

## **Chapter 13: Immunisation**

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### 13.1 Immunisation schedule

- » Every clinic day is an immunisation day.
- » Immunisations are given in a specific sequence at certain ages. This is known as the immunisation schedule.
- » Never miss a chance to immunise – never turn a child away if an immunisation is needed, even if it means opening a multidose vial for just one child.
- » Check the Road to Health Chart every time the child visits the clinic, and give missed immunisations.
- » Mild illnesses are not a contra-indication to immunisation – any child who is well enough to be sent home, is well enough to be immunised.
- » Do not immunise a sick child if the mother seriously objects, but encourage her to bring the child for immunisation on recovery.
- » Give doses no closer than 4 weeks - make follow-up dates with a minimum of 4 weeks from the previous dose.
- » Give an extra dose if in doubt whether a child has had a certain dose or not, as extra doses are not harmful.
- » All vaccines listed in the table can be given safely at the same time, **but should not be mixed in the same syringe.**
- » Serious adverse events following immunisation are uncommon. All adverse events other than mild systemic symptoms (irritability, fever < 39°C) and minor local reactions (redness/swelling at injection site) should be reported.

There are very few contra-indications, but many missed opportunities!

#### Adverse events requiring reporting

##### Local reactions

- » Severe local reaction (swelling extending more than five cm from the injection site or redness and swelling for more than three days)
- » Lymphadenitis
- » Injection site abscess.

##### Systemic reactions

- » All cases of hospitalisation (thought to be related to immunisation)
- » Encephalopathy within seven days
- » Collapse or shock-like state within 48 hours
- » Fever or more than 40.5°C within 48 hours
- » Seizures within three days
- » All deaths (thought to be related to immunisation).

#### Conditions that are *not* contraindications to any of the standard EPI vaccines

- » Family history of any adverse reactions following vaccination
- » Family history of convulsions
- » Previous convulsions
- » Previous measles, mumps, rubella or pertussis-like illness

- » Preterm birth
- » History of jaundice after birth
- » Stable neurological conditions such as cerebral palsy and trisomy 21
- » Contact with an infectious disease
- » Minor illness (without systemic illness and with a temperature below 38.5°C)
- » Treatment with antibiotics
- » Asthma, eczema, hay fever or 'snuffles'
- » Treatment with locally acting (inhaled or low-dose topical) steroids
- » Child's mother is pregnant
- » Child being breastfed
- » Underweight, but otherwise healthy child
- » Over the age recommended in vaccination schedule
- » Recent or imminent surgery

### 13.2 Dosage and administration

#### Immunisation schedule for children

Age	Vaccine dose *
At birth	BCG, OPV0**
6 weeks	OPV1, DTP1, HepB1, Hib1
10 weeks	OPV2, DTP2, HepB2, Hib2
14 weeks	OPV3, DTP3, HepB3, Hib3
9 months	Measles1
18 months	Measles2, OPV4, DTP4
6 years	OPV5, Td
12 years	Td

\*The number that follows the immunisation name (e.g. DTP3) indicates the dose number of that immunisation.

\*\* Refers to dose at birth.

The following vaccines will be introduced over the next few years:

- Pneumococcal vaccine (PCV)
- Rotavirus vaccine (RV)

Consult the latest EPI schedule for further information .

#### Catch-up doses

Any child who is unimmunised should be given a full schedule of immunisations.

##### Note:

- » BCG is given until one year of age provided HIV infection has been excluded by PCR.
- » DTP-Hib combination given until two years of age (above two years give Td).

If more than one vaccine is overdue, it is appropriate to give all the vaccines at one visit.

**Pregnant women**First pregnancy

- » Give three doses of TT:
  - **first dose** on first contact
  - **second dose** 4 weeks later
  - **third dose** 6 months later (even if it is given in the postnatal period)

Subsequent pregnancy:

- » One dose TT during the antenatal period (up to a total of 5 recorded doses)

**Trauma**

- » Give booster dose of TT after each trauma episode (unless given in previous 5 years)

**All personnel working in a health care facility (including cleaning staff)**

- » Hepatitis B, 3 doses of 1 mL
  - **first dose** administered immediately
  - **second dose** 1 month after the first dose
  - **third dose** 6 months after the first dose.

**13.3 Vaccines for routine administration****Note:**

Children with HIV should receive the full schedule of vaccines.

Exception: BCG should not be given to children with symptomatic HIV-infection children

**BCG (*Bacillus Calmette-Guérin*)**

Protects against **TB meningitis and military TB** in children under 2 years.

- BCG, 0.05 mL of reconstituted intradermal BCG vaccine, administered into the skin (intradermally) on the right upper arm, at insertion of the deltoid
  - » Storage:
    - Store diluent and vaccine in fridge at 2–8°C
    - Discard opened vial after 6 hours or at end of immunisation session, whichever comes first
  - » Adverse events:
    - Initial reaction to intradermal vaccination is a papule formation that lasts a maximum of 4–6 weeks. This develops into a scar (visible in 40%)
    - In 1–10% there is oozing, ulceration and lymphadenopathy after vaccination. This is a usual reaction and not a cause for alarm.
    - Lymphadenopathy less than 1.5 cm is not clinically significant
    - Occasionally the papule becomes a pustule.

- Refer all cases with significant lymphadenopathy or a draining sinus
- » Contraindications:
  - Children with signs of symptomatic HIV infection (AIDS) should not get BCG vaccination

**DTP** (Diphtheria, tetanus and pertussis vaccine)

Protects against diphtheria, tetanus and pertussis.

- DTP, IM, 0.5 mL
  - under 1 year: outer side of left thigh
  - over 1 year: upper arm
    - » Storage:
      - Fridge middle shelves at 2–8°C
      - Easily damaged by freezing
      - Keep opened vials for next session if kept at correct temperature and not contaminated
      - Discard after 30 days
      - Record date of reconstitution
    - » Adverse events:
      - 60% have fever and pain at the injection site
      - Some infants have excessive somnolence and disruption of daily routines
      - 5% have prolonged inconsolable crying lasting more than 4 hours
      - Side-effects: mild fever, pain, local swelling occasionally
    - » Contraindications: Do not use if:
      - over 2 years
      - previous severe reaction to DTP
      - epilepsy that is not controlled

**Td** (Tetanus and diphtheria vaccine)

Protects against diphtheria and tetanus.

- Td, IM, 0.5 mL in upper arm
  - » Storage:
    - Fridge middle shelves at 2–8°C
    - Easily damaged by freezing
    - Keep opened vials for next session if kept at correct temperature and not contaminated
    - Discard after 30 days
    - Record date of reconstitution
  - » Adverse events:
    - Mild fever
    - Pain
    - Local swelling occasionally
  - » Contraindications:
    - Previous anaphylaxis

**HepB** (Hepatitis B vaccine)

Protects against hepatitis B.

- HepB, IM, 0.5 mL (paediatric vaccine)
  - under 1 year: outer side of right thigh
  - over 1 year: upper arm
  - use opposite side to DTP/Td
    - » Storage:
      - Fridge middle shelves at 2–8°C
      - Easily damaged by freezing
      - Keep opened vials for next session if kept at correct temperature and not contaminated
      - Discard after 30 days
      - Record date of reconstitution
    - » Side effects:
      - Mild fever
      - Pain
      - Local swelling occasionally
    - » Contraindications:
      - Previous anaphylaxis

**Hib** (*Haemophilus influenzae* type b vaccine)

Protects against Hib disease (meningitis, pneumonia, otitis media)

- Hib, given as DTP-Hib, IM into outer side of the left thigh
  - » Storage:
    - Fridge middle shelves at 2–8°C
    - Easily damaged by freezing
    - Keep opened vials for next session if kept at correct temperature and not contaminated
    - Discard after 7 days
    - Record date of reconstitution
  - » Contraindications:
    - Previous anaphylaxis

**OPV** (Oral polio vaccine)

Protects against polio.

- OPV, oral, 2 drops given by mouth
  - If spat out or vomited, repeat immediately
  - Not affected by feeding (breast or other)
    - » Storage:
      - Fridge: top shelf (**in clinics**); or freezer (**in Pharmacy**)
      - **Not damaged** by freezing
      - easily damaged by temperature above 8°C
      - vials can be reused if the VVM's inner square remains lighter than the outer circle

- » Adverse events:
  - May be associated with a flu-like illness and gastroenteritis
  - Mild fever
- » Contraindications:
  - Previous anaphylaxis

**Measles**

- Measles vaccine, IM, 0.5 mL into outer mid right thigh over one year of age use upper arm
  - » Storage:
    - Fridge at 2–8°C, diluent on middle shelf and vaccine on top shelf.
    - Discard opened vial after 6 hours or at end of immunisation session (whichever comes first)
  - » Adverse events:
    - Transient morbilliform rash and mild pyrexia 6–11 days after vaccination
  - » Contraindications:
    - Previous anaphylaxis

**TT (Tetanus toxoid)**

Protects against tetanus (neonatal and after wounds)

- TT, IM, 0.5 mL into arm
  - » Storage:
    - Fridge middle shelves at 2–8°C
    - Easily damaged by freezing
    - Keep opened vials for next session if kept at correct temperature and not contaminated
    - Discard after 30 days
    - Record date of reconstitution
  - » Contraindications:
    - Previous anaphylaxis

**Influenza vaccine**

Recommended for:

- » Elderly patients over 65 years
- » Medical and nursing personnel
- » HIV-infected people (Do not use the live vaccine)
- » All patients with chronic cardiac or pulmonary conditions
- Influenza vaccine, IM, 0.5 mL

**13.4 The cold chain**

Maintaining the cold chain means keeping vaccines at the right temperature throughout distribution, storage and use. The cold chain can be maintained by:

- » **never** exposing vaccines to heat or freezing conditions, especially during

transportation from one point to another

- » **always** using a **cold box** to keep the vaccines cold during transport and immunisation

**Correct packing of the cold box**

- » **Fully** conditioned ice packs (the ice should rattle inside the pack) are placed on the bottom, at the sides and on top
- » If there are not enough ice packs, place available ice packs at the sides and on top of the vaccines
- » DTP, Td, TT, HepB and Hib vaccines must not be allowed to freeze
- » Keep measles and polio vaccines very cold - place on bottom of the cold box, closest to the ice packs
- » BCG can be placed anywhere in the box
- » Keep the lid firmly closed and the box out of the sun
- » Keep a thermometer in the cold box with the vaccines and the temperature 2–8°C
- » Live vaccines (BCG, OPV, measles) contain weakened organisms and are very sensitive to heat, sunlight and skin antiseptics

**How to pack your fridge correctly**

- » Top shelf: measles and polio vaccines in the coldest part
- » Middle shelf: BCG, DTP, Td, HepB, Hib and TT vaccines (do not freeze) with sufficient diluent for the BCG and measles for 2 days
- » Do not let DTP, Td, HepB, Hib and TT vaccines touch the evaporator plate at the back of the fridge - they are destroyed by freezing
- » Do not keep vaccines in the fridge door
- » Store the same kind of vaccines together in one tray
- » Leave about 5 cm space between each tray to allow the cold air to move around
- » Bottles filled with salt water stored in the bottom of the fridge will keep the fridge contents cold when the door is opened
- » **Do not keep food in the same fridge as the vaccines to avoid unnecessary opening of the door**
- » If there has been a power failure consult the supervisor
- » Monitor and record temperature twice daily

**! CAUTION !**

Do not use vaccines that have expired, missed the cold chain or that VVM has reached discard point.

Keep the fridge temperature between 2–8°C.

**Note:**

All vaccines with a “T” in the name are sensitive to freezing – DTP, TT, Td HepaTiTis B, liquid Hib-Type B and even diluenT.

**13.5 The Revised Opened Multi-Dose Vial Policy****Opened vials of DTP, TT, Td, HepB and OPV vaccines:**

- » May be used in subsequent immunisation sessions **for a maximum of one month**, provided that each of the following conditions have been met:
  - the expiry date has not passed
  - each vial must be dated when opened
  - the vaccines are stored under appropriate cold chain conditions (2–8°C with temperature monitoring and recording)
  - the vaccine vial septum has not been submerged in water
  - aseptic technique has been used to withdraw all doses

If one of these vaccines has a VVM e.g. OPV, the vaccine vial monitor (VVM) will indicate the potency of the vaccine and the vaccine may be used for any length of time as long as the VVM has not reached discard point, and the other conditions above apply.

**Reconstituted vials of DTP-Hib may be used for 7 days if:**

- » each vial is dated when reconstituted
- » the vaccines are stored under appropriate cold chain conditions (2–8°C with temperature monitoring and recording, measured by the condition of the VVM, if any)
- » the expiry date has not passed
- » the vaccine vial septum has not been submerged in water
- » aseptic technique has been used to withdraw all doses
- » the VVM, if attached, has not reached the discard point

**Opened vials of measles, BCG**

Check the VVM and expiration date prior to reconstitution

Reconstituted vials of measles and BCG vaccines must be discarded at the end of each immunisation session or at the end of six hours, whichever comes first.

All opened vials must be discarded immediately if:

- sterile procedures have not been fully observed
- there is even a suspicion that the opened vial has been contaminated
- there is visible evidence of contamination such as a change in appearance or floating particles, etc.

## **Chapter 14: Musculoskeletal conditions**

- 14.1 Arthralgia**
- 14.2 Arthritis, rheumatoid**
- 14.3 Arthritis, septic**
- 14.4 Gout**
  - 14.4.1 Gout, acute**
  - 14.4.2 Gout, chronic**
- 14.5 Osteoarthrosis (osteoarthritis)**

**14.1 Arthralgia**

M25.5

**Description**

Joint pain without swelling, warmth, redness or systemic manifestations such as fever. It is usually self-limiting.

Arthralgia may be a manifestation of degenerative joint conditions (osteoarthritis) or of many local and systemic diseases, in which arthralgia may be an early manifestation.

Suspect rheumatic fever in children, especially if arthralgia affects several joints in succession.

Arthralgia may follow injury to the joint, e.g. work, play and position during sleep.

**General measures**

Advise patient to:

- » apply heat locally to the affected joint, taking precautions not to burn oneself
- » exercise after relief from pain
- » reduce weight if overweight to decrease stress on the joint

Reassure patient after other causes have been excluded

**Drug treatment**

Treat for 1 week (maximum 2 weeks) provided no new signs develop.

- Methyl salicylate ointment, topical, applied to affected areas may be considered in selected patients.
- **Paracetamol**, oral, 15 mg/kg/dose 4–6 hourly when required to a maximum of 4 doses per 24 hours
  - In children under 6 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
≥ 7–9kg	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
≥55kg and above	Up to 1000 mg	–	Up to 2 tablets	≥ 15 years and adults

**Referral**

- » Pain for 1 week in children
- » Pain for over 2 weeks in adults

- » Recurrent pain
- » Severe pain
- » Backache with radiation to one or other lower limb or neurological signs
- » Signs of arthritis (swelling, redness, tender on pressure, warmth)
- » Fever

## 14.2 Arthritis, rheumatoid

M06.9

### Description

A chronic, inflammatory, systemic condition of fluctuating course. It may affect many organs, predominantly joints with:

- » swelling or fluid, affecting at least 3 joint areas simultaneously
- » pain
- » limited movement with morning stiffness for longer than 30 minutes, which improves with activity. This distinguishes osteoarthritis from rheumatoid arthritis.
- » destruction

The arthritis affects mainly the small joints of the fingers and hands with the exception of the distal interphalangeal joints, although any joint can be involved. The distribution is symmetrical.

### Referral

- » All patients

## 14.3 Arthritis, septic

M00.9

### Description

An acute infective condition involving one or more joints.

The joint is hot, swollen, severely painful and with restricted movements.

Signs of systemic infection, including fever, are usually present. The infection is usually blood borne, but may follow trauma to the joint. The course may be acute or protracted. A wide spectrum of organisms is involved, including staphylococci and *N. gonorrhoea*.

#### **Note:**

Haemophiliacs may present with an acute arthritis similar to septic arthritis. This is due to a joint bleed and not due to infection.

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### Referral

#### Urgent

- » All patients for stabilisation and surgical drainage

If referral in children is delayed for longer than 2 hours, 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 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 adult

#### **! CAUTION !**

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

Contra-indicated in neonatal jaundice.

Annotate dose and route of administration in referral letter.

Treat shock if present, while preparing for transfer.

## 14.4 Gout

### 14.4.1 Gout, acute

M10.9

#### Description

A metabolic disease in which uric acid crystal deposition occurs in joints and other tissues and is characterised by following features:

- » recurrent attacks of a characteristic acute arthritis
- » often one joint
- » extreme pain and tenderness

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## **Musculoskeletal conditions**

- » swelling
- » redness and very hot
- » inflammation may extend beyond the joint
- » in the majority of patients the first metatarso-phalangeal joint is initially involved
- » the instep, ankle, heel, and knee are also commonly involved
- » bursae (such as the olecranon) may be involved

The condition is most common in men above 40 years of age and postmenopausal women.

### **Investigations**

- » Increased serum uric acid concentration. However, this may be normal during acute attacks.
- » Serum creatinine

### **General measures**

Immobilise the affected joint during the acute painful attack.

Increase (high) fluid intake.

Avoid alcohol.

Avoid aspirin.

Advise on weight reduction, if overweight.

### **Drug treatment**

Initiate treatment as early as possible in an acute attack.

- NSAID, e.g. ibuprofen, oral, 800 mg 8 hourly with or after a meal for 24–48 hours.

#### **Thereafter, if needed:**

ibuprofen, oral, 400 mg 8 hourly with or after a meal until pain and inflammation has subsided

#### **If NSAIDs are contraindicated, e.g. peptic ulceration, warfarin therapy and renal dysfunction:**

- Prednisone, oral, 40 mg daily for 3–5 days. (Doctor initiated)

### **Referral**

- » No response to treatment
- » Confirmation of diagnosis, if in doubt
- » Patients with chronic kidney disease
- » Patients with suspected secondary gout (e.g. haematological malignancies)

#### **Note:**

Patients with suspected metabolic syndrome often have impaired renal function and the use of NSAIDs has safety implications.

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Gout may be secondary to other medical conditions, e.g. haematological malignancies.

Gout may co-exist with hypertension, diabetes mellitus (as a risk factor for degenerative vascular disease) and chronic renal disease. The medicine treatment of these conditions could precipitate gout.

### 14.4.2 Gout, chronic

M10.9

#### Description

Gout with one or more of the following:

- » uric acid deposits in and around the joints and cartilages of the extremities (tophi)
- » initial involvement of the first metatarsal phalangeal joint in the majority of patients
- » involvement of the instep, ankle, heel and knee
- » further involvement of bursae (such as the olecranon)
- » significant periarticular inflammation
- » serum uric acid over 0.5 mmol/L
- » bone destruction
- » prolongation of attacks, often with reduction in pain severity
- » incomplete resolution between attacks

#### General measures

Avoid known precipitants and drugs that increase uric acid, if possible, e.g.: low dose aspirin, ethambutol, pyrazinamide, diuretics, especially hydrochlorothiazide 25 mg or greater.

Encourage weight loss.

Avoid alcohol.

Avoid aspirin.

#### Drug treatment

##### **Uric acid lowering therapy**

Urate lowering therapy is required in all of the following:

- » > 2 acute attacks per year
- » chronic tophaceous gout
- » urate renal stones
- » urate nephropathy

When the acute attack has settled completely, i.e. usually after 3 weeks:

- Allopurinol, oral, 100 mg daily. (Doctor initiated)
  - Increase monthly by 100 mg according to urate blood levels.
  - Titrate dose to reduce serum urate to < 0.3 mmol/L.
  - Average dose: 300 mg/day.

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- Maximum dose: 400 mg daily.

The elderly and patients with renal impairment require lower doses.

### Referral

- » Suspected secondary gout
- » No response to treatment
- » Non-resolving tophaceous gout

## 14.5 Osteoarthritis (osteoarthritis)

M19.9

### Description

A degenerative disorder typically affecting weight-bearing joints.

Signs and symptoms include:

- » pain
- » limited movement
- » morning stiffness, lasting less than 30 minutes
- » joint swelling

### General measures

Patient and family education on:

- » weight reduction
- » exercise

Rest during acute painful episodes.

Recommend the use of a walking stick or crutch to alleviate stress on the weight bearing joint.

Physiotherapy and/or occupational therapy.

Drug treatment

#### **For pain relief:**

- Paracetamol, oral, 1 000 mg, 6 hourly.
  - Maximum 4 000 mg per day.
- Methyl salicylate ointment, topical, applied to affected areas may be considered in selected patients.

If patient responds to paracetamol reduce the dose to:

- Paracetamol, oral, 500 mg, 6–8 hourly as needed.

If no response and inflammation is present:

#### **add**

- NSAID, e.g. ibuprofen, oral, 200–400 mg, 8 hourly with or after meals, as needed. (Doctor initiated)

**! CAUTION !**

Long-term use of NSAIDs has adverse effects on renal and cardiac function, the GIT and on joint cartilage.

**Referral**

All cases with:

- » intractable pain
- » infection
- » uncertain diagnosis
- » for consideration of joint replacement

## **Chapter 15: Central nervous system conditions**

- 15.1 Stroke**
- 15.2 Seizures (convulsions/fits)**
- 15.3 Febrile convulsions**
- 15.4 Epilepsy**
- 15.5 Meningitis**
  - 15.5.1 Meningitis, acute bacterial**
  - 15.5.2 Meningitis, meningococcal, prophylaxis**
- 15.6 Status epilepticus**
- 15.7 Headache, mild, non-specific**

**15.1 Stroke**

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**Description**

Stroke consists of rapidly developing clinical signs of focal (at times global) disturbance of cerebral function, lasting more than 24 hours or leading to death. Most strokes are ischaemic (embolism or thrombosis) whilst others may be caused by cerebral haemorrhage.

A transient ischaemic attack (TIA) is defined as stroke symptoms and signs that resolve within 24 hours.

The diagnosis of stroke depends on the presentation of sudden onset of neurological loss, including:

- » Weakness, numbness or paralysis of the face or an arm or a leg on one or both sides of the body
- » Sudden onset of blurred or decreased vision in one or both eyes or double vision
- » Difficulty speaking or understanding
- » Dizziness, loss of balance or any unexplained fall or unsteady gait
- » Headache (severe, abrupt)

**Treatment****Acute management**

- » Assess airway, breathing, circulation and disability.
- » Measure blood glucose and treat hypoglycaemia if present. – See section 21.11 Hypoglycaemia and hypoglycaemic coma.
- » Patients should be nil by mouth until swallowing is formally assessed.

**Secondary prevention**

All patients, if not contra-indicated (e.g. haemorrhagic stroke, peptic ulcer, etc):

- Aspirin, oral, 150 mg daily

Lipid lowering drug therapy – See section 4.1: Prevention of ischaemic heart disease and atherosclerosis.

**Hypertension**

For blood pressure management, section 4.7: Hypertension

**Diabetes mellitus**

See chapter 9: Endocrine system

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### **Referral**

- » All patients including patients with TIA
  - A witness should be encouraged to accompany the patient
  - All medications should be brought with the patient
  - History of event, including time of onset, signs and symptoms and previous medical, drug, and social history, should be taken from patient and/or witness

## **15.2 Seizures (convulsions/fits)**

R56.8

### **Description**

A seizure is a change in movement, attention or level of awareness that is sustained or repetitive, and occurs as a result of abnormal neuronal discharge within the brain. Seizures may be secondary (where there is an underlying cause) or idiopathic (where no underlying cause is evident). When seizures are recurrent or typical of a specific syndrome, then the term epilepsy is used.

Seizures should be differentiated from:

- » syncope
- » hyperventilation
- » transient ischaemic attack (TIA)
- » pseudoseizure

Important conditions that should be excluded include:

- » meningitis
- » encephalitis or encephalopathy (including hypertensive encephalopathy)
- » metabolic conditions, e.g. hypoglycaemia
- » brain lesions

### **Treatment**

#### **If convulsing:**

##### Children

- Diazepam, rectal, 0.5 mg/kg/dose for convulsions as a single dose.
  - Diazepam for injection 10 mg in 2 mL is used undiluted.
  - Draw up the required volume in a 2 mL syringe.
  - Remove needle then insert the whole barrel of the lubricated syringe into the rectum and inject the contents.
  - Remove syringe and hold buttocks together to minimise leakage

<b>Weight</b> kg	<b>Dose</b> mg	<b>Ampoule</b> 10 mg/2 mL	<b>Approx age</b>
≥ 3–6 kg	2 mg	0.4 mL	Less than 6 months
≥ 6–10 kg	2.5 mg	0.5 mL	≥ 6 months–1 year

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≥ 10–18 kg	5 mg	1 mL	≥ 1–5 years
≥ 18–25 kg	7.5 mg	1.5 mL	≥ 5–8 years
≥ 25–40 kg	10 mg	2 mL	≥ 8–12 years

- Maximum dose: 10 mg in 1 hour.
- May be repeated after 10 minutes if convulsions continue.
- Expect a response within 1–5 minutes.

If no response after the second dose of diazepam, manage as Status Epilepticus – See section 21.19: Status epilepticus

### Adults

- Diazepam, slow IV infusion, 10 mg at a rate not exceeding 2 mg/minute
  - Repeat within 10–15 minutes, if needed.
  - If no response after the second dose of diazepam manage as Status Epilepticus – See section 21.19: Status epilepticus.

Always check blood glucose levels to exclude hypoglycaemia.

### After seizure

- » All patients presenting with a first seizure need to be investigated to exclude underlying causes.
- » Meningitis must always be excluded.
- » A patient who presents with a first seizure should not automatically be labeled as an epileptic, or started on treatment.
- » When indicated, long term therapy should be initiated by a doctor.

### Referral

#### Urgent:

- » All patients with status epilepticus or suspected meningitis – See section 15.5: Meningitis
- » All patients following a first seizure should be examined by a doctor to exclude underlying causes

#### Note:

Known persons with epilepsy who recover fully following a seizure do not usually require referral – see criteria for referral under epilepsy

## 15.3 Febrile convulsions

R56.0

### Description

A febrile convulsion is a seizure occurring in a child between the ages of 6 months and 5 years in association with a significant fever in the absence of an intracranial infection. These are the most common type of seizures in children of this age.

## Chapter 15 Central nervous system conditions

However, the diagnosis requires the exclusion of other causes of seizures.

Febrile convulsions can be simple or complex. Simple febrile convulsions:

- » are generalised
- » occur once per illness
- » always lasts for less than 15 minutes (typically lasting 1–2 minutes)
- » are not associated with any neurological deficit

Children with febrile convulsions have a good prognosis, and very rarely develop epilepsy

### **If convulsing:**

#### Children

- Diazepam, rectal, 0.5 mg/kg/dose for convulsions as a single dose.
  - Diazepam for injection 10 mg in 2 mL is used undiluted.
  - Draw up the required volume in a 2 mL syringe.
  - Remove needle then insert the whole barrel of the lubricated syringe into the rectum and inject the contents.
  - Remove syringe and hold buttocks together to minimise leakage

Weight kg	Dose mg	Ampoule 10 mg/2 mL	Approx age
≥ 3–6 kg	2 mg	0.4 mL	Less than 6 months
≥ 6–10 kg	2.5 mg	0.5 mL	≥ 6 months–1 year
≥ 10–18 kg	5 mg	1 mL	≥ 1–5 years
≥ 18–25 kg	7.5 mg	1.5 mL	≥ 5–8 years
≥ 25–40 kg	10 mg	2 mL	≥ 8–12 years

- Maximum dose: 10 mg in 1 hour.
- May be repeated after 10 minutes if convulsions continue.
- Expect a response within 1–5 minutes.

If no response after the second dose of diazepam, manage as Status epilepticus – See section 21.19: Status epilepticus

- » Look for a cause of the fever.
- » **Always exclude meningitis**
  - For the first episode in children under 12 months of age, this will require lumbar puncture.

#### General measures

- » If the child is feverish:
  - remove excess clothing
  - cool the body by tepid sponging with lukewarm water
- » Parents/caregivers should be counselled on how to prevent a rapid rise in temperature during illnesses:

## Chapter 15 **Central nervous system conditions**

- remove excess clothing
- tepid sponging
- give child paracetamol)

### **Drug treatment**

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

Weight kg	Dose mg	Syrup 120 mg/5mL	Age months/years
≥ 7 – 14 kg	120 mg	5 mL	≥ 6 months–3 years
≥ 14 –17.5 kg	180 mg	7.5 mL	≥ 3–5 years

### **Referral**

- » All febrile convulsions except where:
  - the diagnosis of recurrent simple febrile seizures has been well established  
and
  - the child regains full consciousness and function immediately after the seizure  
and
  - meningitis has been excluded
- » Complex convulsions

## **15.4 Epilepsy**

G40.9

### **Description**

Epilepsy is defined as recurrent seizures. Epilepsy is associated with many psychological, social and legal problems, and cultural perceptions.

### **Diagnosis**

- » is usually made clinically
- » requires an accurate witness description of the seizure

### **Some different types of seizure**

Partial	» simple partial	Seizure on one side of the body with no loss of consciousness
	» complex partial	Partial seizure associated with loss of consciousness

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Generalised	» generalised tonic clonic	Loss of consciousness preceded by: » a brief stiff phase followed by » jerking of all of the limbs
	» tonic	One or more limbs become stiff without any jerking
	» myoclonic	Brief, usually generalised jerks, with retained awareness
	» absence	» occurs in childhood » sudden cessation of activity followed by a blank stare » usually no muscle twitching » some children will smack their lips

### General measures

- » Extensive health education.
- » Record keeping in a seizure diary recording dates and if possible the times of the seizures.
- » Present seizure diary at each consultation for assessment of therapy.
- » Carry a disease identification bracelet, necklace or card.
- » Counselling and advice on:
  - the adverse effect of alcohol on seizures
  - the effect of missing a dose of medication
  - discontinuing the drug treatment without advice of the doctor

**Patient should be counseled about driving, working at heights and operating machinery - the patient should sign in the notes that they have received this advice.**

### Drug treatment

#### **Note:**

- » General rule: a single drug is best.
- » Combination therapy should only be initiated by a specialist.
- » Recommended doses are general guides and will be effective in most patients. Some patients may need much higher or lower doses. Doses should only be increased at 2 weekly intervals. Therapeutic monitoring will assist with dosage adjustments, or in suspected non-adherence. However, it is only mandatory in the case of higher than usual doses of phenytoin.

Carbamazepine, phenytoin and phenobarbitone are associated with many drug interactions.

- » Always check for possible interactions before prescribing any other drug in combination with these agents.
- » Oral contraceptives may be less effective, and depot or IUCD is preferred. See chapter 7: Family planning.

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### **Generalised tonic clonic seizures**

#### Adults

- Phenytoin, oral, 4.5–5 mg/kg daily on lean body mass, at night  
**or**  
Carbamazepine, oral, 100 mg 12 hourly for one week then, 200 mg 12 hourly.
  - Titrate further upwards every 2 weeks according to response up to a maximum dose of 600 mg 12 hourly.
- » The choice between these two agents must be made on the acceptability of side-effects and how the number of doses influences lifestyle.
- » Carbamazepine is preferred in women because phenytoin may cause hirsutism and coarsening of the facial features.
- » Be aware of dose-related side effects. Phenytoin is a useful and effective agent. However, all doses above 300 mg/day are potentially toxic, and increased dosages should be monitored carefully, both clinically and by drug levels.

#### Children

The decision to initiate long-term therapy is generally made if the child has experienced two or more convulsions (except febrile convulsions).

- » Phenobarbitone and carbamazepine are both effective in generalised tonic clonic seizures.
- » The behaviour profile and academic performance of children on phenobarbitone should be monitored. Treatment should be changed if any problems are identified.
- Phenobarbitone, oral, 3.5–5 mg/kg at night (under 6 months of age). (Doctor initiated.)  
**or**  
Carbamazepine, oral, 5 mg/kg 12 hourly for 2 weeks, then 7.5 to 10 mg/kg 12 hourly. (Doctor initiated.)
  - Maximum dose: 10 mg/kg 12 hourly.

### **HIV infected individuals on ARVS**

#### Children

For HIV infected children on ARV therapy, valproate is preferred because of fewer drug interactions. When switching to valproate, commence treatment with maintenance dose of the drug as below and discontinue the other anticonvulsant after 7 days.

- Valproate, oral, 7.5–10 mg/kg 12 hourly.
  - Titrate according to response over 4 weeks up to 15 mg/kg 12 hourly.
  - If poorly tolerated divide total daily dose into 3 equal doses.

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## **Central nervous system conditions**

### Adults

For HIV infected adults on ARV therapy, lamotrigine is preferred because of fewer drug interactions. When switching to lamotrigine, commence treatment as below and discontinue the other anticonvulsant after 28 days.

- Lamotrigine, oral
  - 25 mg daily for 2 weeks
  - Then 50 mg daily for 2 weeks
  - Thereafter increased by 50 mg every 2 weeks according to response
  - Usual maintenance dose: 100–200 mg/day as a single dose

### **Note:**

The dose of lamotrigine will need to be doubled when patients are switched from regimen 1 (either efavirenz- or nevirapine-based ARV therapy) to lopinavir/ritonavir because the metabolism of lamotrigine is induced by lopinavir/ritonavir.

### **Poorly controlled epilepsy**

Ask about the following as these can influence decisions on drug therapy:

- » has the patient been compliant in taking the medication regularly for at least 2 weeks or more before the seizure? Ask about drug dosage and frequency.
- » has the patient recently used some other medication?
- » is there a chance that alcohol or some other drug is involved?

If one or more of the above can be identified as a problem there is no need to adjust therapy at this time.

### **Referral**

- » All new patients, for diagnosis and initiation of therapy by a doctor
- » Patients with seizures other than generalised tonic clonic seizures, including absence seizures
- » Increased number of seizures or changes in the seizure type
- » Patients who have been seizure free on therapy for 2 years or more (to review therapy)
- » Pregnancy or planned pregnancy
- » Development of neurological signs and symptoms
- » Adverse drug reactions
- » Suspected toxicity

### **Information on the seizures that should accompany each referral case**

- » Number and frequency of seizures per month (or year)
- » Date and time of most recent seizures
- » Detailed description of the seizures, including
  - aura or warning sign
  - what happens during the seizure? (give a step-by-step account)
  - is the person conscious during the seizure?
  - how long do the seizures last on average?
  - what does the patient experience after the seizure?
  - how long does this experience last?
- » Is there a family history of seizures?

## **Chapter 15** **Central nervous system conditions**

- » What is the initial date of diagnosis?
- » Is there evidence of alcohol use?
- » Is there another medical condition present, e.g. diabetes and what medication is used?
- » What is the name and dosage of the antiepileptic drug used to date?
- » Does the person return regularly for repeat of medication?

### **15.5 Meningitis**

#### **15.5.1 Meningitis, acute bacterial**

G00.9

##### **Description**

Infection of the membranes of the brain.

Clinical signs and symptoms include:

- » headache
- » neck stiffness
- » vomiting
- » fever
- » impaired level of consciousness
- » photophobia
- » bulging fontanelle in infants

Neck stiffness is generally not elicited in young children, and especially neonates, and may be absent in adults, especially debilitated patients and the elderly. Young children with fever, vomiting and convulsions or an impaired level of consciousness must be assumed to have meningitis. Signs may be even more subtle in newborns.

##### **Initial management**

- » If possible perform a lumbar puncture. Send cerebro-spinal fluid (CSF) in separate sterile containers (for culture, microscopy and chemistry and for glucose) with patients.

##### **Emergency measures**

- » Stabilise before referral.
- » Treat for shock if present.
- » If patient's level of consciousness is depressed:
  - maintain airway
  - give oxygen
- » Ensure hydration

## Chapter 15

## Central nervous system conditions

### If convulsing:

#### Children

- Diazepam, rectal, 0.5 mg/kg/dose for convulsions as a single dose.
  - Diazepam for injection 10 mg in 2 mL is used undiluted.
  - Draw up the required volume in a 2 mL syringe.
  - Remove needle then insert the whole barrel of the lubricated syringe into the rectum and inject the contents.
  - Remove syringe and hold buttocks together to minimise leakage

Weight kg	Dose mg	Ampoule 10 mg/2 mL	Approx age
≥ 3–6 kg	2 mg	0.4 mL	Less than 6 months
≥ 6–10 kg	2.5 mg	0.5 mL	≥ 6 months–1 year
≥ 10–18 kg	5 mg	1 mL	≥ 1–5 years
≥ 18–25 kg	7.5 mg	1.5 mL	≥ 5–8 years
≥ 25–40 kg	10 mg	2 mL	≥ 8–12 years

- Maximum dose: 10 mg in 1 hour.
- May be repeated after 10 minutes if convulsions continue.
- Expect a response within 1–5 minutes.

If no response after the second dose of diazepam, manage as Status Epilepticus – See section 21.19: Status epilepticus.

#### Adults

- Diazepam, slow IV infusion, 10 mg at a rate not exceeding 2 mg/minute
  - Repeat within 10–15 minutes, if needed
  - If no response after the second dose of diazepam manage as Status Epilepticus – See section 21.19: Status epilepticus.

#### Drug treatment

If bacterial meningitis is strongly suspected, or if any danger signs are present (depressed level of consciousness, purpura), initiate drug treatment before transfer. The threshold for giving antibiotics before referral to young children, especially neonates, should be extremely low.

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- Ceftriaxone, IM, 50–80 mg/kg/dose immediately as a single dose before referral.
  - Do not administer if calcium containing IV fluids administered within 48 hours.
  - Do not inject more than 1 g (1 000 mg) at one injection site.

Weight kg	Dose mg	Injection mixed with water for injection (WFI): (Chose one of the below)			Age Months/ years
		250 mg WFI 2 mL	500 mg WFI 2 mL	1 000 mg WFI 3.5mL	
≥ 2–2.5 kg	200 mg	1.6 mL	0.8 mL	-	-
≥ 2.5–3.5 kg	250 mg	2 mL	1 mL	-	Birth – 1 month
≥ 3.5 – 5.5 kg	375 mg	3 mL	1.5 mL	-	≥ 1–3 months
≥ 5–7 kg	500 mg	4 mL	2 mL	-	≥ 3–6 months
≥ 7–9 kg	700 mg	5.6 mL	2.8 mL	-	≥ 6–12 months
≥ 9–11 kg	800 mg	6.4 mL	3.2 mL	-	≥ 12–18 months
≥ 11–14 kg	1 000 mg	-	4 mL	3.5 mL	≥ 18 months–3 years
≥ 14–17.5 kg	1 250 mg	-	5 mL	4.4 mL	≥ 3–5 years
≥ 17.5–25 kg	1 500 mg (1½g)	-	6 mL	5.25 mL	≥ 5–7 years
≥ 25–55 kg	1 750 mg	-	7 mL	6.1 mL	≥ 7–15 years
≥ 55 kg and above	2 000 mg (2 g)	-	-	7 mL	≥ 15 years and above

### ! CAUTION !

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

Contra-indicated in neonatal jaundice.

Annotate the dose and route of administration on the referral letter.

### Referral

- » All patients with meningitis, or suspected meningitis

### 15.5.2 Meningitis meningococcal, prophylaxis

A39.9

In cases of confirmed meningococcal infection, the following close contacts should receive prophylaxis. Close contacts include:

- » household members,
- » child-care center contacts, and
- » anyone directly exposed to the patient's oral secretions, e.g., through kissing, mouth-to-mouth resuscitation, endotracheal intubation, or

## **Chapter 15** **Central nervous system conditions**

endotracheal tube management.

Chemoprophylaxis is only effective for the present exposure.

### **Drug treatment**

#### **Prophylaxis**

##### Children < 6 years

- Ceftriaxone, IM, 125 mg, single dose

#### **! CAUTION !**

Do not administer calcium containing fluids, e.g. Ringer-lactate, within 48 hours of administering ceftriaxone.  
Contra-indicated in neonatal jaundice.

##### Children 6 – 12 years

- Ciprofloxacin, oral, 250 mg, single dose

##### Children > 12 years and adults

- Ciprofloxacin, oral, 500 mg, single dose

## **15.6 Status epilepticus** **(See Chapter 21 - Trauma and emergencies)**

G41.9

## **15.7 Headache, mild, non-specific**

R51

### **Description**

Headache can be benign or serious.

Headache can have serious underlying causes including:

- |                                    |                            |
|------------------------------------|----------------------------|
| » encephalitis                     | » hypertensive emergencies |
| » meningitis                       | » venous sinus thrombosis  |
| » mastoiditis                      | » stroke                   |
| » benign intracranial hypertension | » brain tumour             |

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Headache due to a serious disease will often be associated with neurological symptoms and signs including:

- » vomiting
- » fever
- » mood change
- » cranial nerve fall-out
- » convulsions
- » confusion
- » impaired consciousness
- » pupillary changes and difference in size
- » focal paralysis
- » visual disturbances
- » neck stiffness

Tension headache due to muscle spasm:

- » may be worse in the afternoon, but often present all day.
- » is normally felt in the neck and the back of the head, but may be felt over the entire head
- » is often associated with dizziness and/or blurring of vision
- » is often described as a tight band around the head or a pressure on the top of the head
- » does not progress through stages like a migraine (no nausea, no visual symptoms)

### **General measures**

- » Teach relaxation techniques where appropriate.
- » Reassurance, where applicable.

### **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 6 months calculate dose by weight

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
≥ 55kg and above	Up to 1000 mg	–	Up to 2 tablets	≥ 15 years and adults

### **Referral**

- » Suspected meningitis should be referred immediately after initial treatment – See section 15.5: Meningitis
- » Headache in children lasting for 3 days
- » Recent headache of increasing severity

**Chapter 15****Central nervous system conditions**

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- » Headache with neurological manifestations
- » Newly developed headache persisting for more than 1 week in an adult.
- » Chronic recurrent headaches in an otherwise healthy patient, refer if no improvement after 1 month of treatment
- » Tension headache due to muscle spasm, refer if no improvement after 1 month of treatment

## **Chapter 16: Mental health conditions**

- 16.1 Aggressive disruptive behaviour**
- 16.2 Anxiety and stress related disorders**
- 16.3 Delirium – acutely confused, aggressive patient**
- 16.4 Mood disorders**
- 16.5 Acute Psychosis**

## **Chapter 16**

## **Mental health conditions**

Maintenance treatment of medicines mentioned in this chapter may be continued by nurses with proven competency to do so, under medical supervision and subject to regular review in accordance with best practice and prevailing legislation.

### **16.1 Aggressive disruptive behaviour**

F23.9

Manage as Acute psychosis. See Section 16.5: Psychosis, acute

### **16.2 Anxiety and stress related disorders**

F41.9

#### **Referral**

- » Poor response to counselling

### **16.3 Delirium – acutely confused, aggressive patient**

F05.9

See section 21.5: Delirium with acute confusion and aggression.

### **16.4 Mood disorders**

F32.9

#### **Description**

##### **Mood disorders include:**

- » major depressive disorder: episodes of major depression
- » dysthymia: not all the criteria for a major depression episode are met
  - lasts at least 2 years
- » bipolar mood disorder: both episodes of major depression and of mania
- » mood disorder due to a general medical disorder: the mood disturbance is secondary to an underlying medical condition
- » substance-induced mood disorder: mood disorder is secondary to substance use or withdrawal

##### **Disorders with disturbances of mood include:**

- » adjustment disorder with depressed mood: depressive symptoms as a response to a major crisis or event
  - usually lasts no longer than 6 months unless the stressor persists

**Major depressive disorder**

Major depressive disorder is a mood disorder characterised by at least 2 weeks of depressed mood as well as diminished interest and pleasure in activities and is associated with:

- » somatic symptoms, e.g. change in appetite and sleep, agitation or retardation and loss of energy
- » psychic symptoms, e.g. feeling of worthlessness, guilt, diminished concentration or indecisiveness, thoughts of death and suicide

Major depressive episodes can be further described in terms of:

- » severity: mild, moderate or severe
- » duration: chronic
- » other features: e.g. psychotic, postpartum

**Note:**

Consultation with a community psychiatrist or medical practitioner is recommended to verify diagnosis and to rule out other conditions, e.g. hypothyroidism.

**General measures**

Effective psychotherapies include:

- » cognitive-behavioural psychotherapy
- » interpersonal psychotherapy

Broader stressors may need to be addressed:

- » stress management / coping skills
- » marital and family issues
- » accommodation and vocational issues

**Medicine treatment**

**Major depressive disorder, particular if there are severe or melancholic features:**

**Adults**

- Amitriptyline, oral, at bedtime.
  - Initial dose 25–50 mg per day.
  - Increase by 25 mg per day at 3–5 day intervals.
  - Maximum dose: 150 mg per day.

**Elderly**

- Amitriptyline, oral, at bedtime.
  - Initial dose 25 mg per day.
  - Increase by 25 mg per day at 7–10 day intervals.
  - Maximum dose: 75 mg per day.

**! CAUTION !**

- » Tricyclic antidepressants can be fatal in overdose.
- » Caution is advised when prescribing these agents to outpatients with possible suicidal ideation and requires risk assessment.
- » The elderly are more sensitive to side-effects and need lower doses of tricyclic antidepressants (amitriptyline).
- » Avoid tricyclic antidepressants (amitriptyline) in patients with heart disease, urinary retention, glaucoma, epilepsy.

**Major depressive disorder, dysthymia or if amitriptyline is contra-indicated:****Adults**

- Fluoxetine, oral.
  - Initial dose: 20 mg per day (in morning).
  - Increase to 40 mg per day if there is partial, or no response after 4–8 weeks and if well tolerated.

Refer if no response after 8 weeks.

Elderly and in patients with panic attacks:

- Fluoxetine, oral.
  - Initial dose: 10 mg per day.

**Note:**

In cases of first episode of major depressive disorder, continue medicine treatment for at least 9 months after symptoms have ceased.

In cases where there have been multiple episodes, or where other complications exist, longer treatment is indicated which should be reviewed every 2 years.

Do not increase the dose too quickly. Although some patients show early improvement, in others response is delayed for up to 4–8 weeks.

**! CAUTION !**

- » Do not prescribe antidepressants to a patient with bipolar disorder without consultation, as a manic episode may be precipitated
- » be careful of interactions between antidepressants and other agents including herbs

**Referral**

- » Suicidal ideation
- » Major depression with psychotic features
- » Bipolar disorder
- » Failure to respond to available antidepressants
- » Patients with concomitant medical illness, e.g. heart disease, epilepsy
- » Poor social support systems
- » Pregnancy and lactation
- » Children and adolescents

**16.5 Psychosis, acute**

F23.9

**Description**

Schizophrenia is the most common psychotic disorder and is characterised by a loss of contact with reality. It is further characterised by:

- » positive symptoms, delusions and hallucinations and thought process disorder
- » negative symptoms, blunting of affect, social withdrawal
- » mood symptoms such as depression may be present

Clinical features include:

- » delusions: fixed, unshakeable false beliefs (not shared by society)
- » hallucinations: perceptions without adequate stimuli, e.g. hearing voices
- » disorganised thoughts and speech: e.g. derailment or incoherence
- » grossly disorganised or catatonic behaviour
- » negative symptoms: affective flattening, social withdrawal
- » social and/or occupational dysfunction

Only make the diagnosis if:

- » there is social or occupational dysfunction
- » signs and symptoms are present for at least 6 months (if less: consider schizophreniform disorder)
- » general medical and substance-related causes are excluded

**General measures**

Supportive intervention includes:

- » family counselling and psycho-education
- » cognitive-behavioural psychotherapy for schizophrenia in stabilised patients
- » supportive group therapy for patients with schizophrenia

Rehabilitation may be enhanced by:

- » assertive community programs
- » work assessment, occupational therapy and bridging programmes prior to return to the community
- » appropriate placement and supported employment

**Note:**

Consultation with a community psychiatrist is essential to confirm diagnosis and treatment.

**Medicine treatment****Schizophrenia where a less sedating agent is required:****Adults**

- Haloperidol, oral.
  - Initial dose: 2.5 mg daily.
  - Gradually increase until symptoms are controlled or until a maximum of 12.5 mg per day is reached.
  - Once stabilised, administer as a single dose at bedtime.

**Elderly**

- Haloperidol, oral.
  - Initial dose: 0.5 mg twice daily.
  - Increase dose more gradually until symptoms are controlled or until a maximum of 12.5 mg daily, if tolerated, is reached.
  - Once stabilised, administer as a single dose at bedtime.

**Schizophrenia where a more sedating agent is required:**

- Chlorpromazine, oral.
  - Initial dose: 25 mg three times daily.
  - Gradually increase until symptoms are controlled.
  - Once stabilised, administer as a single dose at bedtime.
  - Maintenance dose: 75–300 mg at night, but may be as high as 1 000 mg.

**Management of acute psychosis (including mania):**

- Lorazepam, IM, 2 mg immediately

**plus**

- Haloperidol, IM, 2–5 mg. May be repeated after 60 minutes if needed.
  - May be repeated 4–8 hourly.
  - Maximum dose 10 mg in 24 hours.
  - Refer if higher doses are required.

**or****If known schizophrenia and non-aggressive:**

- Zuclopenthixol acetate, IM, 50 mg immediately. Do not repeat within 2 days.

**Violent patients:**

- Zuclopenthixol acetate, IM, 150 mg immediately.

**! CAUTION !**

- » Always monitor for acute dystonic reactions after administration of short acting depot antipsychotic agents (see below for treatment)

**Only for health care workers with advanced psychiatric training**

The management of acute psychosis includes the use of antipsychotic agents and benzodiazepines in order to:

- » decrease agitation
- » decrease positive symptoms

**! CAUTION !**

**Always** consult with a doctor, preferably a psychiatrist where possible, when prescribing antipsychotic medication to:

- » children and adolescents
- » the elderly
- » pregnant and lactating women

**After the acute phase:**

- Haloperidol, oral dose range of 1.5– 10 mg/day, administered 2–3 times daily in divided doses.

**Long-term therapy:**

- Haloperidol, oral, 1.5– 10 mg daily given as a single dose or in two divided doses.
  - or**
  - Fluphenazine decanoate, IM, 25–50 mg every 4 weeks.
    - Initial dose: 12.5 mg.
  - or**
  - Flupenthixol, decanoate, IM, 40 mg every 4 weeks.
    - Initial dose: 20 mg.
  - or**
  - Zuclopenthixol decanoate, IM, 200 mg every 4 weeks.
    - Initial dose: 100 mg.

**Note:**

Long acting antipsychotics are particularly useful in patients unable to adhere to their oral medication regimes

Long-term therapy should always be in consultation with a doctor or a psychiatrist. Patients should be re-assessed every 6 months.

**Extra pyramidal side-effects**

If extrapyramidal side-effects occur with the lowest effective dose of antipsychotic medication:

- » an anticholinergic agent, e.g. orphenadrine or biperiden can be co-prescribed for dystonia or rigidity
- » the low potency agent, chlorpromazine, is less likely to cause dystonia

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## **Mental health conditions**

- Orphenadrine, oral, 50–150 mg, daily according to individual response
  - 50 mg twice daily is usually enough
  - do not prescribe more than 150 mg per day at primary care level
  - use with caution in the elderly as it may cause confusion and urinary retention

### **For acute dystonic reaction:**

- Biperiden, IM, 2 mg – may be repeated every 30 minutes.
  - Maximum of four doses within 24 hours.

### **Referral**

- » First psychotic episode
- » Poor social support
- » High suicidal risk or risk of harm to others
- » Children and adolescents
- » The elderly
- » Pregnant and lactating women
- » No response to treatment
- » Intolerance to medicine treatment
- » Concurrent medical or other psychiatric illness
- » Epilepsy with psychosis