhoea persists, refer to doctor for investigation.

Drug treatment

Give an additional dose of Vitamin A:

- Vitamin A (retinol), oral

Age range	Dose units	Capsule 100 000 u	Capsule 200 000 u
Infants 6–11 months old	100 000	1 capsule	–
Children 12 months to 5 years	200 000	2 capsules	1 capsule

- Zinc (elemental), oral for 14 days:
 - If < 10 kg give 10 mg/day
 - If > 10 kg give 20 mg/day

Referral

- » Child younger than two months of age
- » Signs of dehydration – See Section 2.8.1: Diarrhoea, acute in children
- » Malnutrition or weight loss
- » Diarrhoea that persists for more than 5 days with treatment, refer to doctor for investigation
- » Diarrhoea present for more than 14 days

2.8.3 Diarrhoea, acute, without blood, in adults

K52.9

Description

Acute diarrhoea is usually self-limiting and is managed by fluid replacement.

Drug treatment

Treat vigorously.

- Oral rehydration solution (ORS)
or
Homemade sugar and salt solution (SSS)
- Loperamide, oral, 4 mg immediately and 2 mg as required after each loose stool up to 6 hourly.
 - Not more than 12 mg daily.

Referral

- » Suspected acute surgical abdomen
- » Diarrhoea with complications

2.8.4 Diarrhoea, chronic, in adults

K52.9

Description

Diarrhoea lasting more than 2 weeks.

The majority of cases may be HIV related. Encourage HIV testing.

A stool sample should be requested for microscopy for ova, cysts and parasites

Note:

Culture and sensitivity should not be requested on the form.

Giardiasis is a common cause of chronic diarrhoea in adults, and may be difficult to diagnose on stools. Therefore empiric treatment for giardiasis is recommended before referring such patients.

Drug treatment**Giardiasis**

- Metronidazole, oral, 2 g daily for 3 days

Chronic diarrhoea in HIV/AIDS

See section 11.3.4: Diarrhoea, HIV associated

Referral

- » All HIV negative cases with no pathogen identified and significant diarrhoea

2.9 Dysentery

A03.0

Dysentery or diarrhoeal stool with blood or mucus is usually due to bacteria and should be treated as bacillary dysentery. If there is no clinical response within three days consider managing as amoebic dysentery or refer for formal assessment. It is important to exclude surgical conditions, e.g. intussusception in children. Commonly encountered infectious conditions include *Shigella*, *Salmonella*, *E. Coli*, and *Campylobacter*.

Referral

- » No response to treatment

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Gastro-intestinal conditions

2.9.1 Dysentery, bacillary

A03.0

Description

Acute infection of the bowel usually caused by *Shigella*, *Salmonella* or *Campylobacter*.

There is sudden onset diarrhoea with:

- » blood (not due to haemorrhoids or anal fissure) or mucus in the stools
- » convulsions (in children)
- » fever
- » tenesmus

General measures

- » Prevent spread of micro-organism by:
 - preventing contamination of food and water through good sanitation
 - washing hands thoroughly before handling food
 - washing soiled garments and bed clothes

Drug treatment

Treat hydration vigorously.

Children

Treat dehydration according to Section 2.8.1: Diarrhoea, acute in children

Adults

Oral treatment

- Oral rehydration solution
or
Homemade sugar and salt solution

<p style="text-align: center;">Homemade sugar and salt solution (SSS) ½ level medicine measure of table salt plus 8 level medicine measures of sugar dissolved in 1 litre of boiled (if possible) then cooled water (1 level medicine measure = approximately 1 level 5 mL teaspoon)</p>
--

The amount of fluid required for oral rehydration depends on the severity of the dehydration.

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Gastro-intestinal conditions

IV treatment

- Sodium chloride 0.9%, IV

Antibiotic therapy

Indicated for:

- » children over 1 year old and adults with blood in the stools
- » HIV infected patients

- Ciprofloxacin, oral, 15 mg/kg/dose 12 hourly for 3 days

Weight kg	Dose mg	Use one of the following:			Age Months / years
		Syrup 250 mg/5 mL	Tablet 250 mg	Tablet 500 mg	
≥ 9–11 kg	150 mg	3 mL	–	–	≥ 12–18 months
≥ 11–14 kg	200 mg	4 mL	–	–	≥ 18 months–3 years
≥ 14–17.5 kg	250 mg	5 mL	1 tablet	–	≥ 3–5 years
≥ 17.5–25 kg	300 mg	6 mL	–	–	≥ 5–7 years
≥ 25–35 kg	375 mg	7.5 mL	–	–	≥ 7–11 years
≥ 35 kg and above	500 mg	–	2 tablets	1 tablet	≥ 11 years and adults

Note:

Check for complications such as intestinal perforation or peritonitis and ensure adequate urine output to exclude haemolytic uraemic syndrome.

Referral

- » Malnutrition in children
- » Severe illness
- » Dehydration in children
- » Persistent blood in urine on dipstix or macroscopically
- » Acute abdominal signs (severe pain, acute tenderness, persistent or bilious vomiting),
- » Bloody mucus passed in absence of diarrhoea.

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Gastro-intestinal conditions

- » Children less than 12 months of age. In these children, before referral give:
- Ceftriaxone, **IM**, 50–80 mg/kg/dose immediately as a single dose

Weight kg	Dose mg	Use one of the following injections mixed with water for injection (WFI):			Age Months/ years
		250 mg WFI 2 mL	500 mg WFI 2 mL	1 000 mg WFI 3.5 mL	
≥ 2–2.5 kg	125 mg	1 mL	0.5 mL	–	
≥ 2.5–3.5 kg	200 mg	1.6 mL	0.8 mL	–	Birth–1 month
≥ 3.5–5.5 kg	250 mg	2 mL	1 mL	–	≥ 1–3 months
≥ 5–7 kg	375 mg	3 mL	1.5 mL	–	≥ 3–6 months
≥ 7–9 kg	500 mg	4 mL	2 mL	–	≥ 6–12 months
≥ 9–11 kg	625 mg	5 mL	2.5 mL	–	≥ 12–18 months
≥ 11–14 kg	750 mg	6 mL	3 mL	–	≥ 18 months–3 years
≥ 14–17.5 kg	1 000 mg	–	4 mL	3.5 mL	≥ 3–5 years
≥ 17.5 kg and above	1 000 mg	–	4 mL	3.5 mL	≥ 5 years and adults

! CAUTION !

Do not administer calcium containing fluids, e.g. Ringer-Lactate, within 48 hours of administering ceftriaxone.

Contra-indicated in neonatal jaundice.

Annotate the dosage and route of administration in the referral letter.

2.9.2 Dysentery, amoebic

A06.0

Description

A condition characterised by loose stools or rarely diarrhoea, caused by the parasite *Entamoeba histolytica*, with:

- » blood
- » mucus
- » possible constipation, in the alternative
- » usually without fever

The presentation is usually subacute.

Drug treatment

For dehydration

- » Treat vigorously.

Chapter 2

Gastro-intestinal conditions

Children

Treat dehydration according to Section 2.8.1: Diarrhoea, acute in children

Adults

Oral treatment

- Oral rehydration solution
- or
- Homemade sugar and salt solution

<p style="text-align: center;">Homemade sugar and salt solution (SSS) ½ level medicine measure of table salt plus 8 level medicine measures of sugar dissolved in 1 litre of boiled (if possible) then cooled water (1 level medicine measure = approximately 1 level 5 mL teaspoon)</p>
--

The amount of fluid required for oral rehydration depends on the severity of the dehydration.

IV treatment

- Sodium chloride 0.9%, IV

If case confirmed by identification of organisms on wet stools or if dysentery treated with antibiotics has not improved within 3 days:

- Metronidazole, oral, 8 hourly for 5 days
 - Paediatric dose: 12–17 mg/kg/dose

Weight kg	Dose mg	Use one of the following:			Age Months/years
		Susp 200 mg/5mL	Tablets 200mg	Tablets 400mg	
≥9–11 kg	160 mg	4 mL	–	–	≥ 12–18 months
≥11–14 kg	200 mg	5 mL	–	–	≥ 18 months–3 years
≥14–17.5 kg	240 mg	6 mL	–	–	≥ 3–5 years
≥17.5–25 kg	300 mg	7.5 mL	1½ tablets	–	≥ 5 – 7 years
≥25–35 kg	400 mg	10 mL	2 tablets	1 tablet	≥7–11 years
≥35–55 kg	600 mg	15 mL	3 tablets	1½ tablets	≥11–15 years
≥55 kg and above	800 mg	–	4 tablets	2 tablets	≥ 15 years and adult

Referral

- » Malnutrition in children
- » Severe illness
- » Dehydration
- » Persistent blood in urine on dipstix or macroscopically
- » Acute abdominal signs (severe pain, acute tenderness, persistent or bilious)

Chapter 2**Gastro-intestinal conditions**

vomiting),

- » Bloody mucous passed in absence of diarrhoea.
- » No improvement after 3 days treatment
- » Children less than 12 months of age. In these children, before referral give:
 - Ceftriaxone, **IM**, 50–80 mg/kg/dose immediately as a single dose

Weight kg	Dose mg	Use one of the following injections mixed with water for injection (WFI):			Age Months/ years
		250 mg WFI 2 mL	500 mg WFI 2 mL	1 000 mg WFI 3.5 mL	
≥ 2–2.5 kg	125 mg	1 mL	0.5 mL	–	
≥ 2.5–3.5 kg	200 mg	1.6 mL	0.8 mL	–	Birth–1 month
≥ 3.5–5.5 kg	250 mg	2 mL	1 mL	–	≥ 1–3 months
≥ 5–7 kg	375 mg	3 mL	1.5 mL	–	≥ 3–6 months
≥ 7–9 kg	500 mg	4 mL	2 mL	–	≥ 6–12 months
≥ 9–11 kg	625 mg	5 mL	2.5 mL	–	≥ 12–18 months
≥ 11–14 kg	750 mg	6 mL	3 mL	–	≥ 18 months–3 years
≥ 14–17.5 kg	1 000 mg	–	4 mL	3.5 mL	≥ 3–5 years
≥ 17.5 kg and above	1 000 mg	–	4 mL	3.5 mL	≥ 5 years and adults

! CAUTION !

Do not administer calcium containing fluids, e.g. Ringer-lactate, within 48 hours of administering ceftriaxone.

Contra-indicated in neonatal jaundice.

Annotate the dosage and route of administration in the referral letter.

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Gastro-intestinal conditions

2.10 Helminthic infestation

B83

2.10.1 Helminthic infestation, tapeworm

B83.8

Description

Infestation with tapeworm occurs after eating infected, undercooked or raw meat like beef or pork.

Infestation may be caused by:

- » beef tapeworm – *Taenia saginata*
- » pork tapeworm – *Taenia solium*

Signs and symptoms include:

- » vague abdominal pain
- » diarrhoea
- » weight loss
- » flat white worm segments seen in the stool (blunt ended)
- » anal (nocturnal) itch

General measures

- » Health education on adequate preparation of potentially infected meat.

Drug treatment

- » If the patient has diarrhoea, wait for it to settle.
- Albendazole, oral, daily for three days
 - Children under 2 years: 200 mg
 - Children over 2 years and adults: 400 mg

Referral

- » Abdominal tenderness or pain
- » Abdominal masses
- » Vomiting

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2.10.2 Helminthic infestation, excluding tapeworm

B82.0

Description

Types of worm infestation and the characteristics are shown in the table below. Check for anaemia and failure to thrive. The infestations are often asymptomatic.

Type of worm	Description	Signs and symptoms
Common Roundworm <i>Ascaris lumbricoides</i>	» Long pink/white worms with sharp ends » Up to 25–30 cm long » Often seen in the stools and vomitus	» Cough » If there is vomiting consider intestinal obstruction
Pinworm <i>Enterobius vermicularis</i>	» White and thread-like » Up to 10 mm long » Often seen in the stools » Self-infection common	» Anal itching – worse at night » Sleeplessness
Hookworm <i>Necator americanus</i>	» Up to 8 mm long	» No symptoms or pain » Anaemia
Threadworm <i>Strongyloides stercoralis</i>	» Very small, up to 4 mm long » Very rare	» No obvious symptoms
Whipworm <i>Trichuris trichiura</i>	» Up to 5 cm long » Anterior half thinner than posterior half	» No symptoms » Abdominal pain » Diarrhoea » Possible anaemia and rectal prolapse » Abdominal discomfort » Weight loss

General measures

- » Patient counseling and education.
- » Wash hands with soap and water, particularly:
 - after passing a stool
 - before working with food or eating
- » Keep fingernails short.
- » Wash fruit and vegetables well or cook.
- » Keep toilet seats clean.
- » Teach children to use toilets and wash hands.
- » Do not pollute the soil with sewage or sludge.
- » Dispose of faeces properly.

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Gastro-intestinal conditions

Drug treatment

- Mebendazole, oral,
 - Children 1–2 years: 100 mg 12 hourly for three days
 - Children > 2 years and adults: 500 mg as a single dose

For *Strongyloides stercoralis* refer for specific therapy.

Referral

- » Signs of intestinal obstruction
- » Abdominal tenderness
- » Pain
- » Persistent vomiting

2.11 Irritable bowel syndrome (IBS)

K58

(Synonyms: spastic colon, irritable colon)

Description

Functional bowel disorder: Motility disturbance of the entire GIT resulting in recurrent symptoms of pain, constipation and/or diarrhoea and bloating.

General measures

For patients with an established diagnosis:

- » Reassure patient that there is no serious organic disorder.
- » High fibre/bran diets may be tried for patients with constipation.
 - warn about temporary increased flatus and abdominal distension.
 - high fibre/bran diets are not effective for GLOBAL IBS (i.e. all symptoms).
- » Dietary advice by dietician.

Drug treatment

- » Not specifically indicated.
- » Based on patients predominant symptoms
- » Short-term symptomatic treatment for diarrhoea and/or constipation.

Laxatives only for constipation specific, see Section 2.7: Constipation

Antidiarrhoeals only for diarrhoea specific, see Section 2.8: Diarrhoea

2.12 Typhoid fever

A01.0

Note: notifiable condition.**Description**

A septicaemic illness with fever caused by the micro-organism *Salmonella typhi*. The cause of the fever is difficult to diagnose except in an epidemic.

It may present with:

- » acute abdomen – See section 2.1: Abdominal pain
- » prolonged or high fever in a previously healthy individual
- » fever with a slower pulse rate than expected
- » headache and convulsions
- » constipation during the first week
- » diarrhoea may occur later in the illness and may be accompanied by frank bleeding
- » confirmation is only by stool culture or blood tests

Drug treatment

Treat dehydration if present and refer.

Referral**Urgent**

- » All cases or suspected cases

Chapter 3: Nutritional and blood conditions

- 3.1 Anaemia**
 - 3.1.1 Anaemia, iron deficiency**
 - 3.1.2 Anaemia, macrocytic or megaloblastic**
- 3.2 Childhood malnutrition, including failure to thrive**
 - 3.2.1 Severe malnutrition**
 - 3.2.2 Failure to thrive or not growing well**
- 3.3 Vitamin A deficiency**
- 3.4 Vitamin B deficiencies**
 - 3.4.1 Pellagra (Nicotinic acid deficiency)**
 - 3.4.2 Pyridoxine (Vitamin B₆ deficiency)**
 - 3.4.3 Thiamine deficiency (Wernicke's encephalopathy and beriberi)**

Chapter 3

Nutritional and blood conditions

3.1 Anaemia

E64.9

Description

A condition characterised by low haemoglobin, clinically recognised by pallor.

It is commonly caused by:

- » nutritional deficiency of iron or folate
- » chronic systemic diseases
- » blood loss (bleeding/haemorrhage) e.g. caused by parasites, ulcers, tumours, excessive menstruation

Other causes include:

- » infiltration or replacement of the bone marrow
- » abnormal haemoglobin or red cells
- » haemolysis

Diagnosis

	Hb less than:
» non-pregnant women	11 g/dL
» pregnant women	10 g/dL
» males	12 g/dL
» children 1–5 years	10 g/dL
» children over 5 years	11 g/dL

Children less than 5 years

Anaemia is most often due to iron deficiency – See Section 3.1.1.

Consider blood loss if the anaemia is severe (Hb less than 7 g/dL).

In older children and adults

Request a full blood count.

- » If MCV is normal (normocytic):
 - then systemic disease is the likely cause
- » If MCV is low (microcytic):
 - then iron deficiency is the likely cause
- » If MCV is high (macrocytic):
 - then folate and/or vitamin B₁₂ deficiency is the likely cause

Pregnant women

See section 6.2.3: Anaemia in pregnancy.

Referral

- » Unknown cause
- » Symptoms of anaemia e.g. palpitations and shortness of breath
- » Evidence of cardiac failure
- » Signs of chronic disease (first investigate for HIV and TB)

Chapter 3

Nutritional and blood conditions

- » Anaemia associated with enlargement of the liver, spleen or lymph nodes
- » Signs and symptoms of acute blood loss or bleeding disorder
- » Blood in stool or melaena
- » Pregnant women over 34 weeks of gestation and a Hb less than 7 g/dL
- » Children with Hb less than 6 g/dL (If Hb cannot be done, severe palmar pallor)
- » No improvement despite correct treatment

3.1.1 Anaemia, iron deficiency

D50.9

Description

Iron deficiency is a common cause of anaemia in younger children and women of childbearing age.

In pregnancy and during the post-partum period, folate deficiency and/or combined iron or folate deficiency are common.

Diagnosis suggested on a full blood count. In children this is unnecessary unless referral criteria above are present.

Note:

Iron deficiency in adult males and non-menstruating women is generally due to occult blood loss and all cases should be referred.

General measures

- » Identify and treat the cause.
- » Exclude other causes – see referral criteria in 3.1 above.
- » Lifestyle and dietary adjustment.

Chapter 3

Nutritional and blood conditions

Drug treatment

Children

- Iron, oral, 1–2 mg/kg/dose of elemental iron 8 hourly with meals

Weight kg	Dose mg of elemental iron	Use one of the following:			Age Months/ years
		Gluconate syrup 350 mg/ 5 mL (40 mg elemental iron/5 mL)	Lactate drops (25 mg elemental iron/ mL)	Sulphate compound tablets BPC 170 mg (± 65 mg elemental iron)	
≥ 3.5–5.5 kg	6 mg	0.8 mL	0.3 mL	–	≥ 1–3 months
≥ 5–7 kg	8 mg	1 mL	–	–	≥ 3–6 months
≥ 7–9 kg	16 mg	2 mL	–	–	≥ 6–12 months
≥ 9–25 kg	20 mg	2.5 mL	–	–	≥ 12 months–7 years
≥ 25–35 kg	40 mg	5 mL	–	–	≥ 7–11 years
≥ 35 kg and above	65 mg	–	–	1 tablet	≥ 11 years and above

Follow up Hb after 14 days.

- » If Hb is lower than before – refer,
- » If same or higher – continue treatment and repeat after another 14 days.

Continue treatment for 3 months after Hb is normal

Empiric treatment for worms (this will not treat tapeworm):

- Mebendazole, oral,
 - Children 1–2 years: 100 mg 12 hourly for three days
 - Children > 2 years and adults: 500 mg as a single dose

Adults

- Ferrous sulphate compound BPC, oral, 170 mg three times daily with food

Follow up at monthly intervals.

The expected response is an increase in Hb of 2 g/dL or more in 4 weeks.

Continue for 3–6 months after Hb is normal to replenish body iron stores

! CAUTION !

Iron is extremely toxic in overdose, particularly in children.
All medication should be stored out of reach of children.

Prophylaxis

Infants from 6 weeks of life:

If < 2.5 kg at birth:

- Ferrous lactate, oral, 0.3 mL daily until 6 months of age

Chapter 3

Nutritional and blood conditions

» Pregnant women

See section 6.2.3: Anaemia in pregnancy.

3.1.2 Anaemia, macrocytic or megaloblastic

D53.1

Description

Anaemia with large red blood cells may be due to folate or vitamin B₁₂ deficiency. Folate deficiency is common in pregnant women.

Vitamin B₁₂ deficiency occurs mainly in older adults, and can cause neurological damage if not treated.

Special investigations are required to confirm the diagnosis, except in pregnant women – See section 6.2.3: Anaemia in pregnancy.

Investigations

FBC will confirm macrocytic anaemia.

- » MCV will be elevated
- » Hb and/or white cell count and/or platelet count reduced

Serum vitamin B₁₂ and red cell folate must be done – low values will confirm the diagnosis.

Note:

The antiretrovirals, stavudine and zidovudine, both cause elevated MCV, and zidovudine often causes anaemia and/or decreased white cell count. It is not necessary to measure folate and B₁₂ if the patient is not anaemic.

General measures

- » Ensure adequate intake of dietary folate (e.g. liver, eggs, fortified breakfast cereals, lentils, sugar beans and spinach), and vitamin B₁₂, (e.g. liver, fish and eggs).
- » Reduce alcohol intake.

Drug treatment

Folic acid deficiency:

- Folic acid, oral, 5 mg daily until Hb is normal.
 - Check Hb monthly

If folic acid is given to patients with vitamin B₁₂ deficiency, this can cause neurological damage unless vitamin B₁₂ is also given.

Referral

- » All patients with suspected macrocytic anaemia, for investigation and treatment, except in pregnancy and lactating women who should be treated for folate deficiency

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Nutritional and blood conditions

- » Patients with B₁₂ deficiency
- » Chronic diarrhoea
- » Poor response within a month of treatment

3.2 Childhood malnutrition, including failure to thrive (FTT)

E46

In all children, check for malnutrition and anaemia:

- » plot the weight on the Road to Health Chart
 - » look at the shape of the weight curve:
 - Is the weight curve rising parallel to the reference lines?
 - or**
 - is it flattening?
 - or**
 - is there weight loss?
- Look for visible wasting.
Look and feel for oedema of both feet.
Look for palmar pallor, and
Check haemoglobin if anaemia is suspected.

3.2.1 Severe malnutrition

E42

Description

Severe malnutrition is defined as a weight-for-age less than 60% of the expected weight, marasmus, or nutritional oedema of both feet (kwashiorkor). According to IMCI classification, severe malnutrition is defined as very low weight.

Clinical presentation:

- » Kwashiorkor
 - nutritional oedema associated with skin changes, hepatomegaly and weight usually less than the 3rd percentile for age.
- » Marasmus
 - clinical (visible) severe wasting and weight less than 60% of the expected weight for age.
- » Marasmic kwashiorkor
 - features of both

All children with severe malnutrition are at risk of complications or death.
Refer urgently!
Stabilise before referral.

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Nutritional and blood conditions

Exception

Babies who were premature and are growing parallel to or better than the percentiles, would not be classified as severe malnutrition.

Danger signs in children with severe malnutrition:

- » dehydration
- » lethargy
- » hypothermia
- » jaundice
- » shock
- » weeping skin lesions
- » hypoglycaemia
- » refusing feeds

All children with severe malnutrition need stabilisation, followed by urgent referral, as they are at risk of complications or death due to:

- » hypothermia
- » hypoglycaemia
- » infection
- » fluid overload leading to heart failure

Initiate treatment while waiting for transport to hospital.

General measures

Prevent or treat hypoglycaemia

- » Begin feeding **immediately** if the child is stable and able to take oral feeds. Feed at 15 mL/kg 3 hourly.
 - If the child is hypothermic or hypoglycaemic, feed 10 mL/kg 2 hourly.
 - If oral feeds are refused or not finished, feed via a nasogastric tubeUse expressed breast milk if mother is breastfeeding or any available breast milk substitute.
- » Check blood glucose with a finger prick glucose stix test on arrival and 3 hourly.

If blood glucose under 3 mmol/L in asymptomatic child give whichever of the following is most quickly available:

 - immediate feed, or
 - dextrose 10% (50 mL) or
 - sucrose solution (1 rounded teaspoon of sugar in 3 and a half tablespoons of water)
- » Recheck blood sugar in 30 minutes to confirm above 3 mmol/L. If hypoglycaemia symptomatic (fits/decreased consciousness) or severe hypoglycaemia (< 1.5 mmol/L) or unresponsive hypoglycaemia give:
 - dextrose water 10% 5 mL/kg IV (1 part 50% dextrose diluted with 4 parts sterile water) and immediately restart feeds.

Prevent or treat hypothermia:

- » Measure under-arm temperature 3 hourly.

Keep child warm using mother-child skin-to-skin contact (Kangaroo care), if mother is present.

Keep the child dry and covered at all times, especially the head and avoid drafts.

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If the axillary temperature is below 36°C, warm urgently (use skin to skin contact with mother and wrap both in blankets, if this is not possible clothe and wrap the child in dry warm clothes and blankets and keep near a heater in a warm area). Monitor temperature 2 hourly until more than 36.5°C then resume 3 hourly monitoring.

Drug treatment

! CAUTION !

In malnutrition if IV fluids are given for severe dehydration/shock, give Sodium chloride 0.9% 10 mL/kg/ hour and check for volume overload after each bolus – once stable continue with ORS orally or by nasogastric tube.

Infection

Note:

Signs of infection such as fever are usually absent. Treat for infection while awaiting transfer.

If there are no danger signs – 1st dose while arranging referral to hospital:

- Amoxicillin, oral, 20–30 mg/kg as a single dose

Weight kg	Dose mg	Use one of the following syrups		Age Months/years
		125 mg/ 5 mL	250 mg/ 5 mL	
≥ 2–2.5 kg	62.5 mg	2.5 mL	1.25 mL	34–36 weeks
≥ 2.5–3.5 kg	100 mg	4 mL	2 mL	Birth–1 month
≥ 3.5–5.5 kg	125 mg	5 mL	2.5 mL	≥ 1–3 months
≥ 5–7 kg	175 mg	7 mL	3.5 mL	≥ 3–6 months
≥ 7–11 kg	250 mg	10 mL	5 mL	≥ 6–18 months
≥ 11–17.5 kg	375 mg	15 mL	7.5 mL	≥ 18 months–5 years

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If the child has any danger signs:

- Ceftriaxone, IM, 50–80 mg/kg/dose immediately as a single dose

Weight kg	Dose mg	Use one of the following injections mixed with water for injection (WFI):			Age Months/ years
		250 mg WFI 2 mL	500 mg WFI 2 mL	1 000 mg WFI 3.5 mL	
≥ 2–2.5 kg	125 mg	1 mL	0.5 mL	–	
≥ 2.5–3.5 kg	200 mg	1.6 mL	0.8 mL	–	Birth–1 month
≥ 3.5–5.5 kg	250 mg	2 mL	1 mL	–	≥ 1–3 months
≥ 5–7 kg	375 mg	3 mL	1.5 mL	–	≥ 3–6 months
≥ 7–9 kg	500 mg	4 mL	2 mL	–	≥ 6–12 months
≥ 9–11 kg	625 mg	5 mL	2.5 mL	–	≥ 12–18 months
≥ 11–14 kg	750 mg	6 mL	3 mL	–	≥ 18 months–3 years
≥ 14–17.5 kg	1 000 mg	–	4 mL	3.5 mL	≥ 3–5 years
≥ 17.5 kg and above	1 000 mg	–	4 mL	3.5 mL	≥ 5 years and adults

! CAUTION !

Do not administer calcium containing fluids, e.g. Ringer-Lactate, within 48 hours of administering ceftriaxone.

Contra-indicated in neonatal jaundice.

Annotate the dosage and route of administration in the referral letter.

Give an additional dose of Vitamin A:

- Vitamin A (retinol), oral, every 6 months up to the age of 5 years
 - give to neonate at birth if not breast fed
 - if breast fed, give to mother

Age range	Dose units	Capsule 50 000 u	Capsule 100 000 u	Capsule 200 000 u
Mother who will breast feed	200 000	–	2 capsule	1 capsule
Infants 6–11 months old	100 000	2 capsules	1 capsule	–
Children 12 months to 5 yrs	200 000	–	2 capsule	1 capsule

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3.2.2 Failure to thrive or not growing well

E45

Description

Children and infants who have either:

- » unsatisfactory weight gain (growth curve flattening or weight loss) on the Road to Health Chart
- or**
- » low weight for age, i.e. under the 3rd percentile weight for age but over the 60% expected weight for age

Note:

Babies who were premature and growing parallel to or better than the percentiles, should not be classified as failure to thrive or not growing well.

Failure to thrive (FTT) may be due to:

- » insufficient food intake due to anorexia and illness or poor availability of food
- » insufficient uptake of nutrients, e.g. malabsorption
- » insufficient use of nutrients for growth due to chronic disease
- » an increased demand for nutrients due to illness such as TB

Conduct a feeding and clinical assessment to determine the cause and exclude anaemia.

General measures

- » Counselling on nutrition.
- » Nutritional supplementation should be supplied unless there is a correctable cause.

Drug treatment

- Multivitamin, oral, daily

Empiric treatment for worms (this will not treat tapeworm):

- Mebendazole, oral,
 - Children 1–2 years: 100 mg 12 hourly for three days
 - Children > 2 years and adults: 500 mg as a single dose
- Vitamin A (retinol), oral, every 6 months up to the age of 5 years
 - give to neonate at birth if not breast fed
 - if breast fed, give to mother

Age range	Dose units	Capsule 100 000 u	Capsule 200 000 u
Mother who will breast feed	200 000	2 capsules	1 capsule
Infants 6–11 months old	100 000	1 capsule	–
Children 12 months to 5 yrs	200 000	2 capsules	1 capsule

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Anaemia

See section 3.1: Anaemia

Referral

- » No response to treatment
- » All children other than those with insufficient food intake
- » Severe malnutrition

3.3 Vitamin A deficiency

E50.9

Description

A condition predominantly affecting the skin, mucous membranes and the eyes.

It is most common in children of 1 to 5 years.

If associated with measles and diarrhoea there is an increased risk of illness and death.

If not identified and treated early, it can cause blindness.

Clinical features include:

- » night blindness or inability to see in the dark
- » Bitot's spot or white foamy patches on the eye
- » conjunctival xerosis or the conjunctiva becomes dry
- » corneal xerosis or the cornea becomes dry
- » keratomalacia or wrinkling and cloudiness of cornea
- » corneal ulceration or the cornea becomes soft and bulges

General measures

Dietary supplementation with vitamin A rich food including:

- » fortified maize meal and/or bread
- » carrots, sweet potato, mangoes and pawpaw
- » dark green leafy vegetables e.g. morogo/ imifino and spinach
- » liver, eggs, full cream milk and fish

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Drug treatment

Prophylaxis

- Vitamin A (retinol), oral, every 6 months up to the age of 5 years
 - give to neonate at birth if not breast fed
 - if breast fed, give to mother

Age range	Dose units	Capsule 100 000 u	Capsule 200 000 u
Mother who will breast feed	200 000	2 capsules	1 capsule
Infants 6–11 months old	100 000	1 capsule	–
Children 12 months to 5 yrs	200 000	2 capsules	1 capsule

Note:

A high-dose vitamin A capsule can be given to post-partum women up to 8 weeks after delivery if the mother is breastfeeding, or within 6 weeks if she is not breastfeeding.

Treatment

Children 0–5 years with:

- severe under nutrition
- persistent diarrhoea
- any of the clinical signs of vitamin A deficiency
- measles

Older children and adults with:

- » any clinical signs of vitamin A deficiency
- » measles

- Vitamin A (retinol), oral, every 6 months up to the age of 5 years
 - give to neonate at birth if not breast fed
 - if breast fed, give to mother

Age range	Dose units	Capsule 50 000 u	Capsule 100 000 u	Capsule 200 000 u
Newborn – not breast fed	50 000	1 capsule	–	–
Newborn – breast fed	–	–	–	–
Mother who will breast feed	200 000	–	2 capsules	1 capsule
Infants 6–11 months old	100 000	2 capsules	1 capsule	–
Children 12 months to 5 yrs	200 000	–	2 capsules	1 capsule

Administration of a vitamin A capsule

- Cut the narrow end of the capsule with scissors
- Open the child's mouth by gently squeezing the cheeks
- Squeeze the drops from the capsule directly into the back of the child's mouth. If a child spits up most of the vitamin A liquid immediately, give one more dose.
- Mothers can swallow the capsule with water
- Do **NOT** give the capsule to the mother or the caretaker to take home

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Note:

- » Children suffering from measles or clinical vitamin A deficiency should receive a repeat dose the following day.
- » Children who received a prophylactic dose within the previous month should not receive the treatment dose of vitamin A.
- » If a child is scheduled to receive a routine prophylactic dose of vitamin A and has received a treatment dose within the past month, postpone the routine dose for approximately one month.
- » Wait at least one month between doses.
- » Children receiving routine multivitamin syrup can still receive routine vitamin A supplements.

Referral

- » All complicated cases

3.4 Vitamin B deficiencies

E53.9

Description

A condition in which some of the B group vitamins are deficient. This occurs commonly in malnutrition and alcoholism.

General measures

- » Lifestyle adjustment
- » Discourage alcohol abuse

Drug treatment

- Vitamin B complex, oral, 2 tablets three times daily for 1 week, then one tablet daily for 3 months

3.4.1 Pellagra (nicotinic acid deficiency)

E53.9

Description

Pellagra is a condition associated with nicotinic acid deficiency. It is usually accompanied by other vitamin deficiencies.

Clinical features include:

- » diarrhoea
- » dementia
- » dermatitis with darkening of sun-exposed skin

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General measures

- » Lifestyle adjustment.
- » Patient counselling.
- » Discourage alcohol abuse.

Drug treatment

Children

- Nicotinamide, oral, 100 mg 8 hourly

Adults

- Nicotinamide, oral, 100 mg 8 hourly

Referral

- » Failure to respond

3.4.2 Pyridoxine (Vitamin B₆) deficiency

E53.1

Description

Commonly presents signs of peripheral neuropathy including:

- » tingling sensation
- » burning pain or numbness of the feet

Pyridoxine deficiency is related to:

- » malnutrition
- » alcoholism
- » isoniazid or combination TB therapy

Drug treatment

Children

- Pyridoxine, oral, 50–200 mg daily for 3 weeks

Adults

- Pyridoxine, oral, 200 mg daily for 3 weeks

Then follow with:

- Pyridoxine, oral, 25 mg daily as a maintenance dose (for patients on TB therapy/isoniazid)

Referral

- » Failure to respond
- » Children

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3.4.3 Thiamine deficiency (Wernicke's encephalopathy and beriberi)

E53.9

Description

Clinical features include:

- » confusion
- » short term memory loss
- » paralysis of one or more of the ocular muscles or ophthalmoplegia
- » nystagmus
- » ataxia
- » peripheral neuropathy
- » cardiac failure

Alcoholics may present with Wernicke's encephalopathy, neuropathies or cardiac failure associated with multiple vitamin deficiencies.

General measures

- » Lifestyle adjustment.

Drug treatment

Peripheral neuropathy and cardiac failure (wet beriberi):

- Thiamine, oral, 100 mg daily

In susceptible patients, administration of intravenous glucose precipitates Wernicke's encephalopathy if administered before thiamine supplementation. Thiamine should be given first in all patients treated with intravenous glucose who are at risk of thiamine deficiency, e.g. alcoholics.

Patients presenting with encephalopathy or eye muscle paralysis

- Thiamine, IM, 100 mg
- Followed by:
- Dextrose 5 %, IV

Referral

- » All patients with encephalopathy, eye muscle paralysis or cardiac failure