# 5 An approach to common symptoms

## 5.1 Introduction

The family physician should have a patient-centred approach to the assessment of common symptoms. Primary care is where the majority of people present with new and undifferentiated health problems. A recent primary care morbidity study has identified the most common reasons encountered in South African primary care (Mash, 2012) and this is the crux of the contents of this chapter.

Two of the most important integrated decision support guides in South African primary care are the Practical Approach to Care Kit (PACK) and the Integrated Management of Childhood Illness (IMCI) (National Department of Health, 2014). PACK has been developed over the past 16 years by the Knowledge Translation Unit at the University of Cape Town Lung Institute. Localisations are available in the Western Cape Province (Knowledge Translation Unit, University of Cape Town Lung Institute and the Western Cape Government 2015) and in South Africa as Adult Primary Care (previously Primary Care 101, National Department of Health 2016). PACK covers the management of common symptoms and chronic conditions amongst adults (15 years and older) attending primary care services in low- and middle-income countries, and integrates content on communicable diseases, NCDs, mental disorders and women's health. An annually revised global version is available through www.packglobal.org. IMCI was developed by the World Health Organization and covers the management of children under the age of 5 years old. Localisations are available in most provinces of South Africa. The most recent global revision of IMCI was published in 2014 and can be accessed at http://www.who.int/maternal_child_adolescent/topics/child/imci/en/ . We have aligned the approaches outlined in this chapter with the recommendations in these two guides. The different symptoms are discussed in alphabetical order.

## 5.2 Approach to abdominal pain

*(Hannes Steinberg)*

The following patients may need urgent attention if they present with abdominal pain (Adapted from PACK: Knowledge Translation Unit, University of Cape Town Lung Institute and Western Cape Government, 2015):

- Peritonitis suggested by guarding rebound tenderness or rigidity of the abdomen, for example, guarding, rebound tenderness or appendicitis, perforation
- Jaundice, for example, gallstones, hepatitis
- Fever > 38 °C suggests significant sepsis, for example, pelvic inflammatory disease, pyelonephritis
- No stool or flatus for last 24 hours with nausea or vomiting suggests bowel obstruction
- In a patient on antiretroviral treatment (ART), the combination of abdominal pain, nausea, vomiting, fatigue, sore muscles or difficulty breathing may suggest lactic acidosis
- No urine passed for the last 12 hours and swelling suggest acute urinary retention
- A pregnant woman may have serious problems such as pregnancy-induced hypertension or pyelonephritis
- A patient with chest pain may have referred pain to the abdomen and a serious problem in the chest such as myocardial infarction or pneumonia, lower abdominal pain with recent TOP/miscarriage/ delivery or vaginal bleeding.

### 5.2.1 Gathering information

Have the patient indicate the site of the pain and relate to the anatomy and function of the organs that are found in the abdominal cavity, where they are situated and their nerve supply.

The location of acute abdominal pain may be associated with specific causes as shown in Table 5.1.

**Table 5.1** Likely pathology with abdominal pain at different locations

| Location | Likely pathology |
|---|---|
| Right upper quadrant | Gallbladder disease, lower lobe pneumonia, hepatic disease |
| Epigastrium | Dyspepsia, peptic ulcer, perforation, pancreatitis, referred pain (for example, myocardial infarction, pneumonia) |
| Left upper quadrant and umbilical area | Small bowel obstruction, early appendicitis, mesenteric ischaemia, mesenteric adenitis (TB), gastro-enteritis, lower lobe pneumonia |
| Right or left flank | Ureteric colic, pyelonephritis, leaking abdominal aortic aneurysm |
| Suprapubic | Cystitis, acute urinary retention, pelvic appendicitis |
| Right iliac fossa | Appendicitis, carcinoma of caecum, mesenteric adenitis (TB), Crohn's disease of terminal ileum, ovarian cyst, salpingitis, ectopic pregnancy |
| Left iliac fossa | Diverticulitis, carcinoma of sigmoid colon, ulcerative colitis, constipation, ovarian cyst, salpingitis, ectopic pregnancy |
| Groin | Irreducible hernia |

**Source:** Kontoyannis A, Conway K (2008) *Surgery*. Edinburgh: Mosby-Elsevier

The mnemonic PQRST can help recall further key information in the history:

- **P:** Precipitating/palliating/provoking factors. Peritonitis is worse with movement so the patient lies still. Ureteric colic is unaffected by movement and the patient may move about trying to relieve the pain. Food may relieve a duodenal ulcer, but worsen a gastric ulcer. Fatty foods may worsen bilary colic, hot and spicy foods may worsen dyspepsia and peptic ulcers, and milk may relieve dyspepsia, but worsen bilary colic due to the fat content. Pain on swallowing may be related to oesophageal pathology, while pain 30–60 minutes after eating may be related to gastric pathology. Likewise, pain with defecation may be related to the lower gastrointestinal tract, pain on micturition to the genito-urinary tract and pain with menses to the reproductive tract.
- **Q:** Quality/quantity of pain. Burning sensation is usually felt if there is pathology within the gastrointestinal tract or on the skin. A stabbing pain may indicate peritoneal irritation (including free blood/fluid), a cramp-like and 'colicky' pain indicates pathology of a hollow viscus, whereas a dull and constant aching pain may indicate a tumour or space occupying lesion. The pain may appear to radiate to another place. For example, pain in retroperitoneal structures such as the pancreas or aorta may be experienced as back pain. Pain

from the diaphragm may radiate to the shoulder tip and from the gallbladder to the tip of the scapula. Ovarian pain may radiate to the sacro-iliac region.

- **R:** Related factors. Ask about other symptoms of the gastrointestinal tract (for example, vomiting, diarrhoea, constipation, worms, haematemesis, malaena, dysphagia) or genito-urinary tract (for example, dysuria, menses, vaginal discharge). In a patient with weight loss, fever, night sweats and HIV, consider abdominal TB. In a patient with unexplained weight loss, consider cancer. In a patient with difficulty breathing and leg swelling, consider heart failure. It needs to be kept in mind that referred pain may present as abdominal pain. Cardiac pathology or pneumonia may present as upper abdominal pain. It is common for patients to present with vague lower abdominal pains when they would like to discuss issues of infertility, sexuality or relationship difficulties.
- **S:** Severity of the pain. Ask the patient to rate the severity on a scale of one to ten and also watch how they react during the consultation and examination.
- **T:** Time course and treatment. Consider the duration and whether it is intermittent or persistent pain and the use of or response to any medication. Abdominal pain may change over time. For example, appendicitis starts as a colicky central pain that later localises to the right iliac fossa with the onset of peritonitis. Colic may last seconds (intestinal), minutes (ureteric), or 20 minutes (gallbladder). Dyspepsia may be caused by aspirin or NSAIDs.

### 5.2.2 Examination

Examination includes attention to the patient's general appearance (sweating, pallor, position, behaviour), vital signs (temperature, pulse, blood pressure, respiratory rate), abdomen (nine quadrants), and may include a rectal and vaginal examination.

### 5.2.3 Investigations

Investigations will depend on the hypothesis being considered but may include:

- Full blood count – anaemia, infection
- Urea and electrolytes – renal function, dehydration
- Liver function tests – gallbladder, bilary or hepatic problems
- Amylase – pancreatitis
- Urinalysis – haematuria in ureteric colic and infection, leucocytes and nitrites in infection
- Pregnancy test
- Erect chest X-ray to look for free gas under the diaphragm or lower lobe pneumonia; note that 30% of acute perforations are not visible on the erect chest X-ray
- Abdominal X-ray for signs of obstruction, free gas, calculi or gas in the bilary tree
- Abdominal ultrasound can examine most organs
- Scopes of upper or lower GIT
- CAT scanning, barium or gastrografin studies, laparotomy and laparoscopy may have a place at the referral hospital.

### 5.2.4 Dyspepsia

Epigastric pain or discomfort is one of the commonest presentations of abdominal pain in primary care. Although no specific diagnosis is made in a large number of patients, the following pathology should be considered:

- Duodenal ulcer
- Gastric ulcer or gastritis
- Gastric cancer
- Hiatus hernia, oesophagitis and gastro-oesophageal reflux
- Gall bladder disease
- Irritable bowel syndrome (colicky pain, abdominal bloating and alternating bowel habit).

The majority of patients with dyspepsia will recover spontaneously or with a course of antacids or acid suppression. A number of red flag signs and symptoms suggest the need for further investigation:

- Objective weight loss

- Loss of appetite
- Early fullness
- Anaemia or evidence of bleeding (occult blood, malaena or haematemesis)
- Lymphadenopathy (Virchow's node)
- Age > 55 years when cancer becomes more likely
- Persistent vomiting – gastric outflow obstruction due to duodenal ulcer or gastric cancer
- Jaundice
- Abdominal mass
- Poor response or recurrence after a course of empirical treatment.

In a patient with dyspepsia, it is always important to enquire about medication and lifestyle factors that may be causing or worsening it:

- Non-steroidal anti-inflammatory drugs and corticosteroids
- Cigarette smoking
- Excessive alcohol intake
- Psychosocial stress
- Spicy, hot or acidic foods, or carbonated drinks.

The best investigation is endoscopy to exclude peptic ulcer disease, cancer, oesophagitis and hiatus hernia. Gallbladder disease will require liver function tests and ultrasound. Reflux may require manometry and pH testing to confirm. If peptic ulcer disease is suspected, tests for *Helicobacter pylori* should be considered. Tests include histology, urease testing of biopsies at endoscopy, antibodies in the blood and breath tests.

## 5.3 Approach to an aggressive patient

*(Claire van Deventer)*

### 5.3.1 Ensure that you and those around you are safe

Ask for help from security staff or police. Remove any weapons that the person may have. Try to calm the patient by using a low authoritative

voice and to see them in a safe room. Avoid restraint if possible. However, should restraint be necessary, you need at least five people, one person to take hold of the head, and one for each limb.

### 5.3.2 Check for confusion

Assess the patient for confusion before sedating if possible. Confusion may present as altered consciousness (varying drowsiness and alertness), disorientation for day, time, place and person (as per mini mental state examination (Mash, 2015c), poor attention span, not making sense and with an altered sleep pattern. Delirium is a medical emergency and needs immediate investigation and treatment. Ask about a history of epilepsy as patients may be confused post-ictal. A focused examination should look for underlying causes, for example, pyrexia, neck stiffness, dehydration, and focal neurological signs.

### 5.3.3 Assess for mental illness and substance abuse

Ask those who came with the patient if there is a history of mental illness, alcohol or other substance abuse. Assess whether the patient has any hallucinations, delusions or is incoherent, which may suggest a psychotic state. Consider the possibility of withdrawal from alcohol or illicit drugs and examine the patient for signs of intoxication (Viljoen, 2015).

If the patient has signs of mental illness, refuses treatment or admission and is a danger to self, others, their own reputation or financial interest and property, consider an involuntary admission under the Mental Health Care Act (No. 17 of 2002) before sedating them (Zabow, 2015). All three criteria must be met in order to do this.

### 5.3.4 Sedation

If sedation is needed, you can give lorazepam 2 mg and haloperidol 2–5 mg IM or orally if the patient cooperates. Monitor their blood pressure and level of consciousness every 15 minutes. If necessary, haloperidol can be repeated after 60 minutes to a maximum of 20 mg in 24 hours.

## 5.4 Approach to a patient who is abused

*(Beverley Schweitzer)*

There are many forms of abuse in South African society that present overtly or covertly to the primary care provider. Sexual and physical assault, interpersonal and intimate partner violence, child and elder abuse are some of the ways that people are abused.

### 5.4.1 Sexual assault

Immediate attention should be given to the history of assault, acute injuries, preventing HIV (post exposure prophylaxis and baseline tests for HIV, eGFR, syphilis, hepatitis B and C), preventing pregnancy (consider need for post-coital emergency contraception within 5 days of being raped) and preventing sexually transmitted infections (give appropriate antibiotics).

Care for the person by listening empathically, being supportive, maintaining privacy, involving trusted family members or friends, and identifying social support. Assess the risks of going home or the need for a shelter. Assess the person's mental state and any suicidal risk.

A full examination by a doctor is required to assess all injuries (Oosthuizen, 2015). Forensic specimens should be taken using a crime kit and documentation of all injuries is required on a J88 form. This should be done immediately, ideally in a designated facility with the necessary expertise and equipment, especially if the patient will lay a charge.

See the patient again after 3 days to provide ongoing support, assess for mental problems, continue prophylaxis against HIV and STIs, review the results of tests, enquire about any side effects of medication, consider the need for referral to specialised counselling services, and follow up on involvement of the police and the J88 form.

Follow up on the progress at 6 weeks, 12 weeks and 6 months and repeat HIV and hepatitis tests. Advise the use of condoms during this period.

### 5.4.2 Child abuse

Identification of children with suspected abuse requires familiarity with risk factors and recognition of the signs of abuse. If one cannot ensure the safety of the child, the child should be admitted to hospital (Cartwright *et al.*, 2015) Seeing an abused child evokes many powerful emotions and it is helpful to work with colleagues such as a social worker and not project these feelings onto the child's caregiver.

Children seen with suspected or confirmed child abuse or neglect are required by law to be reported using Form 22.

Doctors reporting suspected child abuse in good faith cannot be prosecuted for breach of confidentiality, even if the child is found not to have been abused or neglected, as the safety of the child is paramount.

### 5.4.3 Intimate partner violence

Intimate partner violence (IPV) has been defined as a pattern of aggressive and coercive behaviour that involves a current or former intimate partner in a dating, married, or cohabiting relationship (Joyner, Mash, 2010). Abuse may be experienced in many forms, including physical, emotional and psychological, verbal, environmental, social, financial, sexual, ritual, and religious/spiritual (Cherniak *et al.*, 2005: 368).

#### Identify the abuse

Abused women are often reluctant to disclose the problem to health workers spontaneously. The following cues should raise the index of suspicion (Joyner, Mash, 2010):

- Vague non-specific symptoms
- History of mental problems or psychiatric medication
- Fatigue, sleep problems, unexplained somatic complaints
- Symptoms of depression
- Feeling anxious/dizzy/thinking too much
- Chronic pain syndromes
- Repeated sexually transmitted infections
- Assault or trauma
- Suspected alcohol or substance abuse.

Direct questions can then be asked sensitively: 'Are you unhappy in your relationship?' 'Do you sometimes feel unsafe with your partner?' 'Has your partner ever hurt you?'

Patients should feel that they will be believed and that the family physician will regard their problems as important. The patient must feel safe so you should ensure confidentiality and privacy.

### Clinical management and plan

- Check for sexually transmitted infections/HIV
- Care for injuries and ensure adequate forensic documentation (use a J88 form)
- Check for pregnancy, offer contraception, termination and/or sterilisation as appropriate.

### Individual assessment and plan

- Listen attentively to your patient's story.
- Screen for mental problems such as anxiety disorders, depression, substance abuse, or post-traumatic stress disorder.
- Offer follow-up counselling and support.
- Listen and believe their experience of abuse. If you are critical or uncomfortable about what the patient says, they will hold back. Having one's story heard can in itself be therapeutic.
- Assure the patient that they are not alone and are not to blame. Abused women often feel alone and abandoned. Abusers often isolate their partners from friends and family. The abuser may blame the spouse for provoking them. The patient may believe this. It is important to be firm and stress that perpetrators are responsible for their actions. Point out that there are many abused people in similar situations.
- Defend the patients' right to live without fear of violence. The abused person often has very poor self-esteem and believes that they have no rights. Remind them that they have a right to live without fear of violence. No one deserves to be beaten, no matter what.

### Contextual assessment and plan

Refer to any or all of the following legal resources (Thuthuzela Care Centres can assist with this):

1 Family court for a protection order
2 Victim Empowerment Unit at a police station for support
3 NPO sector for legal aid.

The Domestic Violence Act (No. 116 of 1998) requires police to find the abused person a safe place to stay and help them to access medical care if necessary. They must inform the abused person of their legal options of laying a charge and/or applying for a protection order. They should supply the person with an application form and explain that a temporary protection order will come into effect as soon as it has been served on the abuser. If the order is contravened, the abuser will be arrested.

Assess her current social situation and future options. A formal risk assessment can assess her imminent risk of harm. Consider the following risk factors for imminent injury and death:

- Increasing severity and frequency of abuse
- An available weapon
- Threats to kill the patient, the children, or the abuser
- Previous attempts to kill the patient, the children, or the abuser
- A suicide attempt by the patient.

Help the patient plan for their safety. If it is not safe for them to return home, organise accommodation where they will be safe. Discuss plans for the patient to leave the abuser. Consider also any children that are involved and who may also be suffering or require maintenance payments.

Encourage the patient to seek help and support. LifeLine has the telephone numbers of shelters in different provinces. Women's groups such as NICRO offer group and individual counselling. Social workers can help with practical advice and counselling. Spiritual leaders may sometimes be of help.

Support the patient's decisions. This may be difficult for the family physician. No matter what the patient decides, the family physician needs to respect their autonomy and their reasons for making the choices they make, even if they are apparently self-destructive. They may decide to stay with the abuser, or leave and then return to the abuser again and again.

### 5.4.4 Elder abuse

The Older Persons Act (No. 13 of 2006) has not yet been proclaimed. The Act requires mandatory reporting of abuse and neglect of the elderly. The elderly are defined as men over the age of 65 years and women over the age of 60 years.

## 5.5 Approach to anal symptoms

*(Claire van Deventer)*

Anal symptoms can be divided into two groups:

- Anal pain and/or bleeding and/or discharge
- Anal itching.

If someone is unable to sit or to pass stool because of anal symptoms, they need urgent attention.

### 5.5.1 Anal pain, bleeding or discharge

Ask about preceding constipation or chronic diarrhoea, anal pain, swelling, ulcers, bleeding or discharge.

Constipation with straining to pass stool may lead to problems with external haemorrhoids or anal fissure. A fissure is usually at the posterior midline and if acute is extremely painful so that you cannot do a rectal examination. Treat the constipation and apply bismuth subgallate compound ointment 6–12 hourly or lignocaine 2% gel after each bowel motion. Refer if the haemorrhoid is thrombosed or cannot be reduced.

A perianal haematoma may also present as a painful lesion on the edge of the anus. It is not a haemorrhoid, but a blood clot which can

easily be drained to give relief.

The presence of painless bright red blood on the toilet paper or separate from the stool may be associated with internal haemorrhoids, although cancer and other conditions should be excluded.

Chronic diarrhoea may cause irritation of the skin. Treat the diarrhoea and apply zinc and castor oil ointment to the skin.

Genital ulcers may present in the anus, particularly in those having anal sex. Manage in the same way as other genital ulcers.

Perianal abscess will cause a painful swelling next to the anus and will need incision and drainage.

Rarer causes of anal symptoms include Crohn's disease, which will usually have other gastrointestinal symptoms and may also present with anorectal fistulas.

Examine the anus in the lateral position with the knees bent. Gently stretch the skin around the anus to see clearly. If possible, perform a rectal examination and in some cases proctoscopy (that is, suspected internal haemorrhoids, bleeding).

### 5.5.2 Anal itch

Itching may be caused by perianal warts, worms, dermatitis or fungal infections. Ask about a history of other skin conditions, allergies, use of any skin products around the anus that may cause contact dermatitis, and diabetes. On examination look for any warts, rash, excoriations or small white pinworms.

## 5.6 Approach to back pain

*(Don O'Mahoney)*

Low back pain (LBP) is defined as pain that occurs posteriorly in the area between the bottom of the rib cage and the buttock creases. The initial evaluation should (Mash, Blitz-Lindeque, 2006):

- Attempt to place patients with LBP into one of the following categories:
  - Non-specific LBP
  - LBP associated with radiculopathy or spinal stenosis

  - LBP associated with serious spinal pathology
  - LBP referred from a non-spinal source
- Assess if there is social or psychological distress that may amplify or prolong the pain (Chou *et al.*, 2007).

### 5.6.1 Natural history and aetiology

Table 5.2 lists the causes of LBP and the natural history is described below:

- Most LBP (80%) is non-specific and derives from the structural components of the lower back: bones, muscles, joints, discs, tendons, ligaments or nerves associated with lumbar vertebrae or pelvis. The exact structure causing the pain cannot be determined for most patients. It affects men and women equally, with onset usually between the ages of 30 and 50 years. The prognosis is favourable, as two thirds of patients with acute LBP substantially improve within six weeks (Deyo, 2001).
- The prognosis of LBP with radiculopathy (4%) caused by herniated discs is also favourable. More than 90% of symptomatic lumbar disc herniations occur at the L4/L5 and L5/S1 levels. Only about 10% of patients have so much pain after six weeks that surgery is considered.
- In contrast, spinal stenosis (3%) caused by hypertrophic degenerative changes of the facets and thickening of the ligamentum flavum, usually remains stable or gradually worsens.
- LBP is due to a specific spinal pathology in a minority of cases. They are important to detect because they often require aggressive evaluation and management (Deyo, 2001). In South Africa, spinal tuberculosis is more common due to the HIV epidemic. Back pain referred from a non-spinal source, such as abdominal or pelvic pathology, comprises about two percent of low back pain causes.

**Table 5.2** Causes of low back pain

| Classification of cause | Examples |
|---|---|
| Structural | Non-specific<br>Facet joint arthritis or dysfunction<br>Prolapsed intervertebral disc<br>Annular tear<br>Midline disc herniation (Cauda equina syndrome)<br>Spondylolysis or spondylolisthesis<br>Spinal stenosis |
| Infection | Discitis<br>Osteomyelitis, for example staphylococcal<br>Tuberculosis of the spine<br>Paraspinal abscess |
| Inflammatory | Spondylo-arthropathies (for example, ankylosing spondylitis, psoriatic and reactive arthritis)<br>Sacro-ilitis or sacro-iliac dysfunction |
| Neoplasm | Primary (for example multiple myeloma) or secondary (for example prostate and breast) |
| Metabolic | Osteoporosis and vertebral collapse<br>Paget's disease<br>Osteomalacia<br>Hyperparathyroidism |
| Referred/non-spinal | Major viscera, for example, kidneys and pancreas<br>Retroperitoneal structures, for example, dissecting aorta<br>Urogenital system, for example, pelvic inflammatory disease<br>Hip, for example, osteoarthritis |

**Source:** Speed C (2004) ABC of Rheumatology. Low Back Pain. *Br Med J* 328: 1119–1121 with permission from BMJ Publishing Group Ltd

### 5.6.2 History

The onset and characteristics of the pain are important in differentiating non-specific from other categories of LBP. It is important to inquire about:

- Impact on physical function (sleep, work, dressing, sexual activity, recreation) and factors that improve or worsen the pain
- The tasks the patient performs at work and their level of physical activity off the job
- Radiating leg pain (sciatica) is suggestive of radiculopathy and disc prolapse and may be exacerbated by coughing, sneezing or straining during the Valsalva manoeuvre

- Spinal stenosis occurs usually in older patients and is characterised by pain in the legs on walking, which mimics ischaemic claudication; the pain is relieved by sitting down or bending forward
- Any red flag or non-spinal symptoms as described in Table 5.3.

**Table 5.3** Red flags for low back pain

| Possible cause | Key features on history or physical examination |
|---|---|
| Cancer | History of cancer with new onset of LBP<br>Pain is progressive<br>Unexplained weight loss<br>Failure to improve after one month<br>Age < 18 years or > 50 years |
| Vertebral infection | Fever and systemic upset such as night sweats and weight loss<br>HIV<br>Intravenous drug abuse<br>Recent infection |
| Cauda equina syndrome | Urinary retention<br>Motor deficits at multiple levels<br>Faecal incontinence<br>Saddle anaesthesia |
| Vertebral compression fracture | History of significant trauma<br>History of osteoporosis<br>Use of corticosteroids<br>Older age |
| Severe/progressive neurological deficits | Progressive motor weakness |
| Inflammation (ankylosing spondylitis) | Early morning stiffness<br>Improvement with exercise<br>Alternating buttock pain<br>Nocturnal awakening in early hours<br>Younger age |
| Referred pain from abdomen or pelvis | Dysuria, fever, nausea/vomiting, abdominal pain, abdominal mass, localised tenderness on examination, genito-urinary symptoms |

**Source:** Adapted from Kinkade S (2007) Evaluation and treatment of low back pain. *Am Fam Physician* 75: 1181–1188, 1190–1192; Chou R, Qaseem A, Snow,V, Casey D, Cross TJ, Shekelle P, Owens DK for the Clinical Efficacy Assessment Subcommittee of the American College of Physicians American Pain Society Low Back Pain Guidelines Panel (2007) Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society. *Annals of Internal Medicine* 147: 478–491

Assess psychosocial factors and emotional distress because they are stronger predictors of chronic disabling non-specific LBP than either

physical examination findings or severity and duration of pain:

- Patient's perspective – beliefs, concerns, expectations, feelings
- Psychosocial stress – relational, financial, health, living situation, work related
- Mental health – depression, anxiety, substance abuse
- Secondary gain from potential compensation or disability grant.

### 5.6.3 Examination

A focused examination is adequate in patients with LBP whose history does not suggest serious spinal pathology or non-spinal causes, with particular emphasis on the following (Mash, Blitz-Lindeque, 2006):

- Palpate spine: Vertebral tenderness has sensitivity for infection, but not specificity. Tenderness may also indicate neoplasia or osteoporotic vertebral collapse
- Movements: Limited spinal motion is not strongly associated with any specific diagnosis, but suggests the degree of functional limitation
- A positive result on the straight-leg-raising test (defined as reproduction of the patient's sciatica between 30 and 70 degrees of leg elevation) has a relatively high sensitivity but modest specificity for diagnosing herniated disc
- The crossed straight-leg-raising test is more specific for a herniated disc but less sensitive.

Tests for sensation (light touch or pin prick), motor strength and reflexes are useful in localising the level of a disc herniation (see Table 5.4).

**Table 5.4** Physical examination findings in nerve root impingements

| Level of disc herniation | Nerve root impinged | Sensory loss | Motor weakness | Screening examination | Reflex |
|---|---|---|---|---|---|
| L3–L4 | L4 | Medial foot | Knee extension | Squat and rise | Knee/ patellar |
| L4–L5 | L5 | Dorsal foot | Dorsiflexion ankle/great toe | Heel walking | None |
| L5–S1 | S1 | Lateral foot | Plantar flexion ankle and toes | Walking on toes | Ankle/ Achilles |

### 5.6.4 When to investigate or refer?

Because non-specific acute LBP typically does not have a serious aetiology and resolves with conservative treatment, most patients do not need investigations (Chou *et al.*, 2009).

Patients with radiculopathy and suspected spinal stenosis should be investigated and referred if symptoms do not resolve in four to six weeks. Typical investigations in primary care include a full blood count, ESR and plain radiograph. CAT scans and MRI scans are often required at the referral hospital. Cauda equina syndrome and severe progressive neurological deficits must be referred as an emergency.

## 5.7 Approach to bites

*(Don O'Mahoney)*

Special considerations in mammalian bite wounds relate to:

1 The risk of bacterial infection due to gross wound contamination
2 The risk of rabies
3 The mechanics of injury.

There is also controversy about the prophylactic use of antibiotics and primary versus secondary wound closure.

In South Africa, bites that present to hospital are mainly by dogs (Engelbrecht, 2012) and predominantly involve children aged 4-7 years (Dwyer, Douglas, Van As, 2007; Kent, Naicker, Wood, 2012). Less common are bites by humans, rats and cats (De Klerk, Van Dijk, Van As, 2016), and bites by bats are rare.

Dog and cat bite wounds are polymicrobial reflecting predominantly the flora in the mouth, consisting of species of anaerobes (for example, *Fusobacterium, Porphyromonas* and *Prevotella*) and aerobes (for example, *Pasteurella, Streptococcus* and *Staphylococcus*) (Abrahamian, Goldstein, 2011). Other organisms may originate in the environment or patients' skin. Infections with *Capnocytophaga canimorsus* (from dogs) can be fulminant and *Pasteurella multocida* (from cats especially) can cause serious complications, for example, necrotising fasciitis, osteomyelitis and meningitis. Dogs can exert a biting power of between 30–70 kg per square centimetre that cause crush injuries, including fractures, in addition to lacerations, puncture wounds, avulsions, tendon, joint and neurovascular injury (Engelbrecht, 2012). Cats' long thin teeth can cause small but deep puncture wounds that penetrate into bone, tendons and joints. The small size makes irrigation difficult and they have a high infection rate (up to 50%) (Evgeniou *et al.*, 2013).

A human bite typically transfers more bacteria than a dog- or cat bite due to a higher population of resident mouth bacteria. Organisms causing infections include *Streptococci, Staphylococcus aureus* and β-lactamase-producing anaerobes (Smith, Meadowcroft, May, 2000). HIV, hepatitis B and C, and syphilis can also be transmitted. Human bites can be occlusional (teeth sinking into the skin) or fight bites (clenched-fist injuries when striking another person in the mouth). Fight bites carries a high risk of joint infection, tendon injury and fractures (Smith, Meadowcroft, May, 2000). Bites of lips, pinnae and nose may cause avulsion and tissue loss.

Any mammalian (including bats) bite can transmit rabies. There were 12 human and 834 animal rabies cases in 2012.

Between 2005 and 2015 an average of 13 human cases has been reported (range 5–31) per year. In 2015, eight confirmed human rabies cases were diagnosed from the following provinces: KwaZulu-Natal (n = 1), Limpopo (n = 3), Eastern Cape (n = 3), and Free State (n = 1) (Centre for Emerging and Zoonotic Diseases, NICD-NHLS (nd.); Onderstepoort Veterinary Institute, Gauteng Department of Agriculture and Rural Development (nd.))

Most human cases were from rabid dog bites in children under the age of 10 and occurred in the provinces of KwaZulu-Natal, Eastern Cape and Limpopo (World Health Organization, 2014a). Other mammals commonly implicated are the mongoose, cat, jackal, cattle and goats. Small rodents such as mice and rats commonly found in and around dwellings are not typically associated with rabies (Blumberg *et al.*, 2010).

### 5.7.1 Assessment

If the patient has sustained severe injuries, resuscitate first. Consult a surgeon for management of extensive injuries, wounds that penetrate bone, tendon, and joints, neurovascular compromise, concern for cosmetic sequelae, or severe infections. However, most bites are managed as outpatients.

### 5.7.2 Local wound treatment

Local anaesthesia infiltrated through uninvolved skin should be used to achieve adequate initial washout and debridement of animal bites (Evgeniou *et al.*, 2013).

Adequate wound cleaning is the most important intervention to prevent infection, including rabies, and promote healing. First aid is to wash the wound thoroughly with soap under running water for 5–10 minutes (Blumberg *et al.*, 2010; National Department of Health, 2014b). If available, use Chlorhexidine 0,05%. Irrigation under controlled pressure is now advocated to clean wounds, using a 20 ml syringe and the plastic cannula of a IV 18 or 20-gauge needle and 100–200 ml normal saline per 2.5 cm of wound (Aziz *et al.*, 2015; Evgeniou *et al.*, 2013). Povidone-iodine 10% solution is virucidal, but may also damage tissues. Apply if there is a high risk of rabies (Engelbrecht, 2012; National Department of Health, 2014b).

Devitalised tissue must be debrided and any foreign bodies removed, for example, a tooth may break off during a bite (Ellis, Ellis, 2014).

Traditional teaching was that bite wounds be left open because of the increased risk of wound infection when sutured. However, even though data is limited (Aziz *et al.*, 2015), current guidelines recommend

primary closure (Engelbrecht, 2012, National Department of Health, 2014; West, Weber, 2014; Ellis, Ellis, 2014) provided there is no established infection and there are no other risk factors for infection (Table 5.5) and a low risk of rabies.

**Table 5.5** Risk factors for infection of bite wounds

| |
|---|
| Bites involving the hand, and below knee: |
| • Puncture wounds |
| • Cat bites (except face) |
| Crush injuries: |
| • Delayed presentation: |
| – > 6–12 hours for bites to arm or leg |
| – > 12–24 hours for bites on face |
| • Diabetes mellitus, HIV or other immunosuppression |

If the bite was by a potentially rabid animal, suturing should be avoided as it facilitates further inoculation of rabies virus (World Health Organization, 2013a). If suturing is necessary, for example, for cosmetic reasons or haemorrhage, rabies immunoglobulin should be administered and suturing delayed for several hours to allow diffusion of the immunoglobulin through the tissues (World Health Organization, 2013b).

### 5.7.3 Rabies prophylaxis

To assess if the animal was potentially rabid, two factors should be considered:

- The epidemiology of rabies in the area – this information can be obtained from the National Institute of Communicable Diseases hotline
- The bite incident (Engelbrecht, 2012).

Key elements of the incident are the circumstances of the bite (provoked or not), species of animal (domestic, stray or wild), animal behaviour (normal or abnormal), rabies immunisation status, and whether the animal can be observed for 10 days. In the author's experience, in a rural district with endemic rabies in the Eastern Cape, few bite victims know the immunisation status of the animal that bit

them. Even if the other elements of the history are reassuring, it is prudent to commence active rabies vaccination to ensure immunity in the event that the animal manifests suspicious behaviour during observation. In an urban district with no reported rabies and a reassuring history, watchful waiting is appropriate.

See Table 5.6 for a patient assessed as having exposure to a potentially rabid animal. The table lists the categories of rabies exposure and recommended post-exposure prophylaxis.

**Table 5.6** Recommended rabies post-exposure prophylaxis according to type of exposure

| Risk category | Type of exposure | Action |
|---|---|---|
| 1 | Touching/feeding animal | None |
| | Licking of intact skin | |
| 2 | Nibbling of uncovered skin | Vaccine |
| | Superficial scratch without bleeding | |
| | Licking of broken skin | |
| 3 | Bites/scratches that penetrate the skin and draw blood | Vaccine |
| | Licking mucous membranes | Rabies immunoglobulin |

**Source:** National Department of Health (2014b) *Primary Healthcare Standard Treatment Guidelines and essential Medicines List* (5th edition). Pretoria: National Department of Health

South Africa uses a 4-dose rabies vaccine schedule. However, if a person is immunocompromised, a fifth dose of rabies vaccine is administered and human rabies immunoglobulin (RHIG) is given for both categories 2 and 3 exposures (National Department of Health, 2015). If RHIG is not available on the first visit, it can be administered within seven days after giving the first vaccine dose (World Health Organization, 2014b, National Department of Health, 2015). RHIG should be injected in and around the wound as well as intramuscularly.

### 5.7.4 Tetanus prophylaxis

A booster dose of tetanus toxoid should be administered after each trauma episode unless given in the previous five years (National Department of Health, 2014b). Consider tetanus immunoglobulin if there is extensive dead tissue.

### 5.7.5 Prophylactic antibiotics

Antibiotics such as co-amoxiclav (for aerobes including penicillin resistant *S aureus* and *P multocida*) and metronidazole (for anaerobes), are indicated for patients at risk of infection (Table 5.5) (National Department of Health, 2014b). For treatment of established infection, oral metronidazole and IV cefotaxime are recommended (Aziz *et al.*, 2015).

Consult the current guidelines (2014b) of the National Department of Health, *Primary Healthcare Standard Treatment Guidelines and Essential Medicines List* for post-exposure prophylaxis for HIV, Hepatitis B and C from human bites.

## 5.8 Approach to breast symptoms

*(Ramprakash Kaswa)*

Breast tissue is composed of adipose tissue, glandular tissue and suspensory ligaments. The primary symptoms of breast disease are classified into three categories:

1 Breast pain (mastalgia)
2 Breast lump (mass)
3 Discharge from nipple.

### 5.8.1 History

In a patient with breast pain or a lump, determine its location, duration and whether it is related to the menstrual cycle. Breast cancer rarely presents with pain and usually there is a benign cause. Bilateral breast lumps are more likely to be benign and cyclical in nature. A unilateral breast lump is more suspicious of cancer, especially if the patient is an older patient (> 35 years) or has a family history of breast cancer. Breast cancer may also be associated with recent nipple inversion and skin changes.

A patient complaining of nipple discharge should be asked to describe its appearance and if it is blood stained. Bilateral discharge is more likely to be associated with pregnancy or hormonal changes,

while a unilateral discharge is more sinister, especially in an older woman. A nipple discharge in a man should be investigated.

Breast enlargement can be due to obesity as well as certain medications (for example, efavirenz, nifedipine, amiodipine, fluoxetine). Gynaecomastia in a man is usually due to hormonal changes with oestrogenic stimulation. This may be due to physiological changes during puberty and old age or can be due to pathogenic causes such as cirrhosis, testicular disease, alcohol abuse, marijuana or anabolic steroids.

Hormonal contraception and medication therefore may be related to breast symptoms and should be queried.

Breast changes may also be due to pregnancy and this should be excluded where appropriate. Breastfeeding women are also more likely to have breast symptoms. Painful or cracked nipples due to poor latching may occur, breasts may be painful with engorgement or mastitis, and painful breast lumps may be due to a blocked duct or breast abscess.

Risk factors for breast cancer include:

- Being female
- Increasing age
- Personal history of previous breast cancer
- Family history of breast cancer in first degree relatives
- Inherited specific genes that increase risk, for example, BRCA1 and BRCA2
- Radiation exposure
- Obesity
- Starting periods at a young age (< 12 years)
- Stopping periods later than usual (> 55 years)
- Having first child at an older age ( > 30 years)
- Never being pregnant
- Postmenopausal hormonal therapy
- Harmful alcohol use.

### 5.8.2 Clinical breast examination

Inspect the breasts in three different postures while standing or sitting on the edge examination couch, arms relaxed at the sides, arms raised with hands behind the head and with hands on the hips. Look for breast symmetry, skin changes (dimpling, retraction, oedema or ulceration) and at the nipples (symmetry, inversion/retraction or discharge).

Palpate the breast with the patient lying down, with the ipsilateral arm raised and the palm behind the head, and contralateral arm by her side. Use four flat fingers to compress breast tissue against the rib cage with a circular motion. Squeezing tissue may create the false impression of a lump. Examine systematically in quadrants or using the approach of a clock-face to go around the breast. If any lumps are identified, note the position, size, shape, consistency, tenderness, fixation and whether single or multiple. A hard, irregular single nodule that is not tender and may be fixed to surrounding tissue is typical of cancer.

Always examine the tail of the breast as well as the axillary and supraclavicular lymph nodes.

Figures 5.1, 5.2 and 5.3 illustrate the assessment of breast symptoms. Breast lumps may need further investigation by ultrasound, fine needle aspiration biopsy, or mammography.

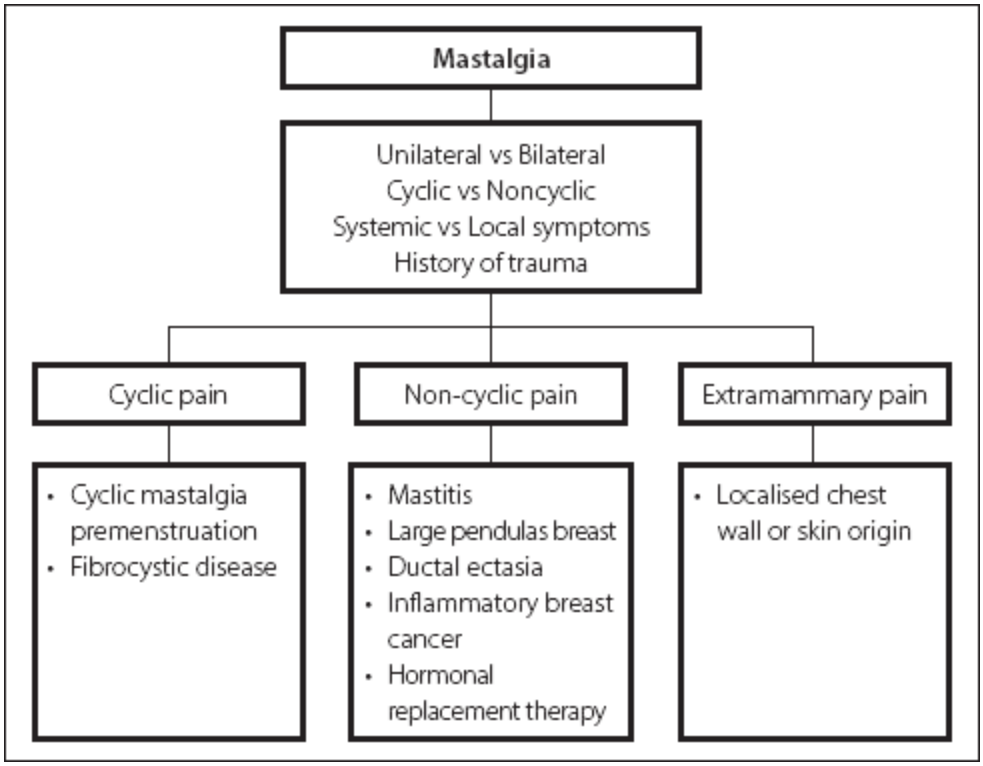



**Figure 5.1** Assessment of mastalgia

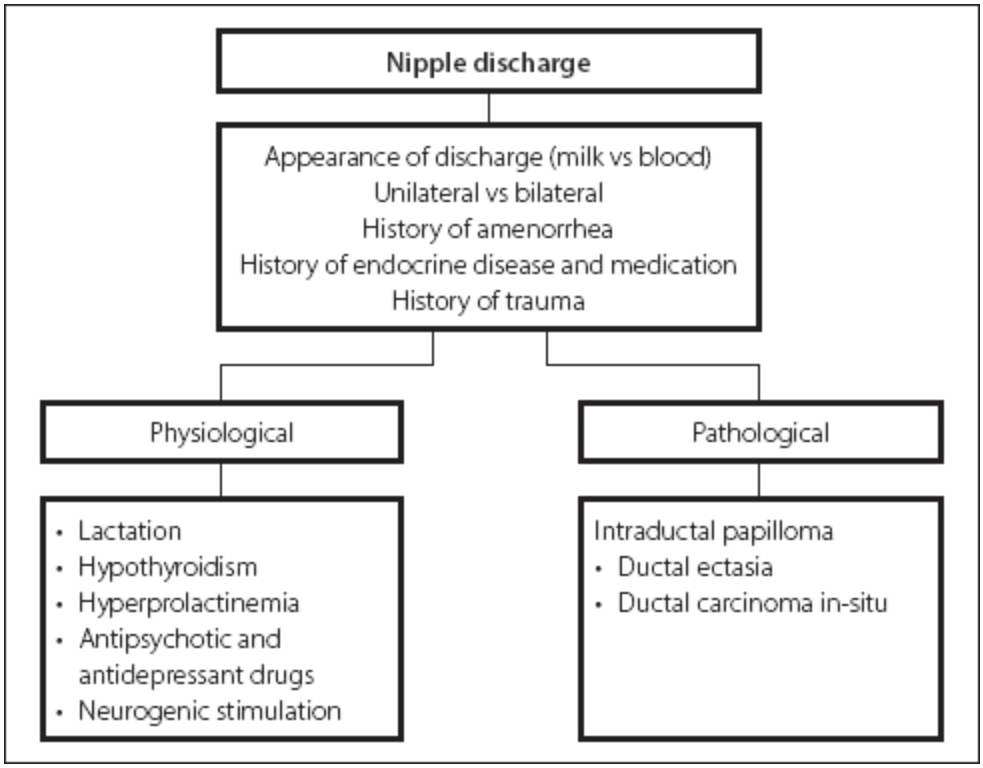


**Figure 5.2** Assessment of nipple discharge

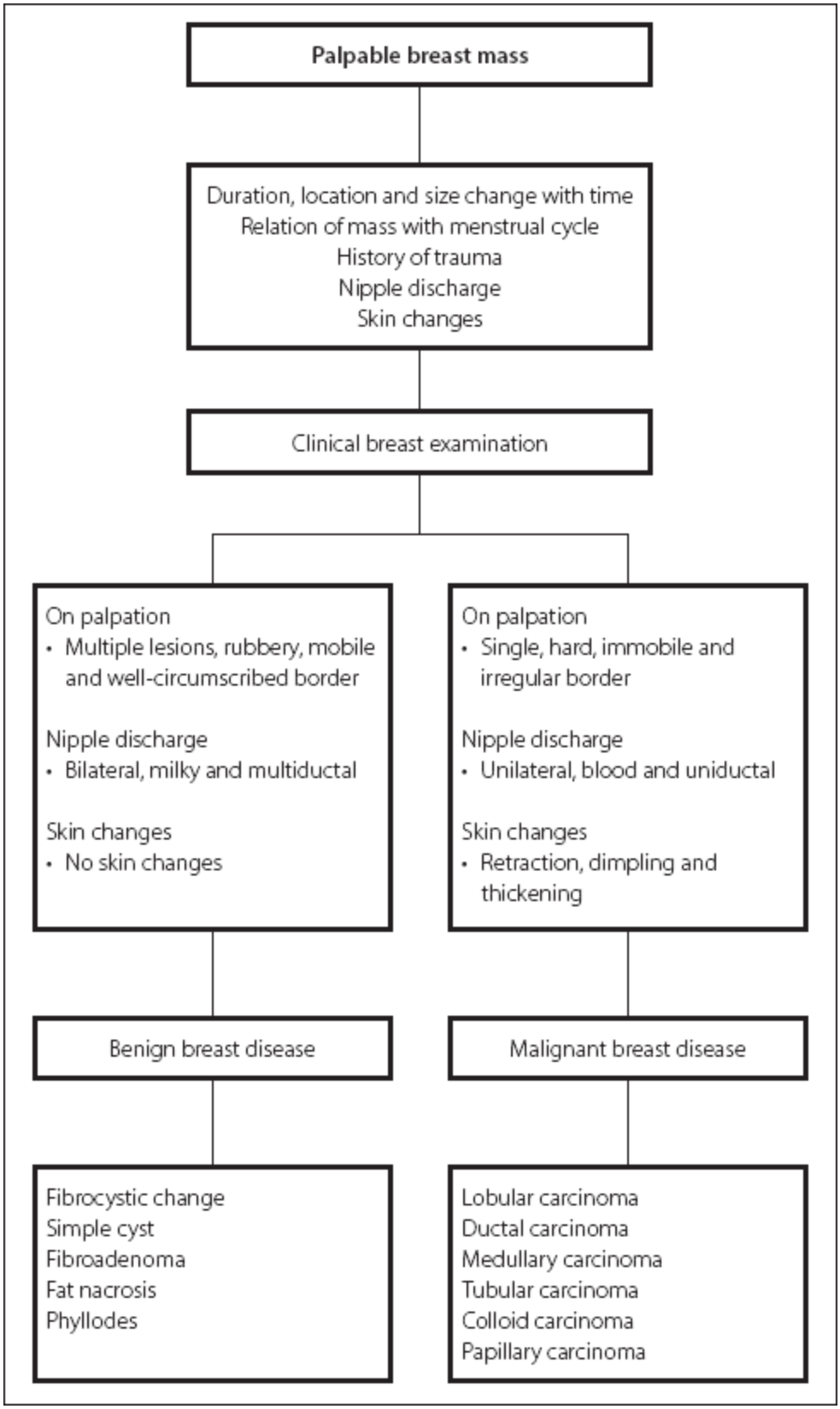

Palpable breast mass
Duration, location and size change with time
Relation of mass with menstrual cycle
History of trauma
Nipple discharge
Skin changes
Clinical breast examination
On palpation
• Multiple lesions, rubbery, mobile and well-circumscribed border
Nipple discharge
• Bilateral, milky and multiductal
Skin changes
• No skin changes
On palpation
• Single, hard, immobile and irregular border
Nipple discharge
• Unilateral, blood and uniductal
Skin changes
• Retraction, dimpling and thickening
Benign breast disease
Malignant breast disease
Fibrocystic change
Simple cyst
Fibroadenoma
Fat nacrosis
Phyllodes
Lobular carcinoma
Ductal carcinoma
Medullary carcinoma
Tubular carcinoma
Colloid carcinoma
Papillary carcinoma

**Figure 5.3** Assessment of breast lump

# 5.9 Approach to burns

*(Hannes Steinberg)*

Immediate management of a patient with a burn:

- Do not forcefully remove burned clothing stuck to the skin. Ensure the person you are helping is not in contact with smouldering materials.
- Remove jewellery, belts and other restrictive items, especially from around burned areas and the neck, burned areas swell rapidly.
- Place under cool running water from the tap, a wet cool clean cloth or first aid burn gel for 20 minutes or until the pain eases.
- Give analgesia (paracetamol, opioids, or ketamine analgesic dose).
- Clean the burn gently with clean water or normal saline.
- Establish the cause of the burn – fire, chemical, electrical. Chemical burns need immediate irrigation. Also establish the timing of the injury relative to arrival at the clinic.

Table 5.7 compares the approximate surface areas of different body parts for adults and children using the rule of nine's. In children the Lund-Browder chart can give a more accurate estimate.

**Table 5.7** Rule of nine's for estimating surface area burnt

| Area of body | Adult (%) | Child (%) |
|---|---|---|
| Head | 9 | 18 |
| Arm | 9 | 9 |
| Leg | 18 | 13,5 |
| Front torso | 18 | 18 |
| Back torso | 18 | 18 |
| Perineum | 1 | 1 |

- Assess the depth of the burn:
  - A *superficial or epidermal burn* involves only the outer layer of skin. The burn is dry with redness, swelling and minor blisters. The burn is regarded as minor, although the pain may be severe. Usually heals in 7 days.

  - A *superficial partial thickness burn* has more extensive blistering and is moist. The burn is painful and usually heals within 7–10 days.
  - A *deep partial thickness burn* is more serious and penetrates most of the skin layers. Red, mottled skin is found associated with swelling, white/yellow slough and blisters. Pain is less severe. If the burn is not larger than 8 cm in diameter it could be treated as a minor burn but may take a month to heal. Burns may need debridement and skin grafting.
  - *Full thickness burns* are the most serious burns as they involve all layers of the skin and underlying fat. Muscle and even bone may be affected. Burned areas may be charred black or white. The person paradoxically does not feel pain as the pain receptors have also been destroyed. Usually need debridement and grafting.
- Cover third degree and extensive burns with an occlusive dressing, other burns with paraffin gauze and dry gauze on top. If already infected, apply povidone iodine cream. The wound may need debridement and cleared of infection before a skin graft is attempted.
- Consider possibility of inhalational injury (black sputum, difficulty breathing, hoarse voice, stridor). Give oxygen, consider need for intubation.
- Ensure hydration. If < 15% burns, give oral fluids, if > 15% burns, give normal saline IV (burn% x weight (kg) x 4 ml). In children, use a cut off of 10%. Give half volume in first 8 hours. Beware over and under resuscitation and adjust the formula according to the clinical context.
- Give tetanus toxoid 0.5 ml IM if not given in last 5 years.
- Consider possibility of abuse or substance abuse.

Refer people with (Knowledge Translation Unit, University of Cape Town Lung Institute and Western Cape Government, 2015):

- Full thickness burns
- Partial thickness burns > 10% of surface area

- Burns of hands, face, feet, genitalia, perineum, major joints
- Circumferential burns of limbs or chest
- Electrical or chemical burns
- Inhalation injury.

Assess for other trauma that may have occurred in addition to the burn.

## 5.10 Approach to chest pain

*(Klaus von Pressentin)*

The initial priority is to exclude life-threatening causes of chest pain, whilst respecting the patient's experience of a very distressing symptom. Start by excluding the cardiorespiratory causes as they represent the most significant morbidity and mortality. Afterwards, focus on the other structures in and around the chest and upper abdomen (such as the oesophagus, chest wall, head and neck).

### 5.10.1 Step 1: Emergency care

Ideally, the extensive work-up of a patient with chest pain should be performed in a suitable health facility with resuscitative equipment and diagnostic facilities. Primary care providers outside these settings should limit their initial first-contact assessment to determining the severity of the chest pain and whether urgent interventions or referral are indicated. Patients presenting with chest pain and one or more of the symptoms in Table 5.8 require urgent attention. The initial management of these patient includes a focused clinical assessment, assessing level of consciousness, sitting the patient up, providing supplemental oxygen (40% face mask) and 200 ml sodium chloride 0,9% if the blood pressure is less than 90/60 mmHg.

**Table 5.8** Symptoms suggestive of life-threatening causes of chest pain

| | |
|---|---|
| Respiratory rate ≥ 30 breaths/minute (dyspnoea) | Pain spreads to the neck, jaw, arm (left > right) or back (thoracic back pain) |
| BP ≥ 180/110 or < 90/60 (with associated syncope) | Sweating, nausea, vomiting |
| Pulse irregular, > 100/min or < 50/min (palpitations or syncope) | Pallor |
| Severe pain | At risk of heart attack (diabetes, smoker, hypertension, known cardiovascular disease risk > 20%) |
| New onset of central chest pain | Known with ischaemic heart disease |

**Source:** Knowledge Translation Unit, University of Cape Town Lung Institute and Western Cape Government (2015) *PACK – Primary Care Guideline for Adults*, Western Cape edition

### 5.10.2 Step 2: Exclude life-threatening conditions and determine appropriate level of care

Chest pain is assessed as myocardial ischaemia or an acute coronary syndrome (ACS) until proven otherwise. ACS includes myocardial infarction (MI), with or without ST-segment elevation, as well as unstable angina. Other life-threatening causes of chest pain are:

- Dissecting aortic aneurysm (aortic dissection)
- Tension pneumothorax
- Pulmonary embolism
- Severe infections: pneumonia, mediastinitis, pericarditis.

The main differential diagnoses to consider with ACS are dissecting aortic aneurysm, pericarditis, gastro-oesophageal reflux and oesophageal spasm, biliary colic and anxiety-related hyperventilation.

The history represents the cornerstone of your assessment of whether this patient is experiencing ACS or not. Angina is likely if the symptoms of central chest pain (burning or crushing) are reproducible with exertion and relieved with rest. Remember that angina may present atypically (or 'silently') in females, elderly patients and patients with co-morbid conditions such as diabetes. The pain of an ACS usually starts more gradually, compared to the sudden onset of intense pain with a pneumothorax or vascular event (aortic dissection or acute pulmonary embolism). The combination of syncope and chest pain

should make you consider aortic dissection, pulmonary embolism or critical aortic valve stenosis.

The focused physical examination should centre on the cardiorespiratory system and vital signs in order to exclude the life-threatening causes of chest pain. In the absence of pyrexia, perform an ECG (electrocardiogram).

The combination of pyrexia (temperature ≥ 38 °C) and chest pain should point you towards a respiratory infection, especially if there are associated symptoms of coughing and if the chest pain is pleuritic in nature (sharp pain, worse on breathing).

Unstable angina or MI is likely and urgent management is indicated when (Adapted from PACK: Knowledge Translation Unit, University of Cape Town Lung Institute and Western Cape Government, 2015):

- Angina type chest pain occurs at rest or with minimal effort
- Angina type chest pain lasts more than 10 minutes
- Pain is worsening, lasting longer than usual, or is not relieved with sublingual nitrates in a patients known to have ischaemic heart disease
- There is evidence of sympathetic nervous system activation: sweating, nausea, vomiting, or breathlessness
- There is ST-segment depression or elevation on the ECG (remember: a normal ECG does not exclude ACS)
- The BP < 90/60 mmHg.

In primary care, a patient with ACS should be stabilised and referred urgently by ambulance for further treatment (Adapted from PACK: Knowledge Translation Unit, University of Cape Town Lung Institute and Western Cape Government, 2015):

- Administer oxygen via 40% face mask
- Give 200 ml sodium chloride 0,9% bolus IV if BP < 90/60 mmHg
- Give aspirin 150 mg orally (single dose)
- Give isosorbide dinitrate 5 mg sublingually every 5–10 minutes until pain relieved to a maximum of 5 tablets
- Dilute Morphine 15 mg with 14 ml of water for injection or sodium chloride 0,9%; give 1ml/min IV until the pain is relieved

- Communicate/liaise with the receiving clinician at your referral centre (according to agreed interfacility referral policies and protocols)
- Streptokinase 1.5 million (or similar thrombolytic treatment) may be indicated prior to transfer – this depends on your setting, proximity to a referral centre and local treatment protocol
- Clearly communicate and hand over to emergency medical services staff responsible for the transfer.

### 5.10.3 Step 3: Treating conditions appropriate to the primary care setting

In primary care, the commonest causes of chest pain are musculoskeletal/chest wall pain and psychogenic disorders. However, angina is also common and must always be considered.

Common pitfalls to avoid, include:

- Not being 'coronary aware'
- Not thinking of referred pain from spinal disorders (especially dysfunction of the facet joints of the lower cervical spine and upper thoracic spine)
- Labelling chest pain as psychological
- Being unaware that up to 20% of ACS are silent, especially in the elderly
- Pulmonary embolism is often painless.

Once you have excluded ACS and the life-threatening causes of chest pain, you may continue to focus on the following systems (with examples):

- Musculoskeletal chest pain (costochondritis, rib fracture, trauma)
- Dermatological (herpes zoster causing shingles)
- Neurological (neuropathic pain)
- Breast (infiltrating breast cancer)
- Gastrointestinal (reflux oesophagitis with spasm or rupture, gastritis, bilary/gall bladder-related problems, pancreatitis)

- Pulmonary (infections, obstructive airway disease, pleuritic, lung cancer)
- Psychiatric (anxiety/panic attack, depression, unexplained somatic symptoms).

Arrange a follow-up evaluation if indicated and discuss safety netting arrangements (how to access help during and after hours).

## 5.11 Approach to a child with danger signs

*(Selma Smith)*

All children presenting to a health-care facility should immediately be assessed or triaged for serious conditions indicating that emergency treatment or prioritisation is needed. Asking for symptoms possibly indicating serious conditions can take place while looking for emergency signs.

### 5.11.1 History

All care-givers should be asked whether the child is drinking and or breastfeeding as normal or if s/he may be vomiting all feeds. Other symptoms indicating possible serious problems are a history of convulsions, loss of consciousness or general lethargy.

### 5.11.2 Examination

Whilst asking about symptoms, the following should be evaluated for signs of emergency. Any signs found should be addressed before evaluating the child further. The ABC-C-C-D mnemonic is helpful to remember what to look for (Emergency Triage Assessment and Treatment South Africa working group (ETAT-SA), 2014).

- **A**irway: Any obstruction, presence of stridor
- **B**reathing: Breathing, cyanosis ($O_2$ saturation < 92%), chest indrawing, increased respiration rate of > 50/minute in a child between 2 months and one year or > 40/minute in child older than one year

- **C**irculation: Signs of possible shock are cold hands, capillary filling time of more than 3 seconds and a weak or fast pulse
- **C**oma: Level of consciousness (alert, responsive to verbal stimuli, responsive to pain stimuli, unresponsive), bulging fontanel, and stiff neck
- **C**onvulsion: Convulsing at the moment
- **D**ehydration: If the caregiver reports diarrhoea or vomiting, assess ability to drink, look for sunken eyes, abnormal skin turgor (> 2 seconds). If dehydration is present, note whether the child is malnourished as it affects how the child will be resuscitated.

In a child with danger signs or symptoms, assess urgently, give pre-referral treatment as appropriate, consider the need for oxygen, check blood glucose, and refer.

After emergency symptoms or signs are excluded, look for other indications that the child should be given priority in the queue (mnemonic 3TPR-MOB) (ETAT-SA, 2014):

- **T**iny infant: Less than three months of age
- **T**emperature: Fever of > 38 °C
- **T**rauma: Such as head injuries, abdominal trauma or fractures
- Severe **p**allor: If the palms are pale, the child is severely anaemic
- **P**oisoning: Possible ingestion of toxic agents
- Severe **p**ain: Must be relieved and may be an indication of an acute abdomen or meningitis
- **R**espiratory distress: Very serious level of distress should be excluded by now, but now also look for wheezing or other signs of distress such as nasal flaring
- **R**estlessness or lethargy: Coma has been excluded, but is the child drowsy, uninterested and only responsive to voice or pain or does s/he cry continuously
- Urgent **r**eferral: If the child was referred from a clinic or doctor, read the note to see if there is an urgent problem
- Severe **m**alnutrition: Severe wasting
- **O**edema: Oedema of both feet may indicate kwashiorkor

- Major **b**urns: Children with major burns can deteriorate rapidly.

The presence any of the above signs indicate that the child needs to be given priority in the queue.

## 5.12 Approach to the child with unusual facial features

*(Selma Smith)*

A child with unusual or dysmorphic facial features may either simply be unusual in appearance compared with his or her parents and local community without having anomalies of medical consequence, or the baby may have anomalies that need further investigation. Minor anomalies can include upslanting eyelids, natal teeth, bifid uvula, epicanthic folds, wide/close-spaced eyes, low nasal bridge or posteriorly rotated ears, whereas major anomalies are for instance spina bifida or achondroplasia. The more anomalies present, the bigger the risk that the child may have congenital problems that will need further care (Falk, 2004).

**Table 5.9** Facial features of common congenital disorders in South African children

| Disorders | Facial features |
|---|---|
| **Foetal alcohol syndrome** | **Most common:**<br>• Short palpebral fissure length<br>• Thin upper lip<br>• Smooth philtrum<br><br>**Other:**<br>• Epicantic folds<br>• Short upturned nose<br>• Undersized mandible |
| **Down syndrome** | **Most common:**<br>• Upslanting palpebral fissures<br>• Epicanthic folds<br>• Brachycephaly<br><br>**Other:**<br>• Flat facial profile/flat nasal bridge<br>• Folded or dysplastic ears<br>• Low-set small ears<br>• Brushfield spots<br>• Open mouth<br>• Protruding tongue<br>• Furrowed tongue<br>• Short neck<br>• Excessive skin at nape of the neck<br>• Narrow palate<br>• Abnormal teeth |
| **Congenital syphilis** | **Early congenital syphilis:**<br>• Rhinitis<br><br>**Late congenital syphilis:**<br>• Frontal bossing<br>• Saddle nose<br>• Short maxilla<br>• Protuberant mandible<br>• Hutchinson teeth<br>• Periorbital fissures |

First compare the child's features with those of the parents and other family members and second evaluate the child's general health, growth and development to decide whether further steps are necessary. If the child is healthy with normal growth and development, there is probably no cause for alarm (Hunter, 2002).

Ask in detail about the pregnancy:

- Pre-natal: previous pregnancy losses, maternal illness or exposure to drugs, foetal vigour
- Pregnancy and delivery: oligo or polyhydramnios, foetal distress, problems with delivery
- Post-natal: jaundice, perinatal behaviour, feeding problems.

A family history can be important. Ask about any similar problems in first- and second-degree blood relatives or intermarriage between blood relatives. The SCREEN acronym is useful and helps to take a family history (Totter, 2007):

- Some concerns: Ask about any concerns with diseases or conditions in the family
- Reproduction: Ask about pregnancy outcomes of relatives, infertility or birth defects
- Early disease: Ask about disability or premature deaths
- Ethnicity: Some ethnic groups have a high prevalence of rare genetic mutations
- Non-genetic conditions: Ask about lifestyle such as smoking, substance abuse, infections or medication during pregnancy.

Examine the child:

- Measure and plot the weight, height and head circumference to compare with normative values
- Note obvious minor or major anomalies present
- Examine all systems
- Focus on neurological examination and current developmental milestones as neurocognitive impairment may be the first sign of disease.

If any red flags are found, referral should be considered. Red flags for hereditary conditions are described by the acronym Family GENES (Whelan, 2004):

- **Family** – of particular interest is:
  - Multiple affected individuals in families

  - Presence of associated conditions
  - History of consanguinity in the family
  - Affected individual in close degree of relatedness to the child
- **G**roups of congenital anomalies present for example any major anomalies, two or more minor anomalies or one major and minor anomalies
- **E**xceptional presentation of common conditions in the child or family members
- **N**eurodevelopmental delay or degeneration
- **E**xtreme pathology: rare conditions present or pathology presenting in extreme manner
- **S**urprising laboratory findings.

The referring doctor's responsibility does not end with referral of the patient. Psychosocial issues of the parents and family need to be taken care of. Families often experience grief for the loss of a 'normal' child, guilt feelings, difficulty in bonding with the baby and require an explanation of why the anomalies occurred. These families require an ongoing caring relationship with the family physician (Falk, 2004).

Children with medically significant congenital or genetic anomalies usually need care from multidisciplinary teams and the family physician is in the best position to coordinate care amongst team members.

## 5.13 Approach to collapse and seizure

*(Klaus von Pressentin)*

The initial priority is to support the vital functions of the patient (airway, breathing and circulation) and commence cardiorespiratory resuscitation (CPR) if indicated (pulseless and non-responsive). Consider life-threatening causes of collapse or seizures and implement life-saving manoeuvres (such as airway support) as indicated. Care should be taken to understand the precise nature of collapse: are you dealing with a pulseless cardiac arrest victim, a fitting patient (seizures), or someone experiencing syncope or vertigo?

### 5.13.1 Step 1: Emergency care

Ideally, the extensive work-up of a patient collapsing or with seizures should be performed in a suitable health facility with resuscitative equipment and diagnostic facilities. Primary care providers outside these settings should limit their first-contact assessment to initiating life-saving manoeuvres, excluding reversible causes (such as hypoxia and hypoglycaemia) and deciding whether urgent interventions (such as CPR or intravenous medication) or referral are indicated.

In the unresponsive patient:

- Assess the airway, breathing (respiratory rate) and circulation (pulse and blood pressure)
- If there is no breathing or pulse, commence cardio-pulmonary resuscitation
- If there is no breathing but the pulse is present, support the airway and breathing
- Obtain intravenous access
- Check capillary blood glucose to exclude hypoglycaemia
- If the patient is breathing and the pulse is present, assess the Glasgow coma score (GCS) (eye opening, best motor response and best verbal response). An advanced/definitive airway is indicated if the GCS is less than 8/15, in order to protect the airway from gastric contents.

Manage according to the likely cause (Adapted from PACK: Knowledge Translation Unit, University of Cape Town Lung Institute and Western Cape Government, 2015):

- Pyrexia (temperature > 38 °C): central nervous system or severe systemic infection
- Oedema of face or airways, bronchospasm: treat as anaphylaxis
- Constricted pupils, history of overdose: consider opiate overdose
- Signs of trauma: stabilise cervical spine, stop bleeding, splint fractures
- History of seizure: possibly post-ictal state.

In the unconscious patient with seizures:

- Place in the recovery position (lateral lying), assess airway, provide supplemental oxygen
- Assess blood glucose and correct hypoglycaemia intravenously
- If more than 20 weeks pregnant or in puerperium, treat as eclamptic seizure
- If less than 20 weeks pregnant or not pregnant, attempt to terminate seizure with intravenous lorazepam, 4mg IV or IM (or diazepam, 10mg slow IV infusion over 5 minutes)
- Repeat lorazepam (or diazepam) dose after 10 minutes, if the seizure continues.

Treat as status epilepticus if:
- No response of seizure activity to first two doses of anticonvulsant (lorazepam/diazepam)
- Seizures last longer than 30 minutes
- There is no recovery of consciousness between seizures.

If the patient has status epilepticus:
- Give phenytoin 20 mg/kg IV (through different line to diazepam) over 60 minutes
- If fits continue, repeat phenytoin 10 mg/kg IV (through a different line to diazepam) over 30 minutes
- Intubate patient to protect airway
- Refer urgently to the hospital.

If there is no status epilepticus and seizures have stopped, decide on the urgency of referral to hospital for further management. Urgent referral (same day) would be indicated in (Adapted from PACK: Knowledge Translation Unit, University of Cape Town Lung Institute and Western Cape Government, 2015):
- Central nervous system infection (fever, meningism)
- Known HIV-positive status
- Reduced level of consciousness more than 1 hour after seizure
- Blood glucose level less than 3.5 mmol/l in a patient on sulfonylurea or insulin diabetic medication

- New weakness or focal neurology
- Recent headaches
- BP ≥ 180/110 one hour after seizure stopped
- Substance abuse history: overdose or withdrawal
- Head injury during last 6 weeks
- Pregnant or one week postpartum.

The collapsed patient who is conscious and had no seizure requires urgent referral to a hospital should one or more of the following symptoms be present (with possible underlying conditions):

- Neurological:
  - Sudden onset of weakness or focal neurology (cerebrovascular/TIA)
  - Loss of consciousness more than 2 minutes (could also be cardiac related)
  - Recent head trauma (space-occupying lesion, such as a subdural haematoma)
- Cardiac:
  - Difficulty breathing (cardiovascular arrhythmia, infective endocarditis)
  - Chest pain (aortic stenosis)
  - Bradycardia (heart rate less than 40 beats per minute)
  - Hypotensive (BP < 90/60 mmHg)
  - Family history of collapse or sudden death (cardiovascular arrhythmia or myocardial pathology)
  - Abnormal ECG
  - Known cardiac problem.

### 5.13.2 Step 2: Excluding life-threatening conditions to determine appropriate level of care

Consider these red flags when assessing 'faints, fits and funny turns', as they may point to a serious condition that should not be missed (cardiovascular arrhythmias, aortic stenosis, cerebrovascular accidents, space-occupying lesions such as neoplasms or subdural haematomas, severe infections and hypoglycaemia):

- Onset in the older person
- Neurological symptoms and signs
- Headache
- Tachycardia
- Irregular pulse
- Fever
- Drugs: alcohol or illicit
- Cognitive impairment
- Confusion.

The management steps as described above are aimed at stabilising the patient for referral. Remember to communicate clearly with the receiving clinician at your referral centre (according to agreed interfacility referral protocols).

### 5.13.3 Step 3: Treating conditions appropriate to the primary care setting

The commonest cause for a 'faint' or 'dizzy spell' in primary care is light-headedness, often as a result of psychogenic factors such as anxiety, panic and hyperventilation. Another common cause for faints are vasovagal syncope episodes (especially during prolonged standing or hot conditions). Potential pitfalls which are often missed include atypical migraine, cardiac arrhythmias/long QT syndrome, unusual or atypical seizure disorders, drugs, electrolyte disturbances and sleep disorders. Severe cervical spondylosis may cause vertebro-basilar ischaemia by causing pressure on the vertebral arteries, especially when turning the head or looking up.

The following patients may be assessed at primary care level (depending on access to resources and support):

- The stable, conscious patient who presented with seizure which stopped spontaneously or as a result of initial anticonvulsant treatment and with no indication for urgent referral:
  - Confirm that the client indeed had a seizure: jerking movements of part of or the whole body, with/without tongue biting, incontinence, post-seizure drowsiness and confusion

  - If it sounds like a true seizure, exclude a history of epilepsy and enquire about previous tuberculous meningitis, CVAs or head trauma, as they may result in recurrent seizures
  - If the episode is unlikely to be a true seizure, consider a CVA/TIA (weakness/slurred speech), vasovagal syncope (simple faint or blackout) or panic attack
  - Consult a specialist physician if the diagnosis remains unclear
- The stable, conscious patient who had no seizure or any red flag symptoms to warrant urgent referral:
  - Ensure ECG normal
  - Exclude postural hypotension (do BP lying and repeat after standing for 3 minutes; a drop in systolic BP of more than 20mmHg is positive – check hydration status and review medication use)
  - If no postural hypotension, ask patient to hyperventilate for 2–3 minutes: if symptoms are reproduced, the patient may be educated on how to manage hyperventilation by re-breathing into a brown paper bag and review of stress management
  - If not unwell after hyperventilation, enquire about preceding symptoms of flushing, light-headedness or nausea before collapsing; if these symptoms were present, a simple faint (vaso-vagal episode) is likely
  - If these symptoms were absent, consider work-up for epilepsy or autonomic dysfunction in consultation with a specialist physician.

Refer patients older than 70 years with possible heart disease, repeated episodes of collapse (or 'frequent falls'), or where no obvious cause for collapse could be identified.

Remember to make appropriate follow-up arrangements and to communicate safety netting strategies clearly.

## 5.14 Approach to the confused patient

*(Klaus von Pressentin)*

The initial priority is to exclude life-threatening causes of confusion. Do not try to jump to a diagnosis at first as the disturbed/confused patient may experience a combination of several organic or mental health conditions. Focus on stabilising the patient, treating reversible causes and preventing further harm or disability.

### 5.14.1 Step 1: Emergency care

First, recognise the patient who is acutely confused. They may be disorientated to place or time, not know their name and behave inappropriately. If the confused patient is also aggressive, try to assess and manage the confusion before administrating sedation. Ideally, the extensive work-up of a patient with acute delirium should be performed in a suitable health facility with resuscitative equipment and diagnostic facilities. Primary care providers outside these settings should limit their initial first-contact assessment to determining the severity of the delirium or acute confusion and whether urgent interventions or referral are indicated.

### 5.14.2 Step 2: Excluding life-threatening conditions to determine appropriate level of care

Urgent care is required if the following symptoms co-occur in a confused patient:

- Focal neurology (for example, weakness)
- Suddenness of onset with varying levels of consciousness, varying between being alert and drowsy (for example, acute delirium)
- Pyrexia (temperature > 38 °C)
- Recent head injury (within the past 6 weeks)
- Point-of-care blood sugar test value ≤ 3.5 mmol/l (hypoglycaemia).

Emergency care should focus on the following steps:

- Support the airway, breathing and circulation (ABCs)
- Provide supplemental oxygen via face mask
- If blood sugar level ≤ 3.5 mmol/l, administer oral glucose, or 40–50 ml of intravenous 50% dextrose (if unable to swallow)

- If confused and temperature > 38 °C, commence sepsis or septic shock protocol (intravenous fluids and antibiotics as per protocol).

In acute alcohol withdrawal (delirium tremens), administer 100 mg thiamine intramuscular, 10 mg diazepam orally and commence oral rehydration.

When situated in a primary care facility, refer to the hospital once stabilised for further work-up and management (standard referral practices apply: clear communication and handover to receiving clinician, referral to appropriate level of care, ensure good communication with patient and family).

See section 5.3 for how to handle an aggressive or violent patient.

Look for mental illness and substance abuse:

- Ask the relatives for a history of mental illness or substance abuse
- Consider psychosis if hallucinations, delusions or incoherent speech
- Consider substance withdrawal or intoxication if alcohol on breath or history of alcohol or illicit drug use.

Consider detaining under the Mental Health Care Act (No. 17 of 2002) before sedation if the patient fulfils all three of the following criteria (Zabow, 2015):

1 Has signs of mental illness
2 Refuses treatment or admission
3 Is a danger of harm to self, others, own reputation or financial interest/property.

### 5.14.3 Step 3: Negotiating the differential diagnosis and further management

It is important to distinguish between acute delirium, dementia and acute psychosis (see Table 5.10). The key features of delirium are a change in the level of alertness, recent onset and fluctuating course.

**Table 5.10** Conditions that need to be differentiated from delirium

| | Delirium | Dementia | Acute psychosis |
|---|---|---|---|
| **Alertness/ Consciousness** | Reduced | Normal | Normal |
| **Onset** | Rapid | Gradual – insidious | Rapid |
| **Course over 24 hours** | Fluctuates frequently | Minimal variation | No fluctuation |
| **Duration** | Hours to weeks | Months to years | Depends on response to treatment |
| **Hallucinations** | Common, visual (usually) or auditory | Uncommon | Common, mainly auditory |
| **Attention** | Distractible | Normal to impaired | Variable, main be impaired |
| **Speech** | Variable, may be incoherent | Difficulty finding correct words | Variable: normal, rapid or slow |
| **Organic illness or drug toxicity** | One or both present | Often absent | Usually absent |

The diagnosis of delirium requires further assessment to identify and address causes (see Table 5.11). The DIMTOP acronym in Table 5.11 helps to narrow down causes which arise primarily within the central nervous system (CNS) and other conditions which are interfering with CNS metabolism or perfusion.

**Table 5.11** Causes of acute delirium

| Categories of causes | Serious disorders not to be missed | Potential pitfalls, especially in elderly |
|---|---|---|
| **Drugs and substances** | Dependency on substances | Illicit drug withdrawal, regular drugs omitted (especially alcohol) |
| **Infection** | Severe infections (septicaemia, HIV/Aids-related, infective endocarditis) | |
| **Metabolic, endocrine and auto-immune** | Hypoglycaemia | Fluid and electrolyte disturbances, hyperthyroidism, hypertensive emergency, hypoglycaemia in diabetes type 2 |
| **Trauma/neurologic** | Subdural haematoma, cerebral hypoperfusion (such as during hypovolemic shock), fat embolism (fractures), cerebrovascular accident, cerebral neoplasia | |
| **Oxygen – lack of oxygen or hypercarbia** | Hypoxia secondary to pulmonary embolism, pneumothorax or pulmonary oedema; hypercarbia secondary respiratory failure in chronic obstructive lung disease | Poor cerebral perfusion secondary to cardiac arrhythmias, acute coronary syndromes or severe anaemia |
| **Pressure (intracranial), pain, poisons, psychiatric** | Intracranial bleed and other causes of raised intracranial pressure (subarachnoid haemorrhage, leaking aneurysm, extra- and subdural bleed and space-occupying lesions)<br>Poisons causing altered states of consciousness (such as organophosphates, salicylates and tricyclic antidepressants)<br>Bipolar mood disorder/mania, schizophrenia states. | Anxiety/panic<br>In the elderly: faecal impaction, urinary retention, severe pain, depression ('pseudodementia') |

The clinical assessment commences with developing a good rapport with the disturbed patient (warm smile, calm voice, speaking slowly and clearly, and reassuring body language). A good collateral history from the family or witnesses is essential. Focus on the past history and recent psychosocial changes/events in the patient's life and context (bereavements, changes in environment at home or work, and family conflict). Try to elicit evidence of depression or organic symptoms (cough, dysuria, constipation, pain). Perform a mini-mental state examination (Mash, 2015c). Screen for mental illness (providing that the patient has appropriate mental function).

When examining the patient, note the interaction with the environment, affect, dress and physical characteristics. Assess the

senses (hearing, sight), and ability to obey commands, stand and walk. Sensory challenges such as deafness or impaired vision may contribute to or cause confusion. Look for alcohol or illicit drug abuse, Parkinson's disease and thyroid dysfunction. Examine the neurological system and check for signs of head trauma. Include the rectal examination and exclude chronic urinary retention.

Use side-room and special investigations appropriately and cost effectively – follow evidence-based protocols which have been contextualised to the local population. These investigations may include urine dipsticks, blood and urine cultures, full blood count, side-room blood glucose, urea and creatinine and electrolytes, thyroid function tests, liver function tests, ECG, chest X-ray, HIV and syphilis serology, arterial blood gases, and a CT scan of the head.

The initial assessment may be difficult to perform as an outpatient. An inpatient admission for 2–3 days may facilitate clinical observation and an expedited exclusion of the serious causes of confusion (facilitated by appropriate investigations and consultations). Discuss the management plan with the patient, family, facility-based multidisciplinary team, and clinical team at referral hospital as indicated. Ensure clear communication and handover with the patient, family and clinical team.

## 5.15 Approach to constipation

*(Thierry Ngoyi)*

Constipation is generally defined as straining to pass hard and infrequent stools. Common causes of constipation are a change in diet, lack of fluid intake or immobility. Make sure the patient is not pregnant. Chronic overuse of enemas and laxatives can ironically contribute to constipation. Painful conditions of the anus or rectum, such as anal fissures, may also result in constipation. Medications may also be a common cause of constipation, for example, codeine, amitriptyline, antacids, or diuretics. More serious medical causes of constipation:

- Disorders of the anorectum and pelvic floor (for example, rectocele, descending perineum syndrome, rectal prolapse, decreased rectal sensation)

- Systemic disorders such as hypothyroidism, diabetes mellitus, hypercalcaemia, hyperparathyroidism, sarcoidosis, malignancy
- Neurological disorders, for example, loss of conscious control, Parkinson disease in which there is a defect of the neurones of the enteric neurone system, multiple sclerosis, spinal cord lesions
- Structural disorders of the colon, rectum and anus such as obstruction, disorders of the smooth muscles, disorders of the enteric nerves
- Psychological disorders such as eating disorders, depression, denied bowel movement.

A history and focused physical examination is usually sufficient and further investigations are rarely necessary unless an underlying medical disorder is suspected. The combination of no stools for 24 hours with abdominal pain, nausea or vomiting suggests bowel obstruction and requires urgent referral. A change in bowel habit in an adult over 40 years of age should make one suspicious of colon cancer.

Constipation may respond to lifestyle changes such as more fibre, fruit, vegetables and fluids in the diet and physical activity. If no response, a stimulant laxative can be used such as senna or bisacodyl. Investigate further if there is no response to treatment after 1 week.

## 5.16 Approach to cough

*(Indiran Govender, Henry Okonta)*

### 5.16.1 Introduction

Cough is one of the five most common symptoms presenting in family medicine and it is the most common respiratory symptom. Cough is a protective reflex which occurs when something blocks or irritates the airway. Vagal afferent nerves regulate involuntary coughing. Coughing as a visceral reflex has higher cortical control. Cortical control can manifest as cough inhibition or voluntary cough. Psychological factors (including a placebo effect) can thus influence the extent of coughing.

### 5.16.2 History

Important aspects of the history are listed in Table 5.12. The two most critical diagnostic issues are the duration of the cough and whether it productive or not.

*Acute cough* lasting less than 3 weeks is most common and is often associated with an upper respiratory tract infect (URTI). There are at least 200 viruses that may cause URTIs. These cause hypersecretion of mucous by goblet cells and vasodilatation and nasal congestion, sneezing, nasal discharge and post nasal drip which leads to throat clearing and cough.

In South Africa any cough lasting more than 2 weeks must be investigated for pulmonary TB, especially is associated with symptoms of weight loss, night sweats, tiredness or loss of appetite. If the patient is HIV positive, the risk of TB is increased further.

The HIV epidemic in South Africa has increased the likelihood of a number of opportunistic infections such as pneumocystis pneumonia.

*Sub-acute cough* lasting 3 to 8 weeks, may be post-infectious (for example, following pneumonia, pertussis, bronchitis, upper airway cough syndrome (UACS)) or be due to exacerbation of an underlying medical condition (for example, chronic obstructive pulmonary disease, asthma, cardiac failure, bronchiectasis). All the other causes of chronic cough listed below are also possible.

In *chronic cough* lasting more than 8 weeks, the following factors should be considered:

- Tuberculosis
- Chronic bronchitis and chronic obstructive pulmonary disease (COPD)
- Chronic uncontrolled asthma
- Lung cancer and neoplastic conditions
- Cardiac failure
- Adverse drug reactions (for example, ACE inhibitors, methotrexate)
- Exposure to environmental irritants, pneumoconiosis
- Non-asthmatic eosinophilic bronchitis (NAEB)
- Interstitial lung disease, connective tissue disorders, sarcoidosis
- Gastro-oesophageal reflux disease (GORD).

Psychogenic cough should only be diagnosed once other conditions are excluded. It is important to note that the patient with chronic cough may have more than one disease.

Table 5.13 shows the typical characteristics of common conditions in terms of whether the cough is productive or not or may cause haemoptysis.

### 5.16.3 Examination

Note the general appearance of the patient, vital signs, use of accessory muscles, respiratory rate and nature of breathing, cough, wheeze, stridor or abnormality in voice. Look for cyanosis, anemia, polycythaemia, peripheral oedema, raised JVP, finger clubbing and cervical lymphadenopathy. Inspect the upper airway, whole chest and upper abdomen. Palpate the chest for tenderness, localised skin or bony lesions, and determine the cardiac apex and position of trachea. Percuss and compare the degree of resonance over equivalent areas on the two sides of the chest. Auscultate for the type and amplitude of breath sounds (either vesicular breathing or bronchial breathing, diminished or absent breath sounds), type and number of any added sounds (wheezes, crepitations, pleural friction rub) and their position in the respiratory cycle; quality and amplitude of the conducted voice sounds.

### 5.16.4 Investigations

Investigations are more often performed in sub-acute and chronic cough and according to the differential diagnosis being considered:

- To exclude PTB send two sputum samples, one for GeneXpert and one for a smear. If the patient has completed TB treatment in the last 2 years, send two sputums, one for smear and one for culture and drug susceptibility testing.
- Consider the need for a chest X-ray.
- Blood tests may show signs of infection (for example, FBC, ESR, CRP, blood cultures), or HIV.
- Spirometry (or peak expiratory flow) may be useful for testing of obstructive or restrictive lung function in certain conditions (for

example, COPD, asthma, interstitial disease or fibrosis).
- ECG if cardiac failure is considered.

Further investigations may be available at the referral hospital, such as lung biopsy.

### 5.16.5 Referral

Consider referral for further investigation or treatment if:
- Diagnostic uncertainty
- Severe disease (see reasons for hospitalisation with dyspnoea in section 5.17.2)
- Haemoptysis
- Suspected lung cancer or other neoplasm
- Persistent hoarseness in a patient who requires expert laryngeal examination.

### 5.16.6 Children

Children with chronic cough require careful and systematic evaluation for the presence of specific diagnostic indicators, usually require chest radiographs and spirometry if age appropriate. Productive purulent cough should always be investigated to document the presence or absence of bronchiectasis and to identify underlying and treatable causes such as cystic fibrosis, PTB and immune deficiency. Children with exposure to tobacco smoke should be identified and interventional options for cessation of the exposure advised or initiated. Different diagnostic possibilities should be considered:
- Early months of life – milk inhalation/reflux, viral-induced wheeze, bronchiolitis, PTB, HIV and lymphoid interstitial pneumonitis
- Toddler/preschool – asthma, bronchitis, whooping cough, cystic fibrosis, croup, foreign body inhalation, TB, chronic HIV-associated lung disease including bronchiectasis
- Early school years – asthma, bronchitis, mycoplasma pneumonia, PTB
- Adolescence – asthma, PTB, smoking, psychogeneses.

### 5.16.7 HIV and cough

In patients with immune deficiency, the initial diagnostic algorithm for patients with acute, sub-acute, and chronic cough is the same as that for immunocompetent persons taking into account an expanded list of differential diagnosis that considers the type and severity of immune defect and geographic factors (Rosen, 2006). CD4 counts should be used in constructing the list of differential diagnostic possibilities potentially causing cough. Those with a CD4 count of < 200 cells/μml (or those with CD4 > 200 cells/μml with unexplained fever, weight loss or thrush who have unexplained cough) should be suspected of having pneumocystis pneumonia, tuberculosis or other opportunistic infections and should be evaluated accordingly:

- Pulmonary TB (PTB)
- Bacterial pneumonia
- Pneumocystis jiroveci pneumonia
- Pulmonary cryptococcus
- Bacterial empyema
- Pulmonary Kaposi's sarcoma
- Post-tuberculous lung disease
- Cytomegalovirus infection
- Disseminated histoplasmosis.

**Table 5.12** Direct questions to ask patients with a cough

| History | Relevance |
|---|---|
| Duration of cough | • Acute causes < 3 weeks<br>• Sub-acute causes 3–8 weeks<br>• Chronic causes > 8 weeks |
| Nature of the cough | • Productive or non productive<br>• How does the cough sound |
| Age of patient | • Differential diagnosis is influenced by age. For example, ung cancer is more likely in the older adult, croup in the pre-school child |
| Onset of cough | When the cough starts or what precipitates it may be helpful. For example:<br>• A cough worse in the morning suggests post nasal drip, bronchiectasis or chronic bronchitis<br>• If a child has a non productive cough at night it suggests asthma<br>• Exercise-induced cough suggests asthma |
| Amount of sputum | • How much sputum is coughed up each day – a spoonful, an egg cupful or a tea cup? |
| Sputum colour | • Mucoid (clear or white) or yellow/green/brown sputum suggests a viral or bacterial infection<br>• Haemoptysis/altered blood suggests more serious pathology and needs investigation or referral<br>• Rust-coloured sputum suggests pneumonia<br>• Pink-tinged sputum suggests left ventricular failure |
| Nature of sputum | Apart from colour, other aspects may be helpful:<br>• Thin and frothy suggests left ventricular failure.<br>• Offensive foul-smelling sputum suggests bronchiectasis or lung abscess. |
| Periodicity | The pattern of cough may be helpful. For example:<br>• Persistent dyspnoea and early morning cough suggests COPD<br>• Intermittent cough and variable dyspnoea with atopy suggest asthma |
| Associated symptoms | Associated symptoms will be important. For example:<br>• Fever in acute infections<br>• Weight loss and night sweats in PTB<br>• Wheeze in asthma and COPD<br>• Ankle swelling in cardiac failure |
| Smoking history | • Tobacco smoking is linked to an increased likelihood of infection, chronic bronchitis, COPD, PTB, lung cancer and uncontrolled asthma<br>• Marijuana smoking may also be linked to the development of COPD<br>• Indoor air pollution and the burning of biomass may also be linked to COPD and asthma |
| Past medical history and medication | Past medical history will influence the differential diagnosis. For example:<br>• Diagnosis of HIV will increase chance of opportunistic infections<br>• Atopic conditions will increase the chance of asthma<br>• Hypertension will increase the chance of cardiac failure<br>• Adverse drug reactions should be considered |

| | |
|---|---|
| | • Response of cough to previous treatments |
| Occupational history | • Pneumoconiosis is relatively common in South Africa due to the large mining industry<br>• Asthma is linked to certain occupational exposures, for example bakeries, spray painters |

**Source:** Truter I (2008) A therapeutic approach to coughing. *Professional Nursing Today* 12: 37–42

**Table 5.13** Assessment of type of cough

| | Productive | Haemoptysis | Non-productive |
|---|---|---|---|
| **Conditions** | • URTIs<br>• Postnasal drip (UACS)<br>• Pneumonia<br>• PTB<br>• COPD<br>• Lung cancer<br>• Heart failure<br>• Bronchiectasis<br>• Nocardiosis<br>• Lung abscess | • PTB<br>• Lung cancer<br>• Bronchiectasis/ post-TB damage<br>• Cancer of upper airways<br>• Pulmonary infarction<br>• Lung abscess<br>• Acute/Chronic bronchitis<br>• Mitral valve stenosis | • Laryngitis<br>• Asthma<br>• GORD<br>• Medicine induced cough or wheeze, for example, angiotensin converting enzyme (ACE) inhibitors<br>• Allergy-related cough<br>• Acute bronchitis<br>• Croup |

## 5.17 Approach to dyspnoea

*(Indiran Govender, Henry Okonta)*

Dyspnoea is a term used to characterise a subjective experience of shortness of breath that is comprised of qualitatively distinct sensations that vary in intensity. The experience derives from interactions among multiple physiological, psychological, social and environmental factors and may induce secondary physiological and behavioural responses. Patients may describe this as 'hungry for air' or 'cannot breathe deeply enough'. Shortness of breath is a common symptom and typically affects patients with disturbance of either the respiratory or cardiovascular systems.

Less commonly, the disturbance of other systems may also cause dyspnoea. For example, dyspnoea may be a presentation of mental problems in anxiety disorders or hyperventilation. Patients with HIV on antiretroviral medication may develop lactic acidosis which also causes

dyspnoea. Less commonly neuromuscular disorders affecting the respiratory muscles may lead to dyspnoea (for example, myasthenia gravis, Guillain-Barre syndrome, kypho-scoliosis).

Dyspnoea is considered acute when it develops over hours to days (for example, pneumonia, anaphylaxis, exacerbation asthma, foreign body inhalation, pulmonary embolism) and chronic when it has been for more than 4 weeks (for example, asthma, COPD, interstitial lung disease). Some patients present with acute worsening of chronic dyspnoea that may be caused by new problem or a worsening of underlying disease such as asthma, COPD or heart failure.

The assessment and management of the patient is based on a quick initial assessment and if necessary immediate emergency management.

### 5.17.1 Gather information

Once the patient is stable, the family physician can pursue a definitive diagnosis and management. Shortness of breath has many different causes that can be related to the upper airways, lungs, heart and a variety of other problems. Specific information that may be useful includes:

- Duration and pattern of dyspnoea, for example, asthma may be intermittent and recurrent, COPD persistent and progressive, or pneumonia of an acute onset. Paroxysmal nocturnal dyspnoea due to cardiac failure is typically improved on standing or sitting up and may necessitate sleeping with multiple pillows, whereas nocturnal asthma is not improved by these factors.

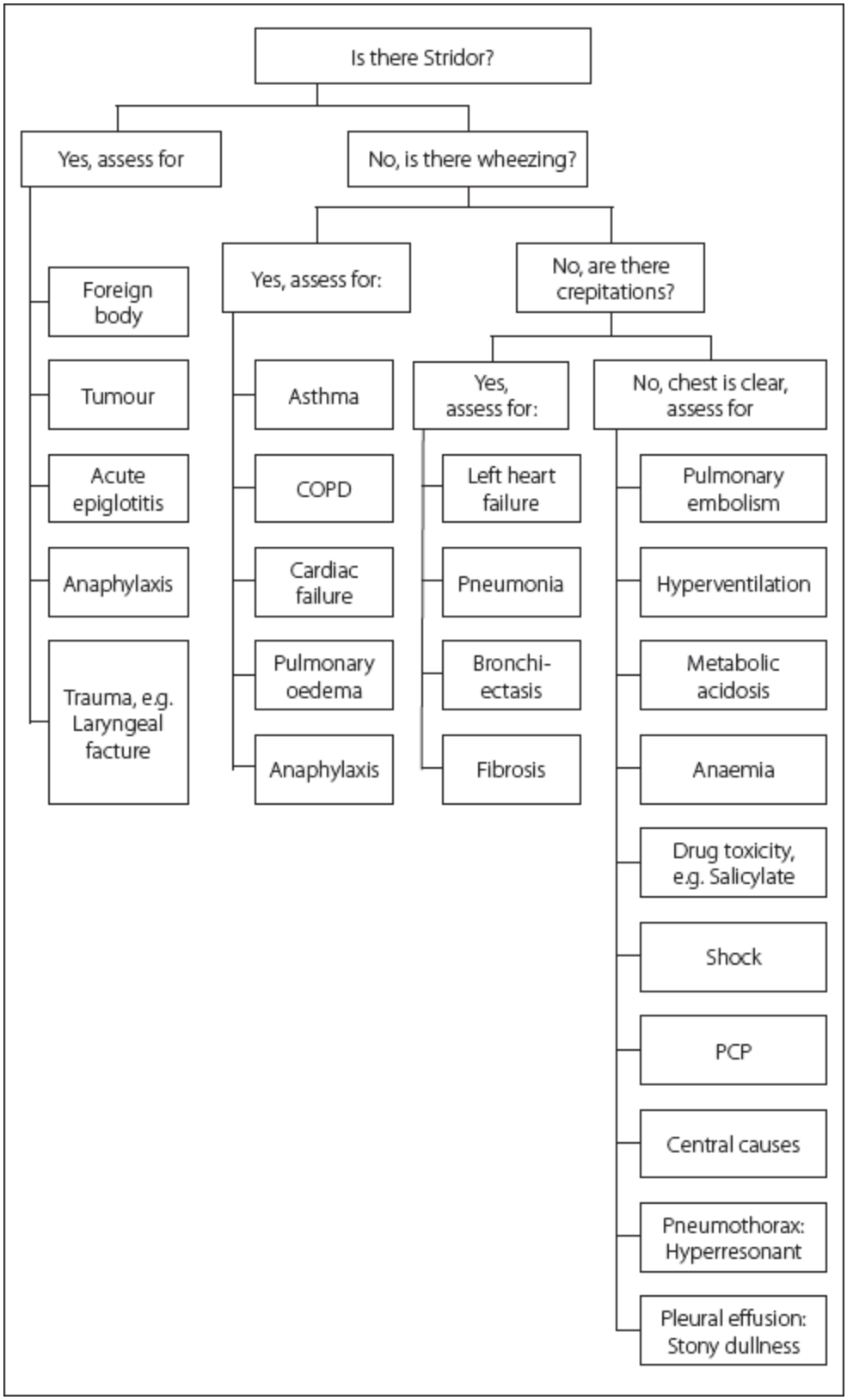



**Figure 5.4** Algorithm for the differential diagnosis in shortness of breath

- Associated symptoms, for example, cough, chest pain, wheeze, ankle swelling, fever, weight loss, night sweats, trauma, anxiety.
- Severity of the dyspnoea, for example, the New York classification of dyspnoea was developed to assess cardiac disease:
  - I – No dyspnoea from ordinary activity
  - II – Comfortable at rest, dyspnoea with ordinary activities
  - III – Less than ordinary activity causes dyspnoea, which is limiting
  - IV – Dyspnoea at rest, all activity causes discomfort.
- Past medical history such as respiratory (for example, asthma, COPD, previous severe pneumonia and TB), cardiovascular (for example, myocardial infarction, hypertension, cardiac failure or diabetes mellitus), HIV.
- A history of smoking, substance use, medication and occupation may also be useful.

Clinical examination explores the differential diagnosis as shown in Figure 5.4. The presence of stridor, wheeze and crepitations can help categorise the possibilities. The absence of key signs may also have useful negative predictive value.

Additional investigations may be performed depending on the differential diagnosis. These could include a chest radiograph, peak flow rate, electrocardiogram, sputum microscopy and culture, full blood count, urea and electrolytes, glucose, urinalysis, blood culture, pulse oximetry and arterial blood gases.

In South Africa, causes of dyspnoea associated with HIV are common and are related to different stages of the diseases and CD4 counts. Causes include recurrent pneumonia and TB and with a CD4 count less than 200, *pneumocystis* pneumonia, Kaposi's sarcoma as well as viral and fungal infections are all possible.

### 5.17.2 Does the patient need admission to hospital?

A patient presenting with any of the following signs should be referred to hospital:

- Temperature > 38 °C

- Systolic blood pressure < 90 mmHg or diastolic < 60 mmHg
- Pulse: > 110/minute or < 60/minute
- Respiratory rate > 30 breaths/minute
- Oxygen saturation < 90%/$PaO_2$ of 60 mmHg.

The mnemonic CURB-65 has been used to identify patients with community-acquired pneumonia that requires admission and stands for:

- Confusion: Any altered mental state
- Urea > 7 mmol/l
- Respiratory rate > 30/min
- Blood pressure: Systolic < 90 mmHg and diastolic < 60 mmHg
- Age > 65 years.

### 5.17.3 Make a specific diagnosis

Table 5.14 shows the typical features of specific conditions that may help you make a diagnosis. Once a specific diagnosis has been made, you can manage the patient accordingly.

**Table 5.14** Key diagnostic symptoms and signs in a patient with shortness of breath

| Clinical assessment | In favour: clinical symptoms and signs | |
|---|---|---|
| | **Symptoms** | **Signs** |
| **1. Upper airway obstruction** | | |
| **Foreign body/choking** | Occurred while eating<br>History of foreign body inhalation<br>Very sudden onset<br>Grasping neck | Cyanosed<br>Stridor |
| **Anaphylaxis** | History of previous anaphylaxis<br>Exposure to food or medication prior to attack | Swollen neck/tongue<br>Wheeze and stridor<br>Urticaria<br>Angio-oedema |
| **Upper airway trauma** | History of trauma to neck | Evidence of trauma |
| **Severe upper airway infection (pharyngeal abscess, diphtheria, peritonsillar abscess, epiglottitis)** | • Sore throat<br>• Barking cough | • Difficulty swallowing/drooling<br>• Stridor<br>• Fever |
| **Inhalation burns** | • History of exposure to fire or smoke<br>• Hoarseness, raspy cough | • Difficulty swallowing secretions<br>• Burns around mouth and nose |
| **2. Asthma** | • Younger age group<br>• History of atopy (eczema, allergic rhinitis)<br>• Family history of atopy<br>• Intermittent dyspnoea, wheeze, cough (often nocturnal), sputum<br>• Ask about triggers: cold air, exercise, emotions, allergens (house dust mite, pollen, animal fur), drugs (aspirin, NSAIDS), viral infection, acid reflux, occupation | • Reversible airway obstruction<br>• Wheeze<br>• Hyperinflated |
| **3. COPD** | • Older age group > 40 years often<br>• History of prolonged smoking/TB<br>• Persistent and progressive dyspnoea<br>• Chronic productive cough | • Irreversible airway obstruction<br>• Wheeze<br>• Hyperinflated<br>• Fever with exacerbation<br>• Right-sided heart failure |

| | | |
|---|---|---|
| **4. Cardiac failure** | • Cough is non-productive or frothy<br>• Orthopnoea, paroxysmal nocturnal dyspnoea<br>• Swollen ankles<br>• History of hypertension, ischaemic heart disease, valvular heart disease, rheumatic fever or other underlying cause | • Signs depend on ventricle most affected:<br>• RVF: Raised JVP, peripheral oedema, ascites, tender hepatomegaly<br>• LVF: Bilateral basal fine crepitations, gallop rhythm, cool peripheries, hypotension, narrow pulse pressure, wheeze, displaced apex beat (LV dilatation), RV heave (pulmonary hypertension) |
| **5. Pneumonia** | | |
| **Bacterial/ viral** | • Cough<br>• Pleuritic chest pain<br>• Rigors<br>• Malaise<br>• Purulent sputum<br>• Haemoptysis<br>• HIV positive | • Fever<br>• Tachycardia<br>• Bronchial breathing<br>• Localised crackles<br>• Consolidation<br>• Pleural rub |
| ***Pneumocystis jiroveci* pneumonia (PJP)** | • Dry cough<br>• HIV positive | • Fever<br>• Hypoxia<br>• Chest mostly clear |
| **Tuberculosis** | • History of TB contact<br>• Cough > two weeks duration<br>• Weight loss, night sweats<br>• HIV positive | • Signs of consolidation or cavitation, typically in upper lobes |
| **Bronchiectasis** | • Cough productive of copious yellow or green sputum<br>• History of TB, recurrent infections<br>• Worsening symptoms associated with infections | • Finger clubbing<br>• Coarse crepitations |
| **6. Pulmonary embolism** | • Abrupt onset<br>• Pleuritic chest pain, haemoptysis, dizziness, syncopy<br>• Past or family history of thrombo-embolism<br>• History of risk factors for thrombosis such as immobilisation and surgery | • Pyrexia, cyanosis, tachypnoea, tachycardia, hypotension<br>• Increased JVP<br>• Pleural rub or pleural effusion |
| **7. Metabolic acidosis Diabetic ketoacidosis, lactic acidosis** | • History of diabetes mellitus or renal failure<br>• Prolonged use of antiretroviral drugs especially stavudine (D4T) or ddI | • Rapid, deep and sighing respiration |

| | | |
|---|---|---|
| | • Salicylate poisoning | |
| **8. Panic attack** | • Sudden onset<br>• No obvious underlying disease<br>• Often young patient<br>• Associated symptoms of anxiety such as numbness, tingling, light-headedness, nausea, palpitations, trembling, chest pain | • No localising signs |
| **9. Pneumothorax** | • Trauma,<br>• Abrupt onset<br>• Chest pain | • Unilateral increased resonance<br>• Decreased breath sounds<br>• Tracheal deviation<br>• Displaced apex beat<br>• Hypotension or weak pulse |
| **10.Cardiac tamponade** | • History of HIV/TB/malignancy | • Distant heart sounds<br>• Distended neck veins<br>• Tachycardia, weak pulse, pulsus paradoxis<br>• Peripheral oedema (right heart failure) |

## 5.18 Approach to diarrhoea

*(Hanneke Brits)*

Diarrhoea is the passage of three or more loose or liquid stools per day, or more frequently than is normal for the individual. Diarrhoea in infants and small children is a major contributor to mortality and therefore most of this section refers to their assessment and management. The approach is largely based on the Integrated Management of Childhood Illness (IMCI) (National Department of Health, 2014a). Most cases of diarrhoea are self-limiting and oral rehydration or prevention of dehydration is the only management necessary.

Clinics using the IMCI will refer the following children for assessment:

- Any child with severe dehydration
- Any child with persistent diarrhoea plus dehydration or weight loss present
- Any child with blood in the stool plus dehydration present or below 1 year of age to exclude intussusceptions.

### 5.18.1 Red flags

Patient with diarrhoea accompanied by shock require urgent attention and can be clinically diagnosed by:

- Drop in blood pressure with rapid pulse
- Decreased level of consciousness
- Capillary refill time of > 3 seconds.

Patients with diarrhoea, abdominal distention and ileus also require urgent attention.

These patients will need resuscitation with intravenous or intraosseous fluids to restore circulation. Give a fluid bolus (0,9% sodium chloride) of 20 ml/kg to restore kidney function. Repeat twice if necessary. Then continue with 20 ml/kg/hr for 4 hours and monitor regularly. Refer urgently.

### 5.18.2 Gathering information

The mnemonic PQRST can help recall key information in the history:

- **P:** Precipitating/palliating/provoking factors, for example, what do they think is the cause, what is making it better and what is making it worse
- **Q:** Quality/quantity of diarrhoea, for example, the number of stools and the presence of blood or mucus
- **R:** Related factors, for example, vomiting, fever or abdominal pains
- **S:** Severity, for example, the ability to drink and keep fluids down
- **T:** Time course and treatment, for example, the duration (more or less than 14 days) and any self-medication, other medication or traditional medication.

### 5.18.3 On examination

Assess the following:

- Degree of dehydration according to IMCI shown in Table 5.15
- Nutritional status using z-scores and mid-arm circumference
- Any other condition, for example, pneumonia, meningitis, acute abdomen.

**Table 5.15** Assess the degree of dehydration

| Shock (one sign) | Moderate to severe (two signs) | Some dehydration (two signs) | No visible dehydration |
|---|---|---|---|
| Decreased level of consciousness | Lethargic | Restless or irritable | Alert |
| Decreased BP and rapid thready pulse | Drinks poorly, unable to drink | Thirsty | Drinks normally |
| Capillary filling time of > 3 seconds | Sunken eyes | Sunken eyes | Wet mucous membranes |
| | Decreased skin turgor; skin pinch > 2 seconds | Normal skin turgor; skin pinch < 2 seconds | Normal skin turgor |

In an adult, postural hypotension may be another useful sign of dehydration (systolic blood pressure drops by more than 20 mmHg between lying and standing) as well as poor urine output.

### 5.18.4 The use of side-room- and special investigations

Consider the following factors:

- Blood glucose if child is not fully awake or drinking well
- Urinalysis to exclude urinary tract infection and ketosis
- If shocked: sodium, potassium, urea and creatinine; blood gas if available for blood acid base assessment
- If dehydrated: sodium, potassium, urea and creatinine
- HIV testing.

In the case of prolonged diarrhoea (two weeks or more), send the stool for microscopy (ova, cysts, parasites) and culture and indicate if the patient is HIV positive. Typical causes in HIV immunosuppressed patients would be isospora belli or cryptosporidium. In HIV negative patients, giardiasis may be a common cause.

### 5.18.5 Principles in the management of diarrhoea

- Rehydration: If there is some dehydration, give 20 ml/kg/hour of ORS for 4 hours and then reassess. Give ORS in frequent small sips. If the child vomits, wait for 10 minutes and then continue more slowly.
- Replace losses with oral rehydration solution or sugar and salt solution (SSS). Estimate 50–100 ml for each loose stool up to 2 years of age and then 100–200 ml for 2 years or more. One teacup is approximately 200 ml.
- Maintenance fluid: Give as breast milk or milk according to age requirements as soon as the child is rehydrated.
- Give elemental zinc: Up to 10 kg weight 10 mg a day for 2 weeks, 10 kg or more, give 20 mg a day for 2 weeks.
- Continue feeding.
- Follow up.

### 5.18.6 Information to patients

- Diarrhoea causes dehydration and therefore the main treatment is rehydration and prevention of dehydration
- Continue to feed the patient during diarrhoea
- Teach the patient or caregiver how to mix homemade sugar and salt solution (SSS): half a level teaspoon of table salt plus eight teaspoons of sugar mixed with one litre of clean water.

### 5.18.7 The place of medication

- No routine antibiotics unless there is an indication, for example, bloody diarrhoea, underlying bacteraemia or a specific infection
- No antiemetics in children
- No antidiarrhoeal medication in children
- The place of probiotics is uncertain
- Vitamin A for persistent diarrhoea
- Zinc for two weeks
- In adults, you may consider the use of anti-diarrhoeal drugs such as loperamide.

### 5.18.8 Follow-up

- Advise the patient or caregiver to return immediately if the patient vomits everything, is not drinking, or has bloody diarrhoea
- Advise on follow-up for malnutrition, HIV, or any other underlying conditions.

## 5.19 Approach to dizziness

*(Thierry Ngoyi)*

The history gives the most valuable information and it is helpful to initially categorise the patient into one of four possible diagnostic groups. History and examination can then proceed in a more focused way:

- Syncope: The patient feels as if they are going to faint
- Vertigo: The patient feels the world is spinning or rotating around them
- Disequilibrium: The patient feels as if they have lost balance in their legs
- Light-headedness: Often ill-defined and cannot be clearly placed in one of the other categories.

### 5.19.1 Syncope

Typical symptoms usually precede a faint such as dizziness, unsteadiness, pallor, nausea, sweating, closing in of visual field or blurred vision. This leads to a collapse with brief loss of consciousness and then rapid spontaneous recovery. Syncope is due to insufficient cerebral blood flow. Occasionally syncope may lead to a brief tonic-clonic seizure that starts after the loss of consciousness.

Specific causes include:

- Simple faint due to a vasovagal reaction to some trigger such as pain, emotion, prolonged standing, heat and excess sweating, or insufficient fluid intake. The majority of people will experience a simple faint at some point and it does not indicate a serious disease. Some people also react to nausea and vomiting, micturition, defaecation or coughing. A few people may have oversensitive

carotid sinuses that react strongly to pressure such as a tight collar when turning the head.

- Drug-induced syncope should always be considered. A wide variety of medication may induce syncope due to hypotension (for example, antihypertensives), bradycardia (for example, beta blockers) or pre-disposing to arrhythmia (for example, erythromycin).
- Orthostatic syncope is due to loss of the reflex maintenance of blood pressure when standing up from a lying or sitting position. It can be due to prolonged bed rest, medication, diabetic autonomic neuropathy, or fever and dehydration. There is a more than 20 mmHg drop in systolic blood pressure on standing.
- Cardiac syncope is dangerous and typically presents during exercise with preceding palpitations or chest pain. It may be due to an arrhythmia (brady- and tachycardias), acute coronary syndrome, severe aortic stenosis, hypertrophic cardiomyopathy or cardiac tamponade. Patients need urgent investigation and usually referral. Cardiac syncope is more common in the older adult or elderly.
- Hypovolaemia from any cause such as diarrhoea, diuretics or bleeding may present with syncope.

### 5.19.2 Vertigo

Vertigo presents with a strong sense of rotation, spinning and falling. Vertigo may be accompanied by ear-related symptoms such as tinnitus or deafness. Look for evidence of nystagmus and perform examination of the ear and neurological system:

- Vertigo arising from disease of the inner ear, for example, benign positional vertigo, Meniere's disease and vestibular neuronitis fall into this category
- Vertigo arising from disease of the acoustic nerve, for example, acoustic neuroma falls into this category
- Vertigo arising from disease of the brain stem or cerebellum, for example, transient ischaemic attack or circulatory disturbance, multiple sclerosis and chronic alcohol abuse fall into this category

- Vertigo related to medication, for example, toxicity from phenytoin or carbamazepine falls into this category.

Vertigo in the elderly is often multifactorial as degenerative disease of the vestibular system and other senses, circulatory disturbances and polypharmacy may coexist.

### 5.19.3 Disequilibrium

Dizziness is actually experienced as a loss of balance and may be felt more in the legs than the head. Typical causes would be Parkinson's disease, peripheral neuropathy, following a stroke, loss of proprioception or cerebellar disease. A full neurological examination is required.

### 5.19.4 Light-headedness

Dizziness which is difficult to define is often related to psychological causes and is a common feature of anxiety disorders. Panic attacks may also include dizziness as an acute symptom. Look for hyperventilation, mental disorders and psychosocial stressors.

## 5.20 Approach to dysuria

*(Werner Viljoen)*

Dysuria is defined as pain, burning, or discomfort on urination, often accompanied by frequency or urgency and presents more commonly in women than in men. Dysuria results from irritation of the bladder trigone or urethral area. Inflammation or stricture of the urethra causes difficulty in starting urination, thereby causing a burning sensation on urination, while irritation of the trigone causes bladder contraction, leading to frequent and painful urination.

Urinary tract infection is the most frequent cause of dysuria, but empiric treatment without a sensible diagnostic approach is not always appropriate or advisable.

A good history and a sound diagnostic approach using inexpensive laboratory testing are often sufficient to determine the cause of dysuria (see Figure 5.5).

### 5.20.1 Red flags

Dysuria with any of the following findings should be further investigated:

- Fever
- Loin pain or tenderness in the renal angle
- Recent instrumentation involving the urethra
- Immunocompromised patients with HIV, diabetes, or on corticosteroids
- Recurrent episodes (including frequent childhood infections)

- Known urinary tract abnormality.

## 5.20.2 Causes

Dysuria can be caused by any of the following factors:

- Infections: pyelonephritis, cystitis, prostatitis, urethritis, cervicitis, epididymo-orchitis, vulvovaginitis. Sexually transmitted infections that present with vaginal discharge and male urethritis syndrome are discussed in section 5.40. Urinary tract infection is also more common in pregnancy and this should be remembered in women of childbearing age. Patients with possible immune suppression (with HIV or diabetes mellitus) or on immune-suppressing medication may present with vulvovaginitis and dysuria due to candidiasis.

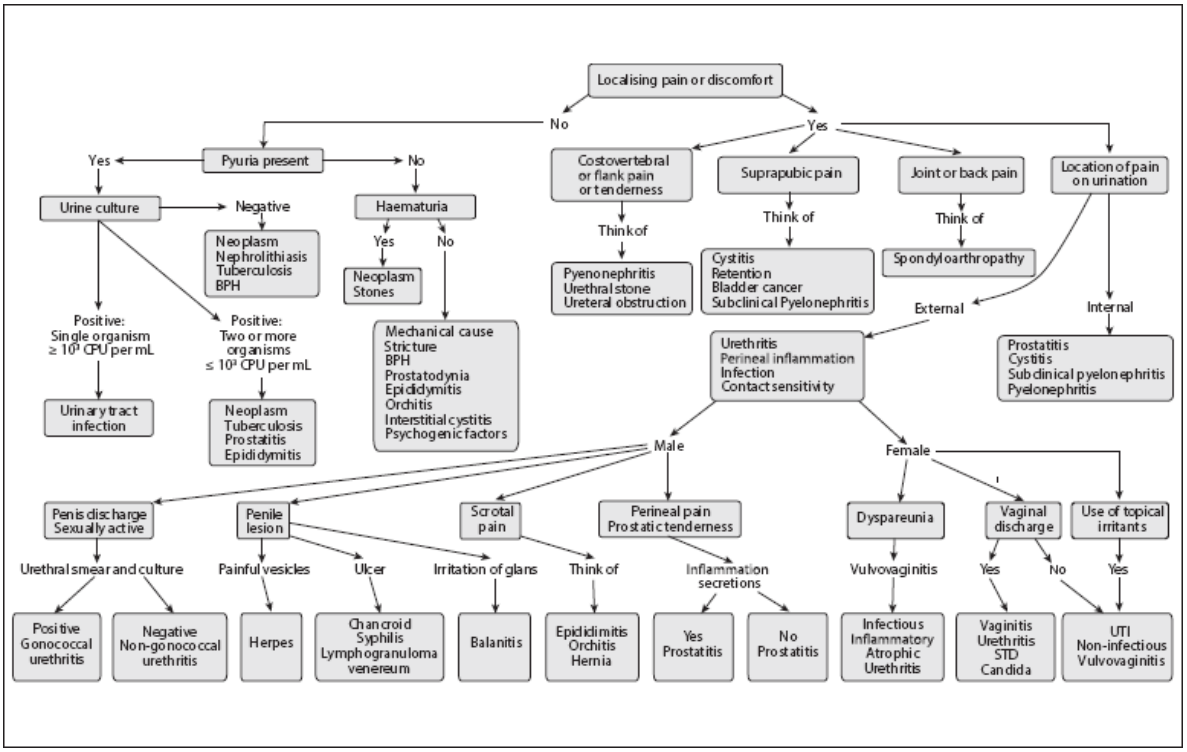



**Figure 5.5** Diagnostic algorithm for dysuria

**Source:** Adapted from Bremnor JD, Sadovsky R, 2002 Evaluation of dysuria in adults. Am Fam Physician Apr 15; 65(8):1589–1596. Copyright 2002 American Academy of Family Physicians all rights reserved

- Hormonal conditions: hypo-estrogenism (postmenopausal), endometriosis.
- Malformations: bladder neck obstruction (with additional symptoms such as a weak stream, dribbling, hesitancy, intermittent stream or nocturia; especially in older men with benign prostatic hyperplasia (BPH)), urethral strictures or diverticula.
- Neoplasms: renal cell tumour; bladder, prostate, vaginal/vulvar and penile cancers.
- Inflammatory conditions: spondyloarthropathies (associated with backache, joint pain or eye irritation) and reactive arthritis (associated with joint pain, skin rash and mucosal lesions), drug side effects, autoimmune disorders.
- Trauma: catheter placement, honeymoon cystitis after sexual intercourse.
- Psychogenic conditions: somatisation disorder, major depression, stress disorders or anxiety, hysteria.

### 5.20.3 History taking

History taking should be aimed at discovering:

- Duration, timing, frequency, severity, and location of dysuria. Dysuria at the start of urination points to urethral pathology. Suprapubic pain after voiding is usually of bladder origin. Longer duration and more gradual onset of symptoms should prompt investigation for *C. trachomatis* or *M. tuberculosis* infection. A sudden onset of dysuria with haematuria usually suggests a bacterial infection.
- If the urine is bloody, cloudy, or malodorous.
- The presence of any red flags.
- Any urethral or vaginal discharge (amount, colour, and consistency). Urethral discharge has a high association with urethritis and, in men, is the most common symptom of a sexually transmitted infection. In sexually active patients, urethritis or vulvovaginitis is a likely cause of dysuria. A history of sexually transmitted infection can point to urethral scarring causing outflow obstruction with stream abnormalities and a predisposition to

repeated infections, especially in patients with high-risk sexual behaviour.

- The use of medications, herbal remedies and topical hygiene products. Dysuria may be caused by medications such as penicillin G, pyrazinamide, Rifater, amlodipine, hydrochlorothiazide, cardura Xl, isosorbide-5-mononitrate and some combination common cold/allergy medications. Dysuria can also occur with the use of, among others, saw palmetto, pumpkin seeds, dopamine, or cantharidin, and with the use of a number of topical hygiene products, including vaginal sprays, vaginal douches, and bubble baths.

### 5.20.4 Physical examination

When doing the physical examination, pay attention to the following:

- Temperature
- Tenderness over the kidneys (renal angles) or bladder
- A vaginal examination may be needed to identify discharge, trauma, sexually transmitted infections or vaginal atrophy
- Male genitalia should be examined for lesions, discharge, tenderness or swelling
- Other signs associated with suspected underlying causes such as skin rash, mucosal lesions and reactive arthritis; rectal examination to evaluate the size, consistency, and tenderness of the prostate in suspected obstruction.

### 5.20.5 Laboratory testing

Laboratory testing is directed at the most probable diagnosis and may include:

- Urine dipstick tests for identifying haematuria and pyuria. Leukocyte esterase is a marker for white blood cells and has a sensitivity of 75% for the detection of infection. Pyuria has a sensitivity of 96% for urinary infection. Positive testing for nitrites suggests a probable infection; however, it is not ruled out by a negative test.

- Microscopic examination of a spun, clean-catch, midstream urine sample. Pyuria is diagnosed by the presence of three to five white blood cells per high-power field and haematuria is diagnosed by the presence of three to five red blood cells per high-power field. Pyuria detected on urinalysis is associated not only with bacterial UTI, but also with *T. vaginalis*, *C. trachomatis* and other infections. Sterile pyuria may be present in patients with prostatitis, nephrolithiasis, urologic neoplasms and fungal or mycobacterial infections (TB).
- Urine cultures are not essential in young women when clear-cut signs and symptoms of acute dysuria indicate a high probability of uncomplicated cystitis.
- Vaginal and urethral smears with gram staining (although in primary care STIs will be dealt with syndromically and without specific tests).
- Radiologic studies and other diagnostic tests are indicated when the diagnosis is in doubt, when patients are severely ill or immuno-compromised or do not respond to antibiotic therapy, and when complications are suspected.

## 5.21 Approach to ear symptoms

*(Louis Jenkins)*

This section deals with symptoms related directly to the ear (pain, discharge, deafness), while other related symptoms (dizziness, vertigo) are dealt with elsewhere.

### 5.21.1 Ear pain

The main causes include:

- Local infection – pustule/furuncle
- Otitis externa – acute or chronic, sometimes itching
- Acute otitis media
- Trauma, for example lacerations, barotrauma and perforation of the tympanic membrane
- Foreign body

- Referred pain from teeth, temporo-mandibular joint or throat. Normal ear canal and tympanic membrane.

### 5.21.2 Otitis externa

Otitis externa is generalised inflammation involving the external auditory canal and the tympanic membrane. The main contributing factors are trauma, for example, by scratching with a finger or earbud, and moisture in the ear. The external canal is acutely inflamed, tender and weeping freely, it is extremely painful to handle and nothing can be seen of the interior of the canal without causing the patient pain. Glands in front and behind the ear may be inflamed. In the case of a more chronic otitis externa, pruritis dominates with some discharge. Give pain relief, clean the ear, use topical treatment (for example, 1% acetic acid in alcohol 4 drops in ear 4 times a day for 5 days) or if severe antibiotics. Eczema needs treatment with a topical corticosteroid.

### 5.21.3 Acute otitis media (AOM)

Findings include pain and hearing loss, with a red and inflamed tympanic membrane. If the membrane perforates, pus may be discharged from the ear. Diagnosis in infants and young children may be difficult because they are unable to articulate symptoms and a screaming child may also develop a red tympanic membrane. Infants may simply be unwell and pyrexial. AOM is usually preceded by an upper respiratory tract infection.

Refer if there is no response to treatment (amoxicillin) after five days, a bulging drum is not responding to treatment, incomplete resolution of AOM, or a complication of AOM:

- Persistent middle ear effusion, especially if it is lasting longer than three months (70% of children will have an effusion present two weeks from the time of diagnosis, 40% at four weeks, with 10% having persistent effusions for three months or more) may lead to impaired hearing and delayed speech and language development in pre-school children
- Persistent deafness

- Mastoiditis: Painful swelling and tenderness behind the ear over the mastoid process
- Perforation of the tympanic membrane not healed in six weeks.

### 5.21.4 Discharging ear

This could be due to AOM as discussed previously, or due to a chronic suppurative otitis media with a perforated tympanic membrane (symptoms > 2 weeks). Most importantly is to clean the ear via dry mopping with cotton wool wick, followed by 1% acetic acid drops (to eradicate pseudomonas) four times a day. A wet ear cannot heal. Antibiotic ear drops may help; oral antibiotics are not indicated. Consider taking swabs for tuberculosis and testing for HIV (stage 2 disease) if not healing despite optimal treatment for four weeks. A central perforation is less worrying, but a large perforation will not easily heal, and an attico-antral perforation carries the risk of a cholesteatoma and mastoiditis. These must be referred.

### 5.21.5 Deafness

Conductive and sensorineural hearing impairment can only be defined by audiometry if both air and bone conduction thresholds are measured. Tuning fork tests are often highly valuable. In a conductive hearing impairment, the Weber test is lateralising towards the defective ear and the Rinne test is abnormal (negative).

Causes of conductive hearing impairment:

- Wax in the canal
- Acute otitis media
- Persistent middle ear effusion ('glue ear')
- Perforation of the tympanic membrane and chronic otitis media
- Otosclerosis.

Causes of sensorineural hearing impairment:

- Presbyacusis
- Noise-induced hearing loss
- Ménière's disease (with tinnitus and vertigo)

Rupture of round window; if the symptoms have started suddenly after, for example, diving, blowing one's nose, physical exercise, or air travel, the patient may have a rupture of the round window
- Chronic otitis media (or cholesteatoma) may have a cochlear complication requiring urgent treatment
- Certain medications, particularly aminoglycosides for tuberculosis
- Hypothyroidism in neonates
- Acoustic neuroma (tumour of the 8th cranial nerve) – slowly progressing, unilateral.

## 5.22 Approach to facial symptoms

*(Louis Jenkins)*

A patient can present with weakness, swelling, or pain of his or her face.

### 5.22.1 Weakness

Sudden onset of one sided facial weakness, with minimal or no involvement of the forehead (due to involvement of upper motor neurone), with or without weakness of the arm/leg, needs urgent attention. Consider a transient ischaemic attack (TIA) or cerebrovascular accident (stroke), especially in a patient with hypertension or diabetes mellitus.

The usual differential diagnosis is idiopathic (Bell's) palsy. Typically the patient cannot wrinkle the forehead or close the eye on the affected side fully (due to involvement of the lower motor neurone). There is usually no pain, and the mouth corner is sagging, with dribbling. Prednisone 1 mg/kg daily is given within 72 hours of onset for five days, and the affected eye is protected by taping the eyelid closed with surgical tape (ensure no corneal damage). Antiviral drugs usually do not help. Most patients will recover in a few days to a few weeks, but some will have residual signs for several months.

If there are signs or symptoms of middle ear disease (for example, cholesteatoma or mastoiditis), any hearing changes (for example, acoustic neuroma or other tumour), recent head trauma (for example, subdural haematoma), painful vesicles in the outer ear canal (for

example, Ramsay Hunt syndrome, caused by varicella zoster virus) or a corneal erosion, refer. A rare cause, especially if the paralysis is bilateral, is Lyme borreliosis, confirmed with serology.

### 5.22.2 Swelling

Sudden onset of facial swelling with or without difficulty in breathing could be due to allergy or anaphylaxis. Angioneurotic oedema (C1-esterase inhibitor deficiency) can present with subcutaneous oedema of the face (91% of attacks), laryngeal oedema (48%), or intra-abdominal (with pain, vomiting and diarrhoea). Stress, infection, being premenstrual, taking oestrogen-containing contraceptive pills or angiotensin-converting enzyme (ACE) inhibitors are precipitating factors. These patients should never be challenged with ACE inhibitors again. Give chlorpheniramine 4 mg 8-hourly for 1–2 days until resolved. Genetic factors (autosomal dominant inheritance) and certain paraneoplastic syndromes are also causative factors. Urinalysis will be normal.

If the airway is threatened (stridor, tachypnoea), give adrenaline 1 ml (1:1 000) IM every 5 minutes until better, hydrocortisone 100 mg slowly IV and promethazine 25 mg IM or slowly IV and refer urgently.

If the patient has a fever and pain with the swelling, consider cellulitis or deeper sepsis, such as a tooth abscess or sinusitis which will need antibiotics.

An abnormal urinalysis (for example, proteinuria, haematuria, casts) indicates possible kidney disease and fluid retention.

### 5.22.3 Pain

Pain in the cheek, upper or lower jaw could be caused by alveolar infection or a dental abscess. Tapping the tooth elicits pain. This needs a dentist, antibiotics (for example, amoxicillin) and analgesics (paracetamol and non-steroidal anti-inflammatory drugs).

Pain over the frontal or maxillary area with or without a nasal discharge or post-nasal drip is usually caused by viral or bacterial sinusitis. Pain may be worse on bending forward and on pressure over the sinus. If it does not resolve within five days, antibiotics (amoxicillin)

are usually necessary. Keep in mind that recurrent sinusitis is a stage two HIV diagnosis which needs routine HIV care. If any neck stiffness or decreased level of consciousness, consider meningitis as a complication of sinusitis.

Other causes of pain include trigeminal neuralgia (which is very short lived, stabbing pains in the sensory trigeminal distribution) and all the headache syndromes.

## 5.23 Approach to fever

*(Hanneke Brits)*

Fever is defined as a temperature of 37.8 °C or more, without the use of fever-reducing medications. Fever is a normal physiological response and usually beneficial to the individual. It is therefore not necessary to reduce all elevated temperatures. However, it is important to distinguish fever from hyperthermia where the body is unable to control or reduce core temperature.

### 5.23.1 Causes of fever

Fever is usually seen as a sign of infection, but can also be caused by a variety of non-infectious conditions:

- Infections: bacterial, viral, spirochaetal, protozoal, fungal, ricketssial
- Neoplasms
- Allergic reactions
- Collagen disorders
- Drugs
- Granulomatous disorders or sarcoidosis
- Heat stroke
- Factitious fever.

### 5.23.2 Red flags

A patient with fever accompanied by (Adapted from PACK: Knowledge Translation Unit, University of Cape Town Lung Institute and Western Cape Government, 2015):

- Decreased level of consciousness or confusion

- Respiratory rate > 30 breaths/minute in an adult
- Unable to walk or drink
- Jaundice
- Renal angle tenderness
- Convulsions
- Shock
- A non-blanching rash, easy bleeding, bruising, blood in urine.

### 5.23.3 Gathering information

Fever is often a diagnostic clue accompanying a more specific symptom such as sore throat, cough or diarrhoea. Occasionally however and more frequently in infants and small children the main presenting problem is fever, and the family physician needs an approach to investigating the cause. Ask the following about the fever:

- **P:** Precipitating/palliating/provoking factors, for example, recent travel, response to antipyretics, TB contacts, HIV status
- **Q:** Quality of the fever, for example, the pattern over time (spiking, low grade)
- **R:** Related symptoms, for example, sore throat, earache, dysuria, cough
- **S:** Severity of fever, for example, measurement at home
- **T:** Time course/treatment, for example, the duration and treatment used.

### 5.23.4 Examination

In the case of an unexplained fever, a full examination will be required:

1 General impression: unable to walk, unable to drink, confused, agitated
2 Vital signs: temperature, respiratory rate, pulse and blood pressure
3 General: jaundice, anaemia, cyanosis, lymphadenopathy, petechiae, oedema
4 Look for a focus of infection:
   - Ear, nose and throat infections – otitis media, tonsillitis, pharyngitis

   - Chest infection – pneumonia, bronchitis, pleural effusion
   - Skin infection and rashes – impetigo, tick bite fever, measles, chickenpox, rubella
   - Abdominal infection – appendicitis, gastro-enteritis, cholecystitis
   - Genito-urinary – pyelonephritis, cystitis, pelvic inflammatory disease
   - Neurological infection – meningitis
5. Look for associated clinical signs such as:
   - Hepatomegaly – malaria, enteric fever, hepatitis
   - Splenomegaly – malaria, enteric fever, infectious mononeuclosis, lymphoma, infective endocarditis
   - Meningeal signs – neck stiffness, Kernig and Brudzinski signs
   - Lymphadenopathy – tuberculosis, HIV, lymphoma, toxoplasmosis, infectious mononucleosis, brucellosis
   - Jaundice – Hepatitis
6. Side-room investigations:
   - Urinalysis.

### 5.23.5 Special investigations

Special investigations should be focused and assist with management.

- Total and differential white blood cell count
- Urine culture and sensitivity only if urinary tract infection is suspected
- Chest radiograph if signs of pneumonia, empyema, pleural effusion or tuberculosis
- Rapid malaria test if in a malaria zone (or patient has recently visited one in past four weeks)
- Special immunological tests like ANA (antinuclear antibody), DsDNA (double-stranded DNA) should be done if one suspects disorders like systemic lupus erythematosis, polyarteritis nodosa or other connective tissue disorders
- Polymerase chain reaction tests if indicated, for example, HIV infection, swine flu

- IgM, IgG antibodies against tick bite fever, rubella, measles, herpes, and so on
- Lumber puncture for meningitis if raised intracranial pressure was excluded
- Blood cultures per indication.

### 5.23.6 Management principles

Divide into a category:

- Children < 3 months: Treat as a severe bacterial infection. Give an immediate dose of systemic antibiotic (for example, IM ceftriaxone), admit to hospital, and investigate fully for infection.
- Serious infection indicated by meningeal irritation, respiratory distress, purpura, surgical abdomen or shock: Resuscitate, give an immediate dose of intravenous antibiotic and refer as an emergency.
- Acute infection with focus of infection identified: Manage according to normal guidelines.
- Fever > 1 week or not responding to treatment: Repeat history, examination and more specialised special investigations or referral.

### 5.23.7 Treatment of fever

Fever has an antimicrobial action and therefore the treatment of fever per se is not indicated, unless it causes discomfort. Fever does not cause convulsions (as previously believed). Tepid sponging and evaporative cooling is not indicated for fever.

- Paracetamol and ibuprofen are safe in children
- Paracetamol, aspirin and non-steroid anti-inflammatory drugs are safe in adults
- Do not let the use of antipyretics distract you from the cause of the infection
- Fever does not always require an antibiotic and if more than two sites are affected, for example, runny nose, coughing, sore throat, ear ache, the infection is often caused by a virus infection.

# 5.24 Approach to genital symptoms

*(Indiran Govender, Henry Okonta)*

The syndromic approach is used to assess and manage patients with genital symptoms from sexually transmitted diseases (STIs). An approach to vaginal discharge is described in section 5.40 (Sexually transmitted infections, National management guidelines, 2015).

## 5.24.1 Assessment

Ask about (Adapted from PACK: Knowledge Translation Unit, University of Cape Town Lung Institute and Western Cape Government, 2015):

- Symptoms such as dysuria, pain, discharge, rash, itch, lumps, and ulcers
- Sexual health: sexual orientation, sexual activities (oral, vaginal or anal intercourse), partners, condom use, substance use and any sexual problems
- Abuse: ask about coercion, sexual assault or rape or if there is any intimate partner violence as in section 5.4
- Family planning: exclude pregnancy, use of or need for contraception.

In a woman, examine the abdomen for masses or lower abdominal pain, look for inguinal lymphadenopathy, inspect the perineum for pubic lice or scabies, discharge, ulcers, rash or lumps (genital warts, molluscum contagiosum), perform a bimanual palpation for cervical tenderness or masses and a speculum examination if necessary.

In a man, inspect for pubic lice or scabies, urethral discharge, ulcers, inguinal lymphadenopathy, scrotal swelling or masses.

Categorise the patient into one of the syndromes: vaginal discharge syndrome (VDS), lower abdominal pain (LAP), male urethritis syndrome (MUS), genital ulcer syndrome (GUS), scrotal swelling syndrome (SSW), balanitis (BAL), pubic lice (PL), bubo or RPR positive.

## 5.24.2 Management

Treat according to the latest guidelines for the syndromic approach (Knowledge Translation Unit, University of Cape Town Lung Institute and Western Cape Government, 2015). In addition, counsel the patient to:

- Complete the treatment, even if symptoms improve, and abstain from sex during treatment
- Test for HIV and RPR
- Notify the partner (issue a notification letter) and ensure treatment for the partner
- Practice safer sex
- Offer or provide condoms
- Consider medical male circumcision.

## 5.25 Approach to growth in a child

*(Selma Smith)*

The growth of normal, healthy infants and children should roughly follow the median or a 'track' on or between the same centiles on the growth chart. A child's growth should be routinely and regularly plotted on a growth chart to compare it with the rest of the population and identify deviations from the norm. When the growth pattern deviates significantly (crosses two or more centiles) from the norm, there is reason for concern and the reasons should be investigated. Serial measurements and plotting are more helpful than a once off measurement as it is the growth pattern or trend that is important.

Growth charts indicating weight-for-age, length-/height-for-age and weight-for-length/-height are available. A child's centile positions on the weight-for-age, length-/height-for-age and weight-for-length/-height charts are usually similar to each other. Weight-for-age is more fre-quently used as failure to gain weight adequately is often the first sign of illness or malnutrition, whereas the other charts are referred to periodically or when a deviation on the weight-for-age charts warrants further investigation.

The severity of the problem is indicated by how many centiles or z-lines are crossed. For instance, if a child's weight falls between the –2

and the –3 z-line, the child is underweight. If weight falls below the –3 line the child is severely underweight and signs of marasmus or kwashiorkor should be expected.

In children under five years of age and especially in the between-6- and 60-months group, mid upper arm circumference (MUAC) is also used in community settings to screen for malnutrition. According to WHO standards, MUAC of less than 115 mm indicate severe wasting. (WHO, 2009).

Poor growth occurs if the child's energy intake is inadequate relative to his/her metabolic and growth needs. The imbalance between intake and expenditure can be due to either inadequate intake or increased energy needs.

### 5.25.1 Assessment of poor growth

Inadequate intake could be due to poverty and lack of food, difficulty eating due to pain, problems with chewing or swallowing, or decreased appetite due to chronic disease. Increased energy needs may be caused by chronic disease for instance HIV, TB, congenital heart conditions or chronic respiratory disease.

History:

- Problems or maternal disease during pregnancy that may indicate congenital infection or genetic conditions impacting on growth
- Prematurity (preterm infants may take up to 36 months to catch up with their genetic potential)
- Diet and feeding, breast- or bottle fed (breastfeeding babies tend to be leaner), food security, difficulty eating
- Symptoms of chronic illness such as tiredness, cough, diarrhoea or shortness of breath
- Current or previous disease such as or HIV, gastroenteritis, tuberculosis
- Family history of genetic disease (that may impact on feeding or growth pattern) or infectious conditions (for example, TB contacts).

Examination:

- Measurements plotted on weight-for-age, length-/height-for-age and weight-for-length/-height charts
- General examination for signs of acute or chronic disease for example wasting, pallor or oedema
- Systematic examination of key systems – cardiovascular, respiratory, abdominal, neurological
- Developmental milestones.

Further investigation is determined by findings and severity of poor growth. Initial special investigations that could be considered are:

- Full blood count and ESR
- Urine examination and culture
- Urea and electrolytes
- Tuberculin skin test
- HIV
- Chest X-ray.

### 5.25.2 Management

If no indication of serious problems are found but weight gain is not satisfactory, give feeding advice and follow up in five days.

When weight gain is not satisfactory, the following should be added to normal feeding advice:

- Feed child more often than usual
- When child is sick to feed child and add more fluids.

Normal feeding advice should include advice to:

- Exclusively breastfeed until 6 months
- Encourage breastfeeding if not contraindicated
- Include staple food for energy
- Add a variety of other foods such as animal source foods, milk products, pulses, green and yellow vegetables, fruits, nuts and a moderate amount of fats or oil.

If improving, continue to follow up monthly for at least six months.

Indications for referral and/or hospitalisation:

- Severe acute malnutrition
- Oedema irrespective of degree of malnutrition
- Severe anaemia
- Poor weight gain that does not improve with dietary advice and clinic management
- Workup necessary for possible infections.

# 5.26 Approach to headache

*(Claire van Deventer)*

## 5.26.1 History

When asking about a headache, you should consider the following factors:

- Time issues:
  - Why has the patient consulted now?
  - When did it start?
  - How frequent is it and what is the pattern (episodic, daily, or unremitting)?
  - How long does it last (minutes, hours, days)?
- Character of the pain:
  - How severe is the pain?
  - What is the quality of the pain (dull, pressure, tight, pulsating, stabbing)?
  - What is the site and spread of the pain (unilateral or bilateral)?
  - What are the associated symptoms (for example, aura, nausea, vomiting, photophobia, phonophobia, fever)?
- Cause questions:
  - What is the patient's perspective ('What do you think is causing your headache?' – this question often reveals psychosocial or mental problems)?
  - Are there predisposing or trigger factors (for example, stress, foods, analgesic use)?

  - Are there aggravating or relieving factors (for example, exercise, rest)?
  - Is there a family history of similar headaches?
- Response questions:
  - What does the patient do during the headache?
  - How much is normal activity limited or prevented?
  - What medication have they used?
- State of health between attacks:
  - Are they completely well or do they have residual or persisting symptoms?
  - Are there concerns, anxieties, or fears about recurrent attacks or their cause?

### 5.26.2 Classification of headaches

A simplified classification of headaches is shown in Table 5.16 and the features of some common primary headaches are outlined below. Despite popular belief hypertension is not a common cause of headaches. A headache diary may help with diagnosis in some patients. The history is almost always the most useful diagnostic tool.

**Table 5.16** Classification of headache disorders, cranial neuralgias and facial pain

| | |
|---|---|
| **Primary** | 1 Migraine, including:<br>1.1 Migraine without aura<br>1.2 Migraine with aura |
| | 2 Tension-type headache, including:<br>2.1 Episodic tension-type headache<br>2.2 Chronic tension-type headache |
| | 3 Cluster headache and chronic paroxysmal hemicrania |
| | 4 Miscellaneous headaches unassociated with structural lesion |
| **Secondary** | 5 Headache associated with head trauma, including:<br>5.1 Acute post-traumatic headache<br>5.2 Chronic post-traumatic headache |
| | 6 Headache associated with vascular disorders, including:<br>6.1 Subarachnoid haemorrhage<br>6.2 Giant cell arteritis |
| | 7 Headache associated with non-vascular intracranial disorders, including:<br>7.1 Benign intracranial hypertension<br>7.2 Intracranial infection<br>7.3 Intracranial neoplasm |
| | 8 Headache associated with substances or their withdrawal, including:<br>8.1 Acute alcohol induced headache<br>8.2 Chronic ergotamine induced headache<br>8.3 Chronic analgesics abuse headache<br>8.4 Alcohol withdrawal headache (hangover) |
| | 9 Headache associated with infection, including:<br>9.1 Intracranial infection |
| | 10 Headache associated with metabolic disorder |
| | 11 Headache or facial pain associated with disorder of cranium, neck, eyes, ears, nose, sinuses, teeth, mouth or other facial or cranial structures, including:<br>11.1 Cervical spine<br>11.2 Acute glaucoma<br>11.3 Acute sinus headache |
| | 12 Headache attributed to a psychiatric disorder |
| **Neuralgias and other headaches** | 13 Cranial neuralgias, including:<br>13.1 Herpes zoster<br>13.2 Trigeminal neuralgia |

**Source:** Adapted from the Headache Classification Committee of the International Headache Society (IHS) (2013) The International Classification of Headache Disorders (3rd edition, beta version). *Cephalalgia* 33(9): 629–808

## 5.26.3 Primary headaches

### Tension-type headache (TTH)

- Bilateral
- Band of pain, tight or pressure-like in nature
- Can last from several hours to several days
- Tends to worsen during the course of the day
- Tightening of scalp and pericranial tenderness
- Normal neurological examination
- Associated with psychosocial stress.

### Migraine

- Unilateral and severe pain
- Pulsating/throbbing in nature
- Associated nausea and sensitivity to light and sound
- Physical activity exacerbates it
- Aura present in 15–33%
- Recurrent and lasts four to 72 hours
- Made worse by psychosocial stress
- More common in women
- Positive family history
- Uncommon, but often missed in children. Children may have bilateral headache and gastrointestinal complaints.

### Cluster headache

- Unilateral in trigeminal area, over the eye and forehead
- Severe and stabbing in nature
- Rapid onset, shorter duration than migraine (one to three hours)
- Restless, may wake the person from sleep
- Lacrimation from one eye, nasal congestion, eyelid oedema, temporary ptosis
- Episodic, every one to two years, then recurrent daily for 6 to 12 weeks, often in the same season
- More common in men.

### Medication overuse headache

- May have features like migraine or tension headache, but is caused by patients using analgesics too often.

### 5.26.4 Secondary headaches

Headaches may be secondary to an underlying medical condition (see Table 5.16). Think about the possibility of a secondary headache when taking a thorough history and performing the examination.

### 5.26.5 Red flags

Headaches are common in primary care and most are due to benign conditions. It can therefore be easy to miss serious and even life-threatening causes of headaches. An awareness of red flag symptoms and signs should alert one to the possibility of a medical emergency.

1 **Sudden-onset headache:** Most patients with a benign headache have a history of the same headache occurring previously. Any patient presenting with a severe headache for the first time needs further assessment. A subarachnoid bleed, for example presents as a headache that starts suddenly and is very severe.
2 **Worsening-pattern headache:** This is a headache that progresses over weeks or months, but is characterised by continually getting worse and without periods of remission. A space occupying lesion or cancer may present in this way.
3 **Headache with systemic illness:** A headache in an acutely ill patient, with symptoms such as fever, rash, sweating, neck stiffness. Meningitis may present in this way.
4 **Focal neurological signs or symptoms:** For example, motor or sensory signs or symptoms (excluding the typical visual or sensory aura in some migraines).
5 **Papilloedema:** Raised intracranial pressure affects the appearance of the optic disc that can be seen during fundoscopy. The disc becomes pinker, retinal veins more dilated and the sharp margin of the disc is blurred and indistinct.
6 **Headache triggered by cough, exercise or Valsalva's manoeuvre:** These activities raise intracranial pressure and if they precipitate

headache suggest that pressure is already raised. Headaches due to raised intracranial pressure may also wake the patient from sleep.

7 **Headache during pregnancy or post-partum:** Headache may be difficult to treat or indicate a more serious underlying pathology. May be associated with imminent eclampsia.

8 **New headache with history of cancer or HIV:** A headache developing for the first time is more likely to be due to pathology such as a metastasis in cancer or infection in HIV (for example cryptococcal meningitis).

9 **Headache following trauma:** May indicate intracranial pathology.

10 **Headache with jaw claudication:** May be due to temporal arteritis.

### 5.26.6 Focused examination

The following should usually be assessed and recorded in the medical record:

- Blood pressure, pulse and temperature
- Examine head and neck for tenderness, neck stiffness or sinus pain
- Neurological examination, including fundi.

### 5.26.7 Investigations

No investigations are useful in primary care for primary headaches. Investigations may be considered in specific patients with suspected secondary headache. For example:

- ESR in suspected inflammation (temporal arteritis)
- Skull radiograph in trauma
- Sinus radiograph or ultrasound in suspected sinusitis
- Tonometry in suspected glaucoma
- Urine test for illicit substances.

Some investigations, such as lumbar puncture, CAT scan or MRI scan, would only be performed in hospital after referral.

## 5.27 Approach to the injured patient

*(Emmanuel Ajudua)*

The initial assessment and management of the polytrauma patient determines to a large extent the final outcome of the patient. The following principles highlight how to conduct the immediate assessment and management and can be divided into the:

- Primary survey
- Secondary survey.

### 5.27.1 The primary survey

The primary survey is aimed at immediate evaluation of life threatening injury and adequate management to improve chances of survival. The common mnemonic for adequate recall is ABCDE. The primary survey is repeated several times in the course of evaluating the patient to ensure the patient is not deteriorating and to intervene as necessary.

- **A – Airway and protect the c-spine**. Ensure the patient's airway is patent and that no immediate risk exists that might impair the patency. An easy way to assess very quickly is to ask a question. If the patient gives a coherent answer, it indicates that the airway is patent and that the patient is breathing. If there is no answer it may indicate a non-patent airway. In the polytrauma patient, there is the chance of cervical spine injury, to prevent further injury to the c-spine it is better to use the jaw thrust manoeuvre to assess the airway. Ensure a cervical collar is in place.
- **B – Breathing**. Check respiratory rate. Ensure there is no obstruction to the free flow of air into and out of the lungs. Monitoring devices like the pulse oximeter can assist with this. An arterial blood gas when available is also useful for assessing effective gas exchange. Immediate threats such as an open pneumothorax, tension pneumothorax, flail chest and massive hemothorax must be addressed immediately.
- **C – Circulation**. Check pulse and blood pressure. This involves securing two large bore intravenous lines for adequate resuscitation to replace acute blood loss. In the shocked patient with a good baseline prior to trauma, it is advisable to give two litres of adequate resuscitation fluids to improve the fluid status of the patient. Smaller boluses (200–500 ml) are required in the elderly or high risk

patients, the paediatric population should have bolus doses based on weight of the patient. In situations with large volume blood loss, resuscitation with emergency blood transfusion (O negative blood) should be considered. Stop all external bleeding by splinting fractures, applying pressure to external wounds. In patients with an open fracture of the pelvis, a bed sheet can be used to close the fractured pelvis to reduce the volume of blood loss in the pelvis.

- **D – Disability**. This essentially looks at the neurologic status of the patient. It entails assessing level of consciousness using the Glasgow coma scale (and record this to compare with the score in the repeated evaluation), checking the pupillary size and the reaction to light; gross motor functioning. If after correcting for all possible metabolic causes for decreased level of consciousness the patient is still unconscious, it is traumatic brain injury until proven otherwise.
- **E – Exposure**. Remove all clothing to evaluate adequately while keeping the patient warm to prevent hypothermia.
- Consider insertion of urethral catheter (if no signs of urethral injury) or nasogastric tube (if no signs of base of skull fracture).
- **Immediate diagnostic tools:**
  - Blood investigations: Haemoglobin, creatinine, crossmatch, venous blood gas
  - X-rays – Chest (AP), Pelvis (AP), c-spine (Lat)
  - Focused assessment sonology in trauma (FAST) is now preferred over diagnostic peritoneal lavage (DPL)
  - 12 lead ECG.

The primary survey ends only after the patients vitals are returning to normal and the ABCDE has been reassessed to ensure nothing has been missed.

### 5.27.2 Secondary survey

The secondary survey involves a detailed history and physical examination of the polytrauma patient.

- **History (may be from family members)** – Allergies, medication use, past illnesses, last meal before accident, events that led to injury

with details of mechanism of injury

- **Examination** – This will include a detailed head to toe evaluation of the patient, remember to inspect, palpate, percuss (where appropriate) and auscultate
- **Head** – Palpate for fractures in the skull, scalp lacerations
- **Face** – Maxillo facial, mandibular injuries, orbital injuries
- **Neck** – Check for blunt vs penetrating trauma, there may be a delay in development of signs
- **Chest** – Check for blunt vs penetrating trauma, inspect, palpate, percuss, auscultate
- **Abdomen** – Inspect, palpate, percuss, auscultate, evaluate need for special studies
- **Rectum, vagina and perineum** – Assess for injuries, contusions, hematomas, check sphincter tone, peri-anal sensation, etc.
- **Pelvis** – Assess for pain, limb length, crepitus, instability suggesting fractured pelvis
- **Musculoskeletal system for limb and spinal injuries** – Log roll the patient with assistance to protect the spine and check for injuries to the spine
- **Neurological assessment** – For a complete examination of the nervous system, note deficits such as lateralising signs, unequal pupillary reaction, note that you will need frequent re-evaluation of the Glasgow coma scale (GCS), prevent secondary brain injury, and assess the spine thoroughly for injury and evaluate with special diagnostic tests as necessary.

If the patient deteriorates at any point during the course of the secondary survey, stop the secondary survey and reassess the primary survey.

If transfer to a referral centre is required, ensure that transfer is organised without delay as this impacts on the outcome for the patient.

## 5.28 Approach to jaundice

*(Febi Ajudua)*

A patient presenting with a complaint of yellow skin or jaundice will often need to be referred for further investigation and management. The following features should prompt urgent assessment or referral (Adapted from PACK: Knowledge Translation Unit, University of Cape Town Lung Institute and Western Cape Government, 2015):

- Pregnant
- Temperature > 38 °C
- Confusion
- Early bruising or bleeding
- Persistent vomiting
- Severe abdominal pain
- Fingerprick Hb < 10
- On any medication, for example, TB medication.

Initial assessment is directed at deciding what broad category of jaundice the person fits into:

- Pre-hepatic causes
- Hepatic causes
- Hepatocellular causes
- Obstructive causes.

Ask the patient about the colour of their stools and urine. Test the urine for urobilinogen and bilirubin. Test the blood for conjugated and unconjugated bilirubin and for liver function tests. Check the haemoglobin. Table 5.17 indicates how to interpret the results.

**Table 5.17** Interpreting the cause of jaundice

| Type of jaundice | Symptoms | Urine | Blood | Causes |
|---|---|---|---|---|
| Pre-hepatic | Normal stool and urine | Urobilinogen<br>No bilirubin | Anaemia<br>Raised unconjugated bilirubin<br>Normal liver function tests | Haemolysis |
| Hepatic | Normal stool and urine | Normal | Raised unconjugated bilirubin<br>Normal liver function tests | Congenital enzyme defects |
| Hepatocellular | Normal or pale stools and dark urine | No urobilinogen<br>Bilirubin | Raised conjugated bilirubin<br>Abnormal liver function tests (ALT $\geq$ 120) | Hepatitis from viral, drug, alcohol or other causes |
| Obstructive | Pale stools and dark urine | No urobilinogen<br>Bilirubin | Raised conjugated bilirubin<br>Abnormal liver function tests (ALP/GGT $\geq$ 3 times upper limit) | Gallstones<br>Pancreatic cancer |

The patient may have other signs or symptoms that point towards a particular cause. For example, alcohol abuse, intravenous drug use, travel abroad or TB medication will point towards a hepatocellular cause. Colicky right upper quadrant pain may suggest gallstones. A family history may point towards genetic or congenital causes. Look also for signs of chronic liver disease or cirrhosis.

## 5.29 An approach to lymphadenopathy

*(Febi Ajudua)*

Assess the:

- Location of the lymph nodes. Is the enlargement involving just a particular group of lymph nodes or are there several groups of

lymph nodes involved?
- Size of the lymph node.
- Consistency of the lymph nodes. Stony hard painless lymph nodes are more likely to indicate malignancy while firm tender lymph nodes are more likely to indicate infection. Is the node fluctuant suggesting an abscess?
- Skin changes. Is there redness of overlying skin or break down with a chronic draining sinus?
- Mobility of the enlarged lymph nodes. Is the particular group of lymph nodes matted or fixed to underlying structures. Matted fixed lymph nodes are seen in both chronic infections like tuberculosis and malignancy. Enlarged freely mobile lymph nodes are seen in infection and also in collagen vascular diseases.
- Associated pain and tenderness. This feature is often associated with infection.

If the patient has generalised lymphadenopathy (usually < 2 cm in size), check for HIV and syphilis (RPR). Secondary syphilis may also have mouth ulcers and a skin rash, particularly on the palms and soles, and genital wart-like lesions. If the patient is well and these tests are initially negative, repeat in 3 months after the window period. If the patient is unwell, investigate further.

If the patient has localised lymphadenopathy (usually > 2 cm in size), check for infection in the drainage area. Other conditions such as neoplasms may also present in this way. In HIV patients, check for a Kaposi's sarcoma lesion. If there is no obvious cause, you may need to aspirate the lymph node for TB and cytology to make a diagnosis. Ask about other symptoms of TB. If the lymphadenopathy is in the groin or inguinal area and inflamed or painful, consider treating for bubo, a sexually transmitted infection.

## 5.30 Approach to mouth- and throat symptoms

*(Indiran Govender, Henry Okonta)*

### 5.30.1 Pharyngitis

Pharyngitis presents with sore throat, difficulty swallowing, fever, malaise and an erythematous oropharynx. Odynophagia, anterior cervical lymphadenopathy and fever are suggestive of bacterial pharyngitis. Suspected streptococcal pharyngitis should ideally be confirmed with a rapid streptococcal antigen test followed by a throat culture if the rapid test is negative. Viral pharyngitis is more likely if the sore throat is accompanied by rhinorrhea, conjunctivitis, cough, or hoarseness. Pharyngitis from herpes simplex virus manifests with painful vesicles on the lips, mouth or oropharynx. Very often it is not possible to clinically exclude bacterial infection as cause of the pharyngitis. To prevent complications from infection with beta-haemolytic streptococcus, all children between the ages of 3 to 15 years with pharyngitis should be treated as having a streptococcal infection unless they have clear evidence of viral pharyngitis.

### 5.30.2 Tonsillitis

Tonsillitis presents like pharyngitis with sore throat, difficulty swallowing, fever and malaise. The tonsils are enlarged, erythematous and there may be anterior cervical lymphadenopathy. The presence of pus or white patches on the tonsils makes bacterial tonsillitis more likely. Treatment of bacterial tonsillitis is with benzathine penicillin injection or penicillin V for 10 days (azithromycin if penicillin allergy). Early treatment can prevent rheumatic fever complications but does not alter the risk of post-streptococcal glomerulonephritis. Indications for tonsillectomy include:

- Recurrent tonsillitis more than four episodes a year
- Peritonsillar abscess
- Obstructive sleep apnoea
- Unilateral enlarged tonsil in an adult.

### 5.30.3 Oropharyngeal candidiasis

Patients with oropharyngeal candidiasis complain of dryness of the mouth, loss of taste and pain. Cheese-like white patches are seen on the cheeks, gum, tongue, palate and oropharynx. Removal of the patches with a spatula reveals an area of punctate erythema or haemorrhagic

spots on an erythematous background. Involvement of the corners of the mouth results in angular chelitis and the concurrence of odynophagia is indicative of oesophageal candidiasis. The diagnosis is usually clinical but if in doubt, the white patches could be collected for potassium hydroxide preparation and light microscopy which will confirm the presence of yeasts and pseudomycelia. Consider immunosuppression due to HIV or locally due to inhaled corticosteroids. Treat with nystatin suspension.

### 5.30.4 Aphthous ulcers

The precise aetiology and pathogenesis of aphthous ulcers are not yet known. The following factors are however associated with and may underlie the development of this condition:

- Stress and anxiety
- Medications such as ACE inhibitors, beta blockers, NSAIDs
- Vitamin or mineral deficiencies – iron, folate, B12, zinc
- Food and chemical sensitivities
- Oral trauma
- Systemic diseases such as HIV, coeliac disease, Crohn's disease, reactive arthritis, Behcet's syndrome.

Aphthous ulcers present with a painful lesion in the mouth. The pain is exacerbated by movement of the affected areas or eating .There may be a history of recurrent episodes, onset related to use of medications, or symptoms indicative of other underlying risk factors. Oral examination will reveal solitary or multiple ulcers covered by a yellowish-white pseudomembrane surrounded by an erythematous halo. These aphthae are typically distributed on the labial and buccal mucosae and on the ventral aspect of the tongue. Laboratory investigations such as full blood count, ESR, HIV and vitamin testing may be helpful in recurrent or persistent cases.

Apply tetracaine ointment until healed and investigate further if the ulcer is not healed within 2 weeks or is larger than 1 cm in diameter.

### 5.30.5 Herpes simplex

Presents with painful blisters that become ulcers on the lips (cold sores) and mouth. Consider the possibility of HIV especially in those with extensive, recurrent or persistent lesions. Give tetracaine for pain and consider the need for acyclovir in those with HIV.

## 5.31 Approach to musculoskeletal problems

*(Mosedi Namane)*

The two most common chronic joint conditions seen in the family physician's office are osteoarthritis (OA) and rheumatoid arthritis (RA). The most common chronic widespread soft tissue pain seen is fibromyalgia syndrome (FMS). At times, patients may present with regional musculoskeletal acute or chronic pain affecting for example just the neck, arm, leg, or foot. Chronic refers to conditions lasting for more than eight weeks. Acute may mean a recent onset of a new condition or in other instances it may refer to a flare up of a chronic condition. With acute pain, one should first exclude a history of trauma before exploring other causes. Urgent attention should be given to unwell patients with a temperature, a history of weight loss, systemic features and/or comorbidities like HIV infection or diabetes. These patients may need to be referred for in-hospital management and therefore should be discussed with a senior clinician.

Do a rapid musculoskeletal screening for a patient presenting with widespread pain (Mash, 2015d). If the patient is able to do all actions comfortably and the symptoms are of an acute onset, exclude common conditions such as viral infections (for example, influenza) or post-exercise myalgia. If the patient is not able to do all actions of a musculoskeletal screening comfortably, **do a detailed musculoskeletal assessment**. Beyond establishing whether the pain is acute or chronic, the following five concepts should be considered when evaluating joints (Baer, 2014).

### 5.31.1 Is the joint pain really arthritis?

There are a variety of painful structures that can be interpreted as pain in the joint by patients.

- *Periarticular* causes of pain can originate from a bursitis (for example, in the case of knee pain, an anserine bursitis could be the cause), tendonitis (for example, inflammation of some tendons of the anatomical snuff-box may cause wrist pain), and perceived regional joint pains may be caused by myofascial pain or FMS
- *Non-articular* causes of pain may come from adjacent tumours of the bone, vascular pathology, osteomyelitis, or radiculopathy
- *Articular pain* arises from involvement of the joint itself. The signs of articular inflammation are swelling, tenderness, warmth and redness.

### 5.31.2 Is the problem inflammatory or non-inflammatory?

Differentiating between inflammatory or non-inflammatory conditions (see Table 5.18) helps in narrowing the differential diagnoses.

**Table 5.18** Differences between inflammatory and non-inflammatory joint pain

| | **Inflammatory** | **Non-inflammatory** |
|---|---|---|
| Early morning stiffness | > 30 minutes | < 15 minutes |
| Stiffness and pain | Increase with rest and are relieved by exercise | Increase with use and relieved by rest |
| Swelling | Often present | Not present |
| Microscopy of synovial fluid | Translucent, white cell count > 75 000 cells/$mm^3$ with polymorphonuclear cells > 50% | Translucent, white cell count < 2 000 cells/$mm^3$ with polymorphonuclear cells < 25% |

It is critical to identify an inflammatory arthritis as, when present, disease-modifying anti-rheumatic drugs should be prescribed early. These drugs alter the progression and the course of the disease. If one is not trained in rheumatology, one should refer the patient to a rheumatologist immediately. On the other hand, all family physicians should be skilled in managing common rheumatological conditions such as gout and RA.

### 5.31.3 What is the pattern of joint involvement?

Monoarthritis and oligo-/polyarthritis have differing diagnostic probabilities as shown in Table 5.19. Inflammatory pain with symmetrical small joint involvement is suggestive of RA, which is the commonest inflammatory condition affecting 1% of the adult population. Inflammatory back pain may be a spondyloarthritis (for example, ankylosing spondylitis).

**Table 5.19** Pattern of joint involvement and diagnosis

| Acute | | Chronic | |
|---|---|---|---|
| **Monoarthritis** | **Oligo-/polyarthritis** | **Monoarthritis** | **Oligo-/polyarthritis** |
| Infective (septic)<br>Gout (crystals)<br>Reactive<br>Trauma | Systemic illness<br>Gout (crystals)<br>Reactive<br>Post-streptococcal | Osteoarthritis<br>Gout (crystals)<br>Infective (TB)<br>Tumour | Autoimmune (for example RA)<br>Osteoarthritis<br>Gout (crystals)<br>Reactive<br>Psoriatic |

### 5.31.4 Are there associated systemic features?

Most of the rheumatic conditions are systemic illnesses. It is therefore important to review all the systems when seeing a patient. Symptoms could include loss of weight, unexplained fevers, rash, chills and new disabilities. Psoriatic arthritis may have the typical skin rash and nail abnormalities. Reactive arthritis may follow urogenital or enteric infections. Rheumatic fever may follow a streptococcal infection.

### 5.31.5 What is the patient's profile?

Age, gender, family history and past medical history may provide clues. For example, FMS is typical in younger women, polymyalgia rheumatica mainly occurs in those over 60 years of age and is usually accompanied by a strikingly raised ESR. A family history of autoimmune diseases makes rheumatoid diseases such as RA more likely. Unexplained paediatric arthralgias have been found to be associated with psychosocial stress, school absenteeism and vitamin D deficiency. HIV infection commonly predisposes to a number of rheumatological conditions.

### 5.31.6 Investigations

Targeted investigations are only useful if there is a high suspicion of a specific condition. Erythrocyte sedimentation rate and a C-reactive protein are commonly elevated in inflammatory conditions.

Arthrocentesis and investigation of synovial fluid can confirm infection and help differentiate inflammatory from non-inflammatory causes. Negative birefringent needle-like crystals in synovial fluid can clinch the diagnosis of gout. However, gout can be diagnosed on history, examination and elevated uric acid. The uric acid however is not always elevated in acute gout and may be mildly elevated in those without gout. Anti-CCP (cyclic citrullinated peptide) antibodies are used to diagnose RA (sensitivity 74%, specificity 94%) and IgM rheumatoid factor (sensitivity 75%, specificity 74%) is a predictor of disease severity. The rheumatoid factor must be highly elevated to support the diagnosis of RA.

Diagnostic imaging in the public sector primary health facilities in South Africa is usually confined to plain X-rays. X-rays can reveal the features of certain rheumatic diseases such as OA and RA. It is also good in showing most fractures. In tertiary institutions, ultrasound and radionuclear bone scans can be used to detect early synovitis when there is a clinical doubt of arthritis. MRI and CAT scans provide information on soft tissue abnormalities.

### 5.31.7 Rheumatoid arthritis

Rheumatoid arthritis (RA) is a systemic disease, but with the musculoskeletal system dominating the clinical picture. The following four 'S-factors' are useful signs of early inflammatory arthritis:

- Stiffness: Early morning stiffness lasting > 30 minutes
- Swelling: Persistent swelling of 1 or more joints, particularly hand joints
- Squeeze test: Tenderness on squeezing across all 4 metacarpal phalangeal joints
- Squeeze test: Tenderness on squeezing across the metatarsal heads.

A scoring system has also been recommended to diagnose RA at an early stage of disease (Table 5.20). A score of 6 or more out of 10 is needed to diagnose RA (Hodkinson *et al*, 2013).

**Table 5.20** Scoring system to diagnose rheumatoid arthritis

| Criteria | Score |
|---|---|
| **Joints** | |
| 1 large joint | 0 |
| 2–10 large joints | 1 |
| 1–3 small joints | 2 |
| 4–10 small joints | 3 |
| >10 joints | 5 |
| **Serology** | |
| Negative RF and negative anti-CCP | 0 |
| Low positive RF or low-positive anti-CCP (≤ 3 times upper limit normal) | 2 |
| High positive RF or high-positive anti-CCP (> 3 times upper limit normal) | 3 |
| **Acute phase reactants** | |
| Normal C-Reactive Protein and ESR | 0 |
| Abnormal C-Reactive Protein or ESR | 1 |
| **Symptom duration** | |
| < 6 weeks | 0 |
| ≥ 6 weeks | 1 |

Notes: Large joints are elbow, shoulder, hips, knees and ankles. Small joints refers to metacarpophalangeal joints, proximal interphalangeal joints, 2nd to 5th metatarsophalangeal joints, thumb interphalangeal joints and wrists. ACPA is also known as anti-CCP.

**Source:** Hodkinson B, Van Duuren E, Pettipher C, Kalla AA (2013) South African recommendations for the management of rheumatoid arthritis: An algorithm for the standard of care in 2013. *South African Medical Journal* 103(8): 576–585. [Online]. Available at: http://www.samj.org.za/index.php/samj/article/view/7047/5294

At a primary care level once a suspected or definitive diagnosis of RA is made, a prompt referral to a specialist physician or rheumatologist is required. Whilst a patient is awaiting an appointment, they can be started on ibuprofen 800 mg 8-hourly orally, prednisone 7.5 mg daily orally, chloroquine 200 mg daily (Monday–Friday) orally and paracetamol 1 g 6-hourly as required.

## 5.31.8 Osteoarthritis

Osteoarthritis (OA) is a chronic disorder of synovial joints characterised by softening and disintegration of the articular joints. The joints most commonly involved are knees, hips, hands and apophysial joints.

The non-pharmacological treatments (referral for physical therapy, referral to nutritionist for weight loss, referral for assistive devices) are the cornerstone of management of people with OA and have been given an equal weighting with pharmacological treatment in the management plan (Holliman, 2012). A specific sequence of pharmacological therapy is no longer recommended as before. Acetaminophen (paracetamol) is now only conditionally recommended amongst other pharmacological agents such as NSAIDs and weak opioids. For people over 75 years of age, topical rather than oral NSAIDs should be used whenever possible. For both knee and hip OA, nutraceuticals such as chondroitin sulphate, glucosamine and topical capsaicin are not usually recommended.

### 5.31.9 Fibromyalgia syndrome

Fibromyalgia syndrome (FMS) is a chronic diffuse soft tissue pain syndrome with patients complaining of being 'sore everywhere'. FMS is common with a prevalence of 0,5–5% in different populations. The diagnosis of FMS has changed and has moved away from palpation of tender points to a more comprehensive assessment of pain locations, core symptoms and the severity of somatic complaints (National Databank for Rheumatic Diseases, 2016). The patients should be asked about pain at the following 19 locations (to give a score out of 19) and should have a score of 7 or more to use right and left where applicable to give a diagnosis of FMS:

- Shoulder
- Hip
- Upper arm
- Lower arm
- Upper leg
- Lower leg
- Jaw
- Chest
- Abdomen

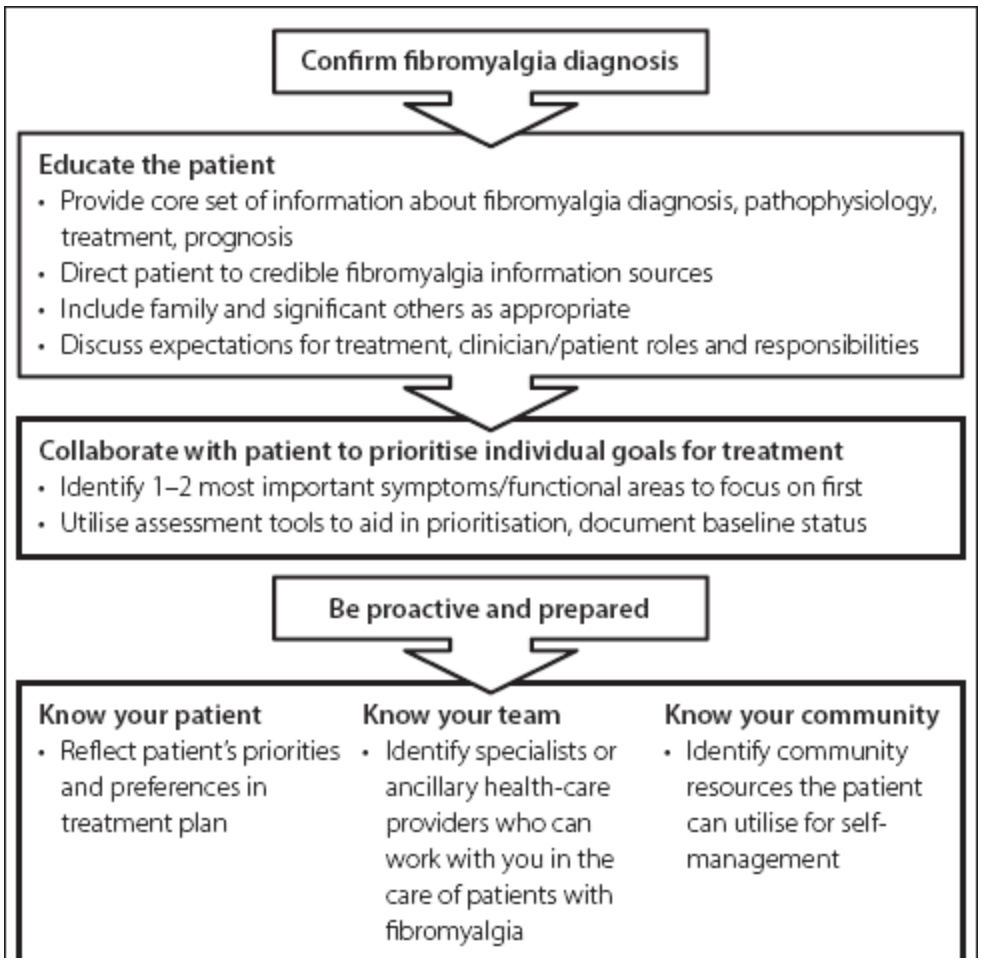
- Lower back
- Upper back
- Neck

In addition, patients should be asked about three core symptoms:

1 Fatigue
2 Waking up tired and unrefreshed
3 Cognitive symptoms, such as trouble thinking or remembering.

These should be scored from 0 (no problem) to 3 (severe, pervasive, continuous and life disturbing). In addition, the severity of associated somatic complaints should also be judged on a scale of 0 (no symptoms) to 3 (a great deal of symptoms). Symptoms might include muscle pain, irritable bowel syndrome, fatigue/tiredness, muscle weakness, headache, pain/cramps in the abdomen, numbness/tingling, dizziness, insomnia, depression, constipation, pain in the upper abdomen, nausea, nervousness, chest pain, blurred vision, fever, diarrhoea, dry mouth, itching, wheezing, Raynaud's phenomenon, hives/welts, ringing in ears, vomiting, heartburn, oral ulcers, loss of/change in taste, seizures, dry eyes, shortness of breath, loss of appetite, rash, sun sensitivity, hearing difficulties, easy bruising, hair loss, frequent urination, painful urination, and bladder spasms. A final score out of 12 for somatic symptoms will be based on the sum of three core symptoms (0 to 3) and the overall severity score (0–3). A score of five or more is needed to make the diagnosis of FMS. Alternatively a pain score of 3–6 and a somatic symptom score of 9 or more can also be diagnostic. Symptoms should be present for at least three months and there must not be another disorder that could explain the symptoms.

A framework for multifaceted management of FMS for primary care providers has also been developed (Figure 5.6).


Confirm fibromyalgia diagnosis
Educate the patient
• Provide core set of information about fibromyalgia diagnosis, pathophysiology, treatment, prognosis
• Direct patient to credible fibromyalgia information sources
• Include family and significant others as appropriate
• Discuss expectations for treatment, clinician/patient roles and responsibilities
Collaborate with patient to prioritise individual goals for treatment
• Identify 1–2 most important symptoms/functional areas to focus on first
• Utilise assessment tools to aid in prioritisation, document baseline status
Be proactive and prepared
Know your patient
• Reflect patient's priorities and preferences in treatment plan
Know your team
• Identify specialists or ancillary health-care providers who can work with you in the care of patients with fibromyalgia
Know your community
• Identify community resources the patient can utilise for self-management

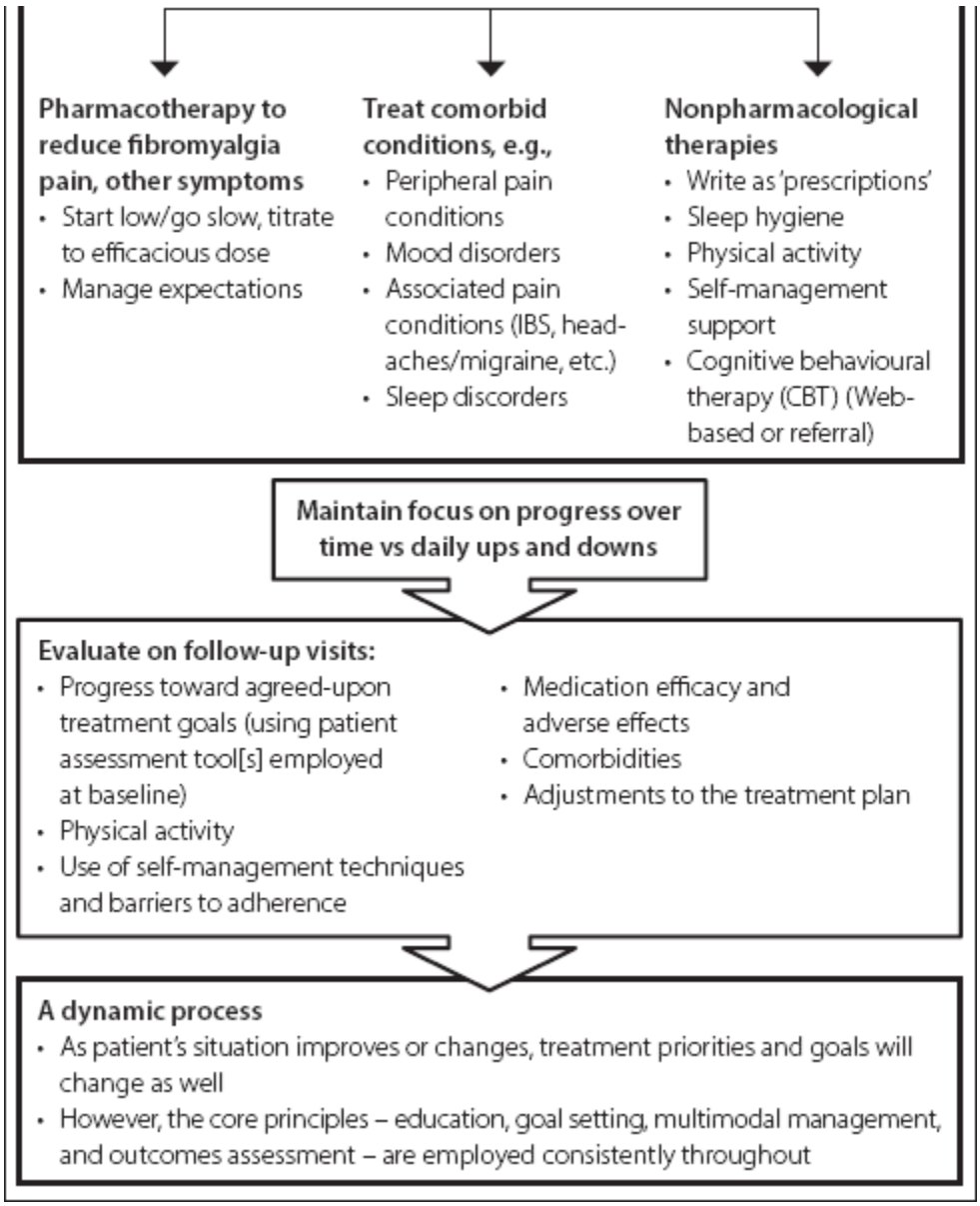



**Figure 5.6** Framework for multifaceted management of fibromyalgia syndrome

**Source:** Arnold LM, Clauw DJ, Dunegan LJ, Turk DC (2012) *A Framework for Fibromyalgia Management for Primary Care Providers*. Mayo Clinic Proceedings 87(5): 488–496. [Online]. Available at: http://www.mayoclinicproceedings.org/article/S0025-6196(12)00299-6/abstract?showall=true

At primary level, non-pharmacological management can be offered by a team comprising of an occupational therapist, physiotherapist, nurse, social worker or doctor. A patient who takes an active role in managing their condition and/or family member/s are also important. A healthy lifestyle (no tobacco smoking, healthy diet and appropriate physical

activities that stretch and strengthen muscles) should be maintained. Medicines include low-dose amitriptyline, paracetamol, tramadol, methylsalicylate ointment and /or other antidepressants (fluoxetine/citalopram).

## 5.32 Approach to nasal symptoms

*(Indiran Govender, Henry Okonta)*

### 5.32.1 Common cold

The common cold is a viral upper respiratory tract infection that presents with sore throat, runny nose, sneezing, conjunctivitis and cough. Constitutional symptoms include fever, headache, myalgia and malaise. The nasal and oropharyngeal mucosa are erythematous. The common cold is self-limiting, but can be complicated by secondary bacterial infection or exacerbate asthma and COPD. Rest, avoid contact with others, use tissues for sneezing/coughing, take paracetamol regularly and drink plenty of fluids. Antibiotics are not necessary. Symptoms improve in 3–7 days.

### 5.32.2 Influenza

Symptoms are similar to the common cold, but with more myalgia or chills. If necessary, a diagnosis can be definitively made by a nasopharyngeal swab for rapid antigen detection and reverse transcription PCR tests. Neuraminidase inhibitors (zanamivir and oseltamivir) decrease both symptom duration and severity if given with 48 hours of onset, but are not routinely used. Routine annual vaccination against influenza is recommended in at-risk patients such as the immunocompromised, elderly, or patients with chronic respiratory and heart conditions.

### 5.32.3 Sinusitis

Nasal obstruction or purulent nasal (or postnasal) discharge is combined with headache (worse on bending forward) or pain/pressure over the sinuses. Give paracetamol and nasal decongestants. Steam inhalation or salt water washes may also help. Antibiotics should be

given if nasal discharge has persisted for more than 6 days. Recurrent sinusitis should make you consider underlying HIV. Complications include spread of infection into adjacent tissues leading to localised swelling or even meningitis.

### 5.32.4 Allergic rhinitis

Allergic rhinitis can be seasonal or perennial. It manifests with recurrent episodes of sneezing, nasal obstruction with itchiness, runny nose, itchiness of the eyes with lacrimation and frontal headache or pressure. An environmental or occupational history may identify the implicated allergens such as pollen or house dust mite. There may be an atopic family and past medical history. Nasal speculum examination usually shows swollen turbinates and nasal mucosa. An elevated blood eosinophil count and nasal smear with eosinophils are supportive, but not diagnostic of allergic rhinitis. A food and inhalant allergy test may help identify or confirm offending allergens. Skin testing is reserved for patients with chronic rhinitis and patients who are not controlled by allergen avoidance and medication. It can also help identify allergens to be included in immunotherapy.

The management of rhinitis is by avoidance of exposure to identified allergens, oral antihistamines and intranasal corticosteroids. Immunotherapy is reserved for cases which do not respond to allergy avoidance and medication.

### 5.32.5 Epistaxis

The commonest site of epistaxis is Little's area in the anterior nose. The cause of epistaxis may be local, systemic or idiopathic. The local causes include trauma, nasal dryness, chemical use (for example, nasal sprays or cocaine), benign and inflammatory tumours, inflammation (allergic or infective rhinitis). Systemic causes include the coagulopathies (anticoagulants, haemophilias, haematological malignancies, liver failure and uremia), vascular diseases (atherosclerosis, hypertension, hereditary haemorrhagic telangiectasia).

An approach to epistaxis is outlined in the following steps:

- Lean patient forward and pinch the alae nasi continuously for 10 minutes.
- Meanwhile assess vital signs. If there are signs of hemorrhagic shock, resuscitate patient with IV normal saline and crossmatch blood. If BP is elevated, risk stratification and manage accordingly.
- If still bleeding, clear out clot by blowing the nose or syringing the nose with saline.
- Determine site of bleeding by speculum examination (anterior or posterior bleed) and look for any obvious local causes.
- Control bleeding initially by topical vasoconstrictors (cotton wool soaked in adrenaline or xylometazoline) or bismuth iodoform paraffin paste (BIPP) stripping. If bleeding is not controlled and the bleeding point is adequately visible, cauterise with silver nitrate. Do not cauterise both sides of the septum and no more than an area of 4 mm diameter.
- If bleeding is still not controlled, or the bleeding site was not adequately visible, proceed to anterior packing for anterior bleeds and posterior packing for posterior bleeds.
- Investigate for systemic causes (prothrombin time, liver function, renal function, full blood count).
- Protect against toxic shock syndrome with antibiotics (co-amoxyclavulcanic acid) for posterior packs and any anterior packs to be left for over 48 hours.
- Treat any underlying cause and refer to a specialist as necessary.

## 5.33 Approach to sexual problems

*(Louis Jenkins)*

Sexual health issues are often not done justice to in the brief encounter with the patient, where the presenting complaint may well not be the real reason for the visit. They need time, trust and privacy for the patient to share these concerns. Cultural norms must be kept in mind, for example, in certain cultures, a man will not disclose to a female doctor his sexual problems. One will have to elicit the real complaint from the

patient and then also seek to address this together with the sexual partner at some stage.

### 5.33.1 Erectile dysfunction

Erectile dysfunction (ED) is common. Sudden onset of ED, but with normal early morning erections may be due to stress, anxieties, fears about performance or fertility, or after operations in the pelvis.

Gradual onset ED with partial or poorly sustained erections is often a warning sign of cardiovascular disease, diabetes, lower urinary tract disorders or depression.

Gradual onset ED may also be related to harmful alcohol use or other substance abuse. Medications may also cause ED: beta blockers, statins, diuretics, serotonin reuptake inhibitors (SSRIs), lopinavir/ritonavir, amitriptyline, phenytoin and carbamazepine. In each patient, consider whether such medication can be stopped or substituted.

Testosterone deficiency syndrome should also be considered with loss of libido, loss of energy, poor concentration and ED.

Treatment is focused on motivation to stop smoking and reduce cardiovascular risk factors, substance abuse, optimising control of chronic diseases, reviewing chronic medication, addressing emotions and expectations, and if necessary referring to a urologist to exclude a surgical cause. Consider treating ED with drugs such as sildenafil unless there are contraindications (for example, nitrate medication) or they are medically unfit. If a patient can climb two flights of stairs, they should be fit enough for sex.

### 5.33.2 Loss of libido

The causes could fall into the following (overlapping) categories:

- Depression, anxiety, stress, bereavement
- Substance abuse: > 21 drinks/week (man) or > 14 drinks/week (woman), misusing prescription drugs (ask about private or over-the-counter medication), illegal drugs
- Testosterone deficiency syndrome/hormonal changes
- Past sexual assault or abuse

- Pain with sex
- Anxiety about sex, fertility issues or performance anxiety.

### 5.33.3 Pain with sex

If the pain is more superficial, think of:

- Genital symptoms (discharge, rash, itch, swelling, ulcer). Treat the symptom, most likely a sexually transmitted infection (STI) according to national guidelines.
- Vaginal dryness. Use a condom-compatible lubricant (avoid Vaseline use with condoms). If vaginal atrophy in the post-menopausal woman, consider topical oestrogen cream (if no contraindication). Also screen for other symptoms of menopause, like headache, mood swings, and hot flushes. Also consider diabetes, thyroid disease, SSRIs or beta blockers, chemotherapy, radiotherapy or the effect of pelvic operations.
- Vaginal/anal spasm during sex. Ask about sexual abuse.

If the pain is deeper, also think of sexually transmitted infections (lower abdominal pain) as well as:

- Irritable bowel syndrome (recurrent abdominal pain, constipation, diarrhoea, bloating). Sometimes associated with other pain syndromes, like migraine, pelvic pain, urethral pain syndrome, and depressed mood.
- Consider anal symptoms in those having anal sex (unable to sit, unable to pass stool, bleeding, pain, discharge). Treat according to main finding on examination.
- Urinary symptoms (dysuria, haematuria, frequency). Consider urinary tract infection or a structural abnormality.
- Colo-rectal or gynaecological disease. Take a history and examine for any masses or other signs.

Ejaculation can be painful in those with associated urinary or genital symptoms.

Always think of and carefully enquire about sexual assault or abuse (this could be many years ago), encourage faithfulness and consistent

condom use, ask about the patient's HIV status and last cervical smear result (in women), and assess family planning and contraception needs.

## 5.34 Approach to skin problems

*(Louis Jenkins)*

### 5.34.1 Skin complaints and rash

In assessing skin complaints it may be more practical to take a brief history and then move immediately to examine the patient. The examination may provide an immediate diagnosis (by pattern recognition) or provide useful information, which will guide further history taking.

### 5.34.2 History

- The duration and temporal sequence of the rash is important:
  - Date of initial onset and duration.
  - How the skin lesions have evolved and changed over time. For example, they may have started as painful vesicles that then develop into pustules or ulcers. The lesion may have started in one part of the body and spread elsewhere.
  - The speed of onset, that is, did the lesions develop suddenly or slowly.
  - A history of previous episodes at the same or different sites.
- Consider any associated symptoms or features:
  - Pruritus (for example, papular pruritic eruption or drugs), pain (for example, herpes).
  - Presence of systemic illness or high fever.
  - Any medication, topical or systemic, prescribed or over the counter.
  - Relationship to recent travel, stress, work or activities.
  - Recent exposure to someone with a similar skin condition.
- Associated diseases: diabetes mellitus, HIV, tuberculosis, atopic conditions such as allergic rhinitis or asthma.

- Previous treatment: strengths of medication (be aware of the four groups of steroid potency), duration of treatment (often too short), and whether it worked or not.
- Type of work: hands in water and detergents all the time, exposure to other chemicals or irritants.
- Lifestyle and habits: washing with antiseptic soap will irritate already sensitive skin, exposure to chemicals such as cosmetics, hair products, perfumes, plants.

It is important to note the individual patient's expectations. It is not uncommon to find a patient who has been to several different health practitioners and who has had various combinations of steroids, antihistamines, antifungals, antibiotics, and advice. The patient is often very anxious to know what the definitive diagnosis is, whether there is definitive treatment that will cure the rash, and why they have this problem.

### 5.34.3 Examination

Take a look at the patient. Make sure the patient undresses enough to ensure adequate examination. Note the morphology of the lesions:

- Circumscribed, flat, non-palpable, changes in skin colour: macule, patch
- Palpable elevated solid masses: papule, nodule, plaque, wheal
- Circumscribed superficial elevations of the skin formed by free fluid in a cavity between the skin layers: vesicle, bulla, pustule, cyst
- Loss of skin surface: fissure, erosion, ulcer
- Material on the skin surface: crust, scale, peel
- Vascular: petechiae, purpura, telangectasia
- Other: lichenification, atrophy, excoriation, scarring
- Eczema is a complex morphology, but is very common and may be:
  - Acute: wet, red, vesicles, erosions, crusting
  - Chronic: dry, lichenified, excoriations.

Note the distribution of the lesions: Scalp, face, lips, mouth, trunk, body folds, limbs, hands and feet, nails. Some lesions also occur in particular

arrangements such as:

- Ring shaped (annular), for example, tinea infection (ringworm), syphilis, urticaria
- Clustered together, for example, herpes simplex, shingles, insect bites
- Linear (in a line), for example, scars, warts, insect bites
- Reticulate (in a network), for example, erythema ab igne, lichen planus.

If a diagnosis is not immediately apparent, the combination of history, morphological appearance, distribution and particular arrangements should enable a differential diagnosis to be made. For example:

- Tender, reddish nodules on the anterior surface of the lower legs suggests erythema nodosum, of which the two most common causes to exclude are tuberculosis and streptococcal infection
- Involvement of the palms of the hands and soles of the feet suggests syphilis, tick-bite fever, or psoriasis.

### 5.34.4 Investigation

- **Take a blood test**. Only two are generally needed: VDRL and HIV. All the allergy tests, such as IgE, RAST, eosinophil counts, are expensive and generally do not help one clinch a diagnosis.
- **Take a skin scraping**. If considering a fungus infection, especially in persistent skin rashes, it is best to confirm a diagnosis prior to treatment. Scrape some of the scales from the rash with a glass slide onto another slide, and send it to the laboratory. If scabies is considered, the scraping must be made of the deeper layers of the skin, until bleeding points appear.
- **Take a photograph**. Any average cell phone camera will do. Natural light is best, without a flash. Remember to get the patient's consent. Send it via MMS or email attachment to a dermatologist associated with your work place, accompanied by a short history.
- **Take a skin biopsy**. This is not for every rash, but certainly in persistent cases where everyone is guessing, lots of treatments have been tried, and the patient is losing hope and spending money, a

simple skin biopsy aids tremendously in making a proper diagnosis. The easiest method is a punch biopsy.

### 5.34.5 Assessment

The clinical diagnosis can quite often be placed into one of five major areas:

1 Infectious: bacterial, viral, fungal, parasitic, spirochetes
2 Eczema: atopic, contact, nummular, photosensitive, seborrhoeic, stasis
3 Drug related: drug hypersensitivity syndrome, urticaria, Stevens-Johnson syndrome, fixed drug eruption, lichenoid reaction
4 Psoriasis: plaque, erythrodermic, pustular, guttate, flexural (inverse)
5 Other: acne, erythema nodosum, erythema multiforme, lichen planus, lupus erythematosis, vitamin deficiencies, tumours (such as Kaposi's sarcoma) or melanoma.

This is not an exhaustive list, but from the history and examination, it is very useful to think in big categories and make sure one quickly sifts through these major areas and then pursues a management plan according to the most likely diagnosis while awaiting blood or biopsy results.

### 5.34.6 Management

1 Treat a specific diagnosis, not a rash.
2 Remove any offending agents (tight boots, perfume), deal with stress, reassure and discuss skin hygiene (use basic soaps).
3 Arrest pruritis. Use high enough dosages of antihistamines for a long enough time period. Sometimes a month of high dosages is needed.
4 Use steroids in sufficient amounts and adequate potency for short periods of time, expecting results and then taper down.
5 Be kind to the skin. Use liberal amounts of emulsifying ointment or aqueous cream, even occlusive dressings, not rubbing too hard, not scratching, and remember sunscreen. (Aqueous cream contains sodium lauryl sulphate, which can be very irritating to sensitive skins. If a patient reports worsening of symptoms, stop this cream.)

# 5.35 An approach to difficulty sleeping

*(Beverley Schweitzer)*

Insomnia is characterised by a lack of sleep that impacts negatively on daytime functioning. The effects of insomnia include feeling of fatigue, irritability, impaired concentration and performance. Attempts to self-medicate using alcohol and other substances may occur. Insomnia has been linked to diabetes and cardiovascular disease.

## 5.35.1 History

A sleep history requires a detailed description of the problem. Is the difficulty with falling asleep, staying asleep or early waking? When did it start and how often does it occur? Does it cause problems in daytime functioning?

Consider whether lifestyle, life cycle or environmental issues may be responsible:

- Did the onset coincide with a psychosocial stressor such as a change in work situation, loss of a relationship, shift work?
- Is the bedroom environment quiet, dark, comfortable, safe?
- Are their physiological changes associated with pregnancy or menopause?

Consider whether there are medical or neurological conditions that could cause insomnia:

- Are there symptoms that interfere with sleep: pain, a need to pass urine, diarrhoea, dyspnoea, anxiety, congested nose, cough, hot flushes or sweats?
- Are there comorbid conditions such as asthma, arthritis, Parkinson's disease, cancer, heart failure or shingles?

Consider whether there are medications that may cause insomnia, for evample, corticosteroids, theophylline, methylphenidate, diuretics, beta blockers.

Consider whether there are mental problems that may cause insomnia. Is there abuse of substances such as alcohol, nicotine or stimulant recreational drugs? Are there mental problems such as

anxiety, depression, dementia, attention deficit hyperactivity disorder, autism spectrum disorder?

Consider whether there are specific sleep-related disorders:

- Sleep apnoea. Does the person or their partner notice snoring and apnoeic episodes during the night?
- Restless leg syndrome. Does leg discomfort bother the person at night? Do their legs jerk at night?

When a specific cause is identified, it should of course be addressed. Patients who have insomnia associated with specific sleep disorders can be referred to a specialist sleep clinic, or to a respiratory clinic if sleep apnoea is present, depending on local protocols. Primary insomnia with no identifiable cause can be addressed through a combination of improved sleep hygiene, cognitive behavioural therapy and medication.

### 5.35.2 Basic sleep hygiene

People with insomnia should pay attention to basic sleep hygiene:

- Create a suitable environment for sleep – dark, quiet, safe. If necessary, use eye covers or ear plugs.
- The bedroom should be associated with sleep – avoid TV, computers, work and eating in the bedroom.
- Resolve concerns before going to bed. Relaxation techniques and exercises may help to calm the mind (Neff, 2016; Potter, 2016).
- Maintain routine times for going to bed and rising in the morning.
- Avoid caffeine-containing drinks in the afternoon and evening.
- A warm drink (with no caffeine or alcohol) can be calming.
- Be aware of becoming anxious about the inability to sleep – accept that you are resting even if you are not sleeping.
- Avoid smoking or other sources of nicotine.
- Avoid naps during the day.
- Ensure you do physical activity during the day.

### 5.35.3 Cognitive behavioural therapy

CBT can address insomnia that worsens or persists due to a cycle of anxious thoughts (I can't sleep, I will be tired tomorrow, I won't be able to concentrate at work, I'll make mistakes, I'll lose my job). CBT might look at replacing these thoughts with more helpful ones (While I'm not sleeping, I am still resting. I can use this time to practice my breathing and relaxation techniques).

### 5.35.4 Medication

When deciding to use sedative medication, one needs to weigh the benefits of sleep on the person's quality of life against the risks of medication. Medication for primary insomnia includes benzodiazepines and benzodiazepine-related drugs such as Zopiclone and Zolpidem. The latter group is less likely to produce dependence and withdrawal than benzodiazepines, but the risk is still present.

## 5.36 An approach to a patient who is stressed

*(Beverley Schweitzer)*

Stress occurs when one perceives the demands of a situation are greater than one's available resources to deal with it. Stress is related to particular situations, while anxiety may be generalised and persists even when there is no stressor or the stressor is no longer present. Common stressors in South Africa are crime, unemployment, family members taking drugs, gangs, family conflict, poverty, food insecurity, debt, poor living conditions, and concern about children. People often present symptoms to their primary care provider due to underlying problems of living.

A person who is stressed may present with a number of physical and psychological symptoms such as muscle pain (especially in the upper back and neck), headaches, dizziness, nausea, heartburn, abdominal discomfort, fatigue, insomnia, frequency of micturition, palpitations, chest pain (especially under the breast), irritability, poor memory and concentration and many others – some of which may be vague and confusing and culturally specific such as 'painful neck veins' or 'thinking too much'.

Before labelling a person as ‘stressed’ consider if they have another medical condition, medication or more specific mental disorder causing their symptoms.

On examination, one might find raised blood pressure or pulse rate, jumpiness (an overreaction to minor stimuli) or an inability to relax shown by sitting stiffly. People who are stressed often make the doctor feel stressed. They might interrupt, ask a barrage of questions or repeat themselves. They might seek a lot of reassurance, but not respond to repeated reassurance.

Once one has recognised the signs and symptoms of stress, one can invite the patient to discuss their stressors. Hearing a person talk about what is upsetting them, does not mean that one has to solve the problem. Listening can be therapeutic in itself. On the other hand there may be simple interventions that can make a significant difference – the contact number of legal aid, information on the basic conditions of service act, narcotics anonymous for family members of people who are abusing drugs, the parent support centre, or advice regarding eligibility for social grants. It is important to have a list of the contact details of such resources available. Help the person to see the connection between their symptoms and the underlying problems of living.

A problem-solving approach can be useful. Brainstorm options with the patient. Write down possible solutions – even unrealistic ones as they may unleash creative possibilities. Patients often surprise their doctors with inventive ideas.

Sick leave may be given for stress when rest is required. However, it is only a temporary measure and the cause of the stress needs to be addressed to prevent recurrence.

Resilience refers to the ability to cope with stressful situations or to ‘bounce back.’

Using the model in Table 5.21, one can look at helping a person who is stressed to develop their resilience.

**Table 5.21** Model of resilience

| Aspects of resilience | How it can be developed in the consultation |
|---|---|
| Connection with others | Connect with your patient by means of empathic listening. Encourage connection with others such as family, friends, suitable groups where friends might be made. |
| Physical well-being | Encourage healthy eating, exercise, sufficient rest and sleep. Avoid unhealthy coping mechanisms such as alcohol, drugs or overeating. |
| Awareness | Encourage self-awareness of thoughts and feelings – both emotional and physical, such as 'where in the body do you feel the stress?' |
| Internal locus of control | Look at options – it is important for a person to feel that they are in control by means of the choices they make – even if there are not easy options. |
| Social support/interdependence | Encourage contact with formal support structures (keep a list of contact numbers) and encourage informal support such as family, friends and people in similar situations. |
| Sense of self-worth and self-efficiency | Remind the person of the difficulties that they have successfully overcome previously and acknowledge the strength they have shown with the current stress. |
| A sense of meaning/spirituality | Encourage the person to find meaning in the current stressful situation. |
| Understanding that setbacks are part of life | While not trivialising a stressful event, it is important to help the patient see it in perspective. |

## 5.37 An approach to a patient who is suicidal

*(Beverley Schweitzer)*

People who are suicidal are often trying to escape from a situation that they see as insurmountable. Suicide may be an attempt to seek relief from overwhelming feelings of shame, guilt, rejection, loss, loneliness or feeling like a burden to others – often part of a major depressive disorder.

Asking patients about suicidal ideation does not precipitate suicide, but often provides relief to the person who is experiencing these terrifying thoughts. Every patient with depression, or other high risk conditions, should be asked about suicidal thoughts at each visit. If suicidal ideation is present, one needs to ask about plans. Examples are 'This may be a difficult question, but does it ever become so bad that you feel you would be better off dead?' or 'Do you ever think of harming yourself?' If so, one can continue with 'Have you made any plans?' Examples would be collecting a lethal dose of pills, organising rope, poison or pipes to carry out the suicide and writing a suicide note. If the person has access to a gun, it must be removed. If a person has

threatened to use their gun on themselves or another person, the police are obliged to remove the gun, even from a licenced user. The same applies to any person who has a mental condition, tends to be violent or has a dependence on alcohol or drugs. Breach of confidentiality is superseded by the risk to the well-being of the patient or a third party.

### 5.37.1 Suicide risk assessment

The most common method of suicide is hanging, followed by firearms and poisons. Although based on factors that increase risk in population studies, currently available suicide risk assessment tools do not make very accurate predictions any better than the chance for an individual person.

The SAD PERSONS mnemonic refers to population-based risk factors:

- **S**ex – Men are more likely than women to commit suicide
- **A**ge – Adolescents and older people
- **D**epression and more importantly, hopelessness
- **P**revious suicide attempts
- **E**xcessive alcohol or drug use especially drugs that result in loss of inhibition
- **R**ational thinking loss, such as psychosis
- **S**ingle, separated, divorced or widowed; in fact those who never married are at highest risk
- **O**rganised or serious previous attempt
- **N**o social support, especially homelessness and those living alone
- **S**tated future intent relates to actual plans for performing the suicide in a way that will allow it to be completed without interruption.

Other population-based factors associated with higher risk are those:

- Who have recently been discharged from psychiatric hospital
- Who have access to firearms or toxins
- Who show high impulsivity
- Who experience chronic illness or pain
- Who have a history of adverse childhood experiences

- Who have a biological family member who has taken his or her own life
- Who have experienced a recent suicide of a peer, recent bereavement or the anniversary of the loss of a loved one or recent loss of a relationship.

### 5.37.2 Management of a person who is suicidal

Having assessed someone as being at risk of suicide, the steps discussed in the sections that follow can be taken.

#### Reduce immediate risk

The person requires emotional containment by means of an empathic and respectful connection with the health provider and physical containment, usually in a hospital. If the suicidal person refuses hospitalisation, the Mental Health Care Act (No. 17 of 2002) makes provision for the involuntary admission of a person who is at risk of harming him- or herself (Zabow, 2015).

#### Manage underlying factors

Underlying psychiatric conditions (for example, depression) need to be assessed and managed. Crisis intervention is needed for acute psychosocial stressors. Substance abuse needs to be managed. Underlying medical conditions and chronic pain need to be treated.

Psychosocial issues in adolescents include relationship problems with parents, boy or girlfriends, peers (for example, bullying) or siblings. They may have issues relating to school or work, self-esteem, sexual identity, alcohol or drug abuse.

#### Monitoring and follow up

This includes long-term management of the underlying factors mentioned in the previous section.

Skills training regarding problem solving, assertiveness and management of impulsivity can be given, often by occupational therapists, psychologists or social workers. Encourage family connectedness and strengthening of other social support.

Arrange for regular follow-up appointments with yourself as the medical officer or family physician and/or any of the following persons: the community psychiatric nurse, social worker, psychologist, or psychiatrist. Support groups such as the South African Depression and Anxiety Group (SADAG) can be contacted.

Give emergency contact numbers of staff to call in an emergency. Other useful numbers are:

- Suicide Crisis Line: 0800 567 567 or SMS 31393
- SADAG Mental Health Line: 011 234 4837.

## 5.38 Approach to tiredness

*(Mukund Bahadur Khatry-Chhetry)*

Tiredness is a common complaint that if persistent may prompt a medical consultation. It may be described as feeling lethargic, weak, listless, lacking energy, tired, worn out, weary, exhausted, malaise, or run down. If the patient complains of chronic tiredness, is unable to complete routine tasks and finds that it interferes with work, social or family life then underlying causes must be considered. A holistic approach to the patient is required to explore the possibility of physical, psychological or contextual issues.

### 5.38.1 Lifestyle issues

Tiredness may be a normal response to doing too much at home or work, shift work or pregnancy.

### 5.38.2 Medical problem

Consider possible medical causes in your history and examination (see Table 5.22). For example, heart disease, lung disease, or anaemia may be associated with shortness of breath or tiring easily with minimal activity, diabetes may be associated with polyuria, polydipsia, or blurred vision, and hypothyroidism may be associated with feeling cold, dry skin and brittle hair. Investigations should be purposefully selected on the basis of the history and examination, but could include HIV, pregnancy test, GeneXpert, haemoglobin, full blood count, electrolytes,

glucose, urinalysis and/or creatinine, thyroid stimulating hormone, or tests for vitamin deficiency.

### 5.38.3 Are there any medications that might cause tiredness?

Ask the patient about prescription or over-the-counter medication that they may be taking. Many medications may cause tiredness but common examples include benzodiazepines, sedating antidepressants, antihistamines, or steroids.

**Table 5.22** Medical causes of chronic tiredness

| Causes | Disease conditions |
|---|---|
| Metabolic or endocrine problems | Anaemia, diabetes, lactic acidosis, electrolyte imbalances, hypothyroidism, kidney disease, liver disease |
| Cardio-respiratory problems | Arrhythmias, asthma, chronic obstructive pulmonary diseases, congestive heart failure, coronary artery disease, pneumonia, valvular heart disease |
| Infections | Tuberculosis, HIV infection, Epstein-Barr virus cytomegalovirus, hepatitis, influenza (flu), malaria |
| Vitamin deficiencies | Folic acid, iron, vitamin B12, vitamin D |
| Others | Coeliac disease, cancer, fibromyalgia, obesity, chemotherapy, radiation therapy |

### 5.38.4 Is there a mental problem or specific disorder?

Screen the patient for mental problems by asking about their mood, level of interest, sleep problems, anxiety or worry, as well as use of alcohol or other substances. Depression, anxiety disorders, bereavement, alcohol or substance abuse as well as eating disorders may be associated with tiredness. Sleep disorders should also be considered such as sleep apnoea.

### 5.38.5 Chronic fatigue syndrome

Chronic disabling fatigue or at least six months' duration that is present for at least 50% of the time which affects both physical and mental functioning and in which no other cause can be found may be due to chronic fatigue syndrome. Myalgia, sleep- and mood disturbance may be associated.

## 5.39 Approach to vaginal bleeding

*(Hannes Steinberg)*

A normal menstrual cycle takes 28 days, although some women may have a shorter cycle of 21 days. Bleeding may take five to seven days with total blood loss of approximately 40 ml. Deviation from normality is associated with the following terms:

- Menorrhagia: excessive uterine bleeding in amount and duration that occurs at regular intervals
- Metrorrhagia: uterine bleeding at irregular intervals
- Menometrorrhagia: frequent irregular excessive bleeding
- Oligomenorrhoea: infrequent irregular bleeding occurring at intervals of more than 45 days.

Prior to the reproductive years (before menarche) bleeding is rare. Newborn females may bleed vaginally due to an excess of maternal oestrogens during pregnancy leading to a short 'withdrawal' bleed. At times infants present with urethral prolapse accompanied by bleeding. During experimentation young girls may insert foreign bodies into the vagina. When forgotten there, these are likely to become infected and may present as vaginal bleeding with a discharge. An infection such as vulvo-vaginitis could also present with vaginal bleeding.

In their reproductive period, about 20% of women will present with problems related to abnormal uterine bleeding. Causes of abnormal bleeding are listed in Table 5.23.

After the reproductive years, post-menopausal bleeding is defined as any amount of vaginal bleed that occurs at least six months after the last normal menstrual period. Tumours of the genital tract are more common and need to be excluded. This includes mild bleeding after intercourse known as 'contact bleeding'. Atrophy of the genital tract may occur during this time leading to bleeds with minor trauma.

**Table 5.23** Cause of abnormal vaginal bleeding

| Category | Specific examples |
|---|---|
| Pregnancy related | Spontaneous or threatened abortion – early pregnancy<br>Placenta praevia or an abruptio placenta – late pregnancy<br>Ectopic pregnancy<br>Gestational trophoblastic disease |
| Hormonally related | Anovulation<br>Excessive oestrogen intake / production |
| Vulvovaginal | Condylomata<br>Cervical polyp<br>Cervical cancer<br>Cervicitis<br>Trauma / sexual assault |
| Uterine | Fibroids<br>Endometrial polyp<br>Endometrial hyperplasia / carcinoma |
| Ovarian | Tumours |
| Systemic | Coagulopathy |

### 5.39.1 History

- **Age:** The probability of different conditions is age related and should guide the diagnostic process. For example, dysfunctional bleeding is more likely in younger patients and carcinoma more likely in older patients.
- **Pattern of bleeding:** What is the normal menstrual pattern and when did it change? Is the bleeding regular (cyclical), irregular in anovulatory cycles or completely irregular (non-cyclical)? How much bleeding is there? For example, is there only spotting or heavy bleeding with clots? How frequently must the patient change her sanitary wear?
- **Abdominal pain:** Is there lower abdominal pain? Is the pain bilateral or unilateral? Is there usually dysmenorrhoea? Is there dyspareunia?
- **Family planning:** What method of family planning is being used or when was it stopped?
- **Sexual history:** Is the patient sexually active? Any possibility of sexual abuse or trauma?
- **Infection:** Are there any symptoms of infection? For example, a fever, vaginal discharge, dyspareunia or dysuria?

- **Past medical history:** Previous pregnancies, previous Pap smears, other medical conditions or medication that could cause bleeding (for example, haemophilia, Warfarin use) or interfere with family planning.
- **Stress:** Is there a possible mental disorder or history of recent psychosocial stress?
- **Pregnancy:** A pregnancy test should be performed. The question of whether the pregnancy is intrauterine or extrauterine (ectopic) should be considered.

### 5.39.2 General examination

Routine observations should include temperature, pulse and assessment of anaemia. A high temperature suggests infection, a tachycardia may suggest haemodynamic instability and severe blood loss, a blood pressure should then be taken, clinical signs of anaemia can be followed up by a fingerprick haemoglobin determination (Hbg%) or full blood count. The abdomen should be examined.

### 5.39.3 Visualisation of the lower genital tract

A speculum examination of the lower genital tract should be performed. Confirm that the bleeding is really coming from the genital tract. Is the lower genital tract normal? The vulva, vagina and particularly the cervix should be inspected. A Pap smear should be taken. If bleeding excessively, the blood can be gently cleaned from the cervix with a cotton swab. Macroscopic suspicion of a cervical cancer should lead to referral.

### 5.39.4 Bi-manual palpation

Is the upper genital tract normal? Consider:

- Pregnancy with enlarged uterus
- Ectopic pregnancy with unilateral tenderness, rigidity, mass and cervical excitation
- Inflammation with tenderness and cervical excitation
- Ovarian cysts or enlargement

- Fibroids with enlarged uterus.

If the upper and lower genital tracts are normal on examination, other causes should be considered. These can be considered as dysfunctional bleeding, side effects of family planning (injectable progesterone, oral contraceptives, IUCDs) or more rarely endocrinopathies (polycystic ovaries with chronic anovulation, prolactinomas, thyroid disease, diabetes) and bleeding disorders (thrombocytopenia, liver disease, warfarin therapy).

Dysfunctional bleeding is common at the time of the menarche and menopause and occasional anovulatory bleeds can occur in all women. As a family physician do not forget the effects of psychosocial stress, weight loss and weight gain on the hypothalmic-pituitary-ovarian axis.

### 5.39.5 Assessment

Any identified specific cause should be treated. Patients with severe bleeding and anaemia may need to be referred immediately. If no cause is identified, an empirical approach can be adopted. If three courses of empirical treatment are not successful, further investigation or referral should be made. The intrauterine cavity should be explored, for example, by pelvic ultrasound scan (intramural or subserosal fibroids, functional ovarium cysts, other ovarian tumours) or hysteroscopy (polyps, tumours, submucous fibroids). In older women, an Endopap, Acurette or similar intrauterine sampling device can be taken as an initial investigation of the intrauterine cavity.

## 5.40 Approach to vaginal discharge

*(Mukund Bahadur Khatry-Chhetry)*

### 5.40.1 History and examination

The following information is important:

- Colour, any blood, smell
- Duration
- Associated symptoms such as lower abdominal pain, pruritus, fever

- Last menstrual period, contraception and possibility of pregnancy
- Use of tampons, douches, lubricants or other products in the vagina
- Patient's perspective on the possibility of a sexually transmitted infection or causation
- Sexual partners, for example, new partners, unfaithful partners, intimate partner violence, and use of condoms
- Previous cervical smears and results, previous treatment for vaginal discharge or diagnosis of HIV.

The patient should be examined to confirm the presence of a discharge and to observe it directly. A speculum and bimanual examination should be routine and focus on:

- The appearance and origin of the discharge
- Appearance of the cervix and opportunity for a cervical smear
- Any cervical excitation tenderness or adnexal tenderness and masses
- Any uterine abnormalities or pregnancy
- Any other pathology such as genital ulcers, carcinoma or foreign bodies.

### 5.40.2 Physiological discharge

The physiological discharge is due to normal secretions from the cervix and vagina mixed with bacteria from the normal flora and shed epithelial cells. Patients with a white physiological discharge are otherwise asymptomatic. The discharge normally has a pH of 3.8 to 4.5, a wet slide with normal saline solution would show a few white cells, no clue cells and a predominance of lactobacilli seen as long rod shaped bacteria.

Increased physiological discharge occurs in:

- Puberty
- Pregnancy
- Women who do little physical exercise
- Menopause
- Ovulation

- Cervical ectopy
- Sexual stimulation.

### 5.40.3 Pathological discharge

Causes of pathological discharge are listed below. The ability to reach a reliable diagnosis based on the appearance of the discharge is poor. Discharge may be due to an overgrowth of the normal flora as in:

- Bacterial vaginosis
- Candida infection.

Discharge may be due to a sexually transmitted infection as in:

- *Trichomonas vaginalis* infection
- *Neisseria gonorrhoea* infection
- *Chlamydia trichomatis*.

A foreign body, such as a forgotten tampon, may present with a foul-smelling infected discharge.

Discharge that is often blood stained may be a sign of carcinoma of the cervix or other less common carcinomas.

Oestrogen deficiency at the menopause may lead to a discharge from atrophic vaginitis.

A discharge may complicate pregnancy in the case of a threatened or inevitable abortion, premature rupture of membranes and in the post-partum period as lochia gradually reduces.

The commonest of the above pathological causes are bacterial vaginosis, trichomonas vaginalis and candida infection.

### 5.40.4 Bacterial vaginosis

The process seems to start with a decrease in lactobacilli, resulting in reduced production of peroxidase in the vagina thus increasing the vaginal pH. This allows the overgrowth of facultative anaerobic bacteria such as *gardenerella vaginalis, mycoplasma homonis, mobiluncus* species and other anaerobes. The diagnosis is confirmed if three of the following are present:

- A grey-white vaginal discharge, which is sometimes foamy

- A positive amine or Whiff test (the detection of a fishy smell when a drop of 10% of potassium hydroxide is added to a drop of vaginal fluid)
- A vaginal pH > 5 (with no contamination from cervical mucus, blood or semen as they can all raise the pH)
- Clue cells (epithelial cells with a stippled appearance from being covered with bacteria) in a normal saline wet smear.

### 5.40.5 Trichomonas vaginalis infection

This is normally sexually transmitted, but can also be transmitted in other ways. The organism can survive in chlorinated swimming pools, hot tubs and tap water. Perinatal transmission is also possible, but beyond infancy its presence is strongly suggestive of child sexual abuse.

The clinical features include a malodorous, frothy green-yellow discharge. The diagnosis is confirmed by microscopically examining a normal saline wet smear. The organism is recognised by its characteristic jerky movements in 50–70% of the trichomonads.

### 5.40.6 *Candida vaginitis*

This is caused by *Candida albicans* in more than 70% of all cases. The infection is often linked to a predisposing cause such as HIV infection, diabetes, steroid therapy, malnutrition, pregnancy, menstruation, oral contraceptives, prolonged broad spectrum antibiotic use, immunosuppressive medications and coitus. Most of these suppress immunity or alter the local environment in the vagina allowing *Candida* to become pathological.

Clinical features include an itchy, curd-like, cheesy yellow or white discharge adherent to the vulvovaginal mucosa leaving a raw bleeding surface when detached. Superficial dyspareunia is sometimes present. The pH is 4.5 or less. Infection under the foreskin of the penis of the sexual partner may also occur.

The diagnosis is confirmed by making a wet smear of the discharge with 10% potassium hydroxide where hyphae and spores are seen microscopically. Any predisposing cause should be considered.

### 5.40.7 Pelvic inflammatory disease

Pelvic inflammatory disease results from ascending infection that causes inflammation of the uterus and adnexa. It is a sexually transmitted disease caused by a mixture of organisms of which *Neisseria gonorrhoea, Chlamydia trachomatis* and anaerobes such as *Bacteroides* are the most common.

Symptoms include lower abdominal pain, fever, and foul smelling yellow purulent vaginal discharge. Examination may reveal a sick or ill-looking patient with a raised temperature, lower abdominal tenderness (or generalised tenderness due to peritonitis if a tubo-ovarian abscess has burst), and vaginal discharge from the cervical os. There is positive cervical excitation tenderness and a pelvic mass may be palpable in the posterior fornix.

Diagnosis is usually made clinically, but can be confirmed by pelvic ultrasound or laparoscopic examination. A cervical swab should be taken for microscopy, culture and sensitivity. Blood should be taken for culture and sensitivity if the patient is febrile.

### 5.40.8 Syndromic management

In primary care it may be difficult to reliably make a specific diagnosis as infections are frequently mixed, clinical features non-specific, time is limited and laboratory services far away. A syndromic approach to the initial management has therefore been recommended, which ensures the most likely causes are all treated simultaneously at the one visit. In patients suspected of having a sexually transmitted infection it is important to manage the patient holistically and not just prescribe medication. The following issues should be considered:

- Condoms should be used during treatment
- Contact tracing is needed to also treat the sexual partner(s)
- Counselling on safer sex, condom use, testing for HIV and syphilis
- Contraception needs
- Cervical cancer screening
- Completing all the treatment even if the symptoms improve quickly.

A follow-up visit may be needed to ensure treatment is successful, continue counselling and to give the results of any investigations.

Vaginal discharge syndrome (Adapted from PACK: Knowledge Translation Unit, University of Cape Town Lung Institute and Western Cape Government, 2015):

- Treat instead for bacterial vaginosis if the patient was not sexually active in the last three months
- Give ceftriaxone 250 mg IM stat (dissolve in 0.9 ml lidocaine 1% without adrenaline) Azithromycin 1 g orally stat
- Metronidazole 2 g orally stat
- If the patient has a severe penicillin allergy, omit ceftriaxone and increase azithromycin to 2 g orally stat
- If the symptoms persist after seven days, give metronidazole 400 mg 12 hourly for seven days
- Investigate further if the symptoms persist.

Lower abdominal pain syndrome (LAP):

- Give ceftriaxone 250 mg IM stat (dissolve in 0.9 ml lidocaine 1% without adrenaline)
- Give azithromycin 1 g orally stat
- Give metronidazole 400 mg 12 hourly for seven days
- If the patient has a severe penicillin allergy, omit ceftriaxone and increase azithromycin to 2 g orally stat
- Treat pain with ibuprofen 400 mg 8 hourly with food for five days
- Review after 2–3 days for response.

## 5.41 Approach to vomiting

*(Hanneke Brits)*

Vomiting is the forceful expulsion of stomach contents through the mouth usually associated with nausea. It is an unpleasant symptom of an underlying condition and therefore the condition should be treated rather than the symptom.

### 5.41.1 Red flags

Vomiting with:

- Diarrhoea plus shock
- Peritonitis
- Altered level of consciousness
- Large amounts of blood in vomitus
- Jaundice
- Other symptoms or signs compatible with lactic acidosis (on ARVs, nausea, abdominal pain or swelling, weight loss, fatigue, shortness of breath).

Resuscitate these patients immediately and transfer urgently after stabilisation.

### 5.41.2 Most common causes

- Gastrointestinal conditions, for example, gastroenteritis, obstruction, appendicitis, pancreatitis or cholecystitis
- Infections, for example, urinary tract infection, otitis media or hepatitis
- Physiological in pregnancy and motion sickness
- Metabolic and endocrine conditions causing hypoglycaemia, ketosis, uraemia or porphyria
- Neurological conditions, for example, migraine, head trauma, raised intracranial pressure or central nervous system infections
- Adverse drug reaction, for example, to TB medication, ARVs, antibiotics, analgesics, digoxin, or chemotherapy
- Psychological issues, for example, attention-seeking behaviour or bulimia.

### 5.41.3 Gathering information

Explore the causes mentioned in the previous section and try to gather relevant information. Specifically attend to:

- Appearance of the vomitus, particularly the presence and amount of blood
- Duration of vomiting

- Ability to keep fluids and food down
- Associated symptoms, for example, diarrhoea, abdominal pain or fever
- The use of chronic or self-medication, for example, TB or ARV treatment
- The use of traditional medication
- Possibility of pregnancy.

### 5.41.4 Examination

If the cause can be established from the history, start with vital signs, a general examination and a focused systemic examination, for example, in gastrointestinal conditions, assess for dehydration and do an abdominal examination.

If the cause is not clear, a full examination as well as side-room investigations may guide you.

### 5.41.5 Side-room investigations

- Blood glucose to detect hypo or hyperglycaemia
- Urinalysis to exclude a urinary tract infection or ketosis
- Pregnancy test
- Other special investigations per indication, for example, lactic acid for lactic acidosis or amylase for pancreatitis.

### 5.41.6 Principles of management

- Ensure that the patient is well hydrated (see management of diarrhoea)
- Treat the underlying cause, for example, antibiotics for a urinary tract infection
- Stop medication that can cause vomiting (if possible)
- If an antiemetic is indicated, use a drug appropriate to treat the mechanism or cause, for example, metoclopramide in migraine or to assist in gastric emptying, antihistamines for nausea and vomiting associated with motion sickness and vertigo,

dexamethasone for raised intracranial pressure or odansetron for nausea and vomiting associated with chemotherapy
- Advise the patient to eat small, frequent non-greasy meals
- Admit in hospital if the patient cannot keep down fluids or medication
- Follow up if there is no improvement within 24 hours or if the condition worsens.

## 5.42 Approach to weight loss

*(Mukund Bahadur Khatry-Chhetry)*

Weight loss occurs when the balance between energy intake, absorption, utilisation and loss is disturbed. The complaint of weight loss should be confirmed by comparing the current weight with previous recordings and asking about whether clothes are looser than before.

Weight loss may be intentional if the patient is dieting, taking medication to lose weight, or engaging in strenuous physical exercise.

If weight loss is unintentional and is more than 5% of body weight, an underlying cause should be looked for. Again a holistic approach that considers physical, psychological and contextual issues is required.

### 5.42.1 Lifestyle issues

Some patients may be suffering from malnutrition due to poverty and food insecurity.

### 5.42.2 Medical problems that may cause weight loss

Consider the possibility of HIV, TB or diabetes before thinking of other conditions.

Common cancers should be considered such as cervical cancer (vaginal discharge or abnormal bleeding), breast cancer (breast lump or nipple discharge), bladder or prostate cancer (haematuria or lower urinary tract symptoms), colon cancer (change in bowel habit), or lung cancer (chronic cough, haemoptysis, tobacco smoking).

Consider other gastrointestinal conditions (anorexia, nausea, vomiting, sore mouth, dysphagia, diarrhoea), cardiorespiratory, renal, neurological or chronic inflammatory conditions that may be associated with weight loss. Hyperthyroidism may be associated with tachycardia, tremor, irritability, heat intolerance and goitre.

Investigations should be purposefully selected after a history and examination, but could include GeneXpert, HIV, glucose, cervical smear, urinalysis, faecal occult blood, chest radiograph, full blood count, and thyroid stimulating hormone, ESR or C-reactive protein.

### 5.42.3 Medications that might cause weight loss

If the patient is on antiretroviral medication, consider lactic acidosis (associated nausea, vomiting, sore muscles, shortness of breath, abdominal pain or distension). Other prescription medications that may cause weight loss include serotonin reuptake inhibitors, levodopa, digoxin, metformin, non-steroidal anti-inflammatory drugs and anti-cancer drugs. Some herbal or non-prescription drugs may also be associated with weight loss.

### 5.42.4 Consider the possibility of a mental problem or specific disorder

Inadequate food intake or loss of appetite may be due to a mental problem such as depression, anxiety disorder, alcohol or substance use disorder, or eating disorders. Screen patients for symptoms of mental problems such as sadness, loss of interest, loss of energy, sleep problems, anxiety or worry and stress.

## 5.43 An approach to wheeze

*(Arina Schlemmer)*

Wheeze may be inspiratory, expiratory, localised or diffuse and of a high or low pitch. Causes of wheezing can be categorised based on their location in one of the following three areas (Irwin, 2015):

1 The intrathoracic lower airways which include airways narrower than 2 mm in diameter. Conditions here typically cause diffuse

expiratory wheeze.

2 The intrathoracic central airways, including the intrathoracic trachea and bronchi at least 2 mm in diameter. Conditions here such as a foreign body, tumour or congenital abnormality typically cause a localised wheeze.

3 The extrathoracic upper airway which includes the nose, mouth, pharynx, larynx, and extrathoracic trachea. Obstruction here may cause stridor (inspiratory wheeze).

In adults, while asthma and COPD are the most common causes of wheezing, a variety of other conditions can cause airflow obstruction and thus wheezing. So called 'cardiac asthma' is due to cardiac failure and others signs of this will be present such as oedema, crepitations or crackles in the lungs.

The first step in assessing an *adult* patient with wheezing is to determine the severity of respiratory distress. Urgent attention should be given if the patient is breathless at rest or while talking, is using accessory muscles to help them breath, or has a respiratory rate > 30 breaths/minute. Immediate treatment of the wheeze may be necessary with oxygen, nebulised bronchodilators (or via spacer) and steroids (oral or intravenous). Monitor oxygenation with a pulse oximeter or, if available, with arterial blood gases.

Consider other causes of cough or dyspnoea as discussed earlier in this chapter. It is important to distinguish asthma and COPD from each other. Table 5.24 helps to distinguish asthma from COPD. Diagnostic tests such as spirometry and radiographs should be directed to the most likely cause. For example, reversibility of airways obstruction is a feature of asthma while post-TB fibrosis and bronchiectasis may be seen on a chest X-ray.

**Table 5.24** Distinguishing asthma from COPD

| Asthma likely if: | COPD likely if: |
|---|---|
| • Onset before 20 years of age<br>• Associated hay fever, eczema, allergic conjunctivitis, allergies<br>• Intermittent symptoms with normal breathing in between<br>• Symptoms worse at night, early morning, with cold or stress<br>• Client or family have a history of asthma | • Onset after 40 years of age<br>• Symptoms are persistent and worsen slowly over time<br>• Cough with sputum starts long before difficulty breathing<br>• Client is or was a heavy smoker (tobacco/ marijuana) or miner<br>• Previous doctor diagnosis of COPD or previous diagnosis of TB |

**Source:** Knowledge Translation Unit, University of Cape Town Lung Institute and Western Cape Government (2015) *PACK – Primary Care Guideline for Adults*, Western Cape edition

In *children* one should again start by assessing the severity of respiratory distress. A normal respiratory rate is below 60 breaths/minute for a new born up to 2 months, 50 breaths/minute for an infant up to 12 months and then 40 breaths/minute for a toddler up to 5 years. In infants, look also for chest indrawing as a sign of respiratory distress. Immediate treatment of the wheeze may be necessary with a nebulised bronchodilator (or via spacer). Oral prednisolone should be considered in those with recurrent wheeze.

In children wheezing can be caused by bronchiolitis, episodic viral wheeze, atopic wheeze/asthma, transient infant wheeze or inhaled foreign bodies (BPJ, 2013).

The history is the most important aspect of assessment of a wheeze in a young child. It is important to describe wheeze to the caregivers and check that this fits their description of the child's symptoms. The clinical definition of a wheeze is a high-pitched, musical or whistling sound coming from the chest.

Enquire about:

- The nature and duration of the wheeze, whether it is present constantly or intermittently
- The presence of other respiratory symptoms such as cough
- Exacerbating factors and triggers
- Previous episodes
- Smoking status of the household

- Whether the child has ever had eczema or other symptoms or signs of atopy
- Whether there is a family history of atopy.

The child's wheeze should be assessed during the examination to confirm if it fits the clinical definition of wheeze. Include a general examination, respiratory rate, heart rate, and temperature and oxygen saturation. In a child with acute wheeze, the examination should assess whether concurrent respiratory infection is present. Observe for signs of hyperinflation and respiratory distress. Perform auscultation and note any wheeze, crackles and whether there are focal sounds. Some extra pulmonary findings to look out for are tonsillar hypertrophy, lymphadenopathy, thyroid enlargement, or a surgical scar (BPJ, 2013).

# 6 Managing common conditions

## 6.1 Introduction

A recent primary care morbidity survey identified the top 25 diagnoses in South African primary care (Mash, 2014). This chapter gives an outline of the management of the most common chronic conditions, including mental disorders.

## 6.2 Management of hypertension

*(Thierry Ngoyi)*

The clinical management should be based on the latest South African guidelines which were last published in 2014 by the South African Hypertension Society (Seedat, Rayner, Veriava, 2014) (see Figure 6.1).

### 6.2.1 Check the blood pressure

Management decisions and lifelong treatment will be based on the blood pressure measurement. This measurement therefore needs to be as accurate as possible. A number of factors need to be taken into account:

- Is the BP machine accurate and recently calibrated?
- Are you using the correct size cuff? Using too small a cuff in an obese patient may produce an artificially high reading.
- Is the patient relaxed and sitting or lying down?
- Has the patient recently smoked tobacco, drunk caffeine or eaten a meal?
- Is there tight fitting clothing around the upper arm?
- Are you supporting the arm at the level of the heart?
- Have you considered the effect of white coat hypertension? Blood pressure increases when the patient sees the doctor and may decrease with repeated readings as they relax.

A diagnosis of hypertension is not made on the basis of one reading. A mildly raised blood pressure can be repeated at the next visit in a few weeks time, a moderately raised blood pressure can be repeated in a few days' time and a severely raised blood pressure can be repeated in a few hours time.

### 6.2.2 Clinical assessment and plan

#### Look for other cardiovascular risk factors

In addition to the blood pressure reading, information on all cardiovascular risk factors should be obtained:

- Family history of premature cardiovascular disease (men < 55 years, women < 65 years)
- History of tobacco smoking
- Evidence of being overweight/obesity (BMI or waist circumference > 102 cm in men and > 88 cm in women)
- Dyslipidaemia (xanthoma, total cholesterol > 6.5 mmol/l or LDL-cholesterol > 4.0 mmol/l or HDL-cholesterol < 1 mmol/l in men and < 1.4 mmol/l in women)
- Diabetes mellitus (check blood glucose)
- Age (> 55 years in men and > 65 years in women).

Calculate the person's cardiovascular risk, which is usually expressed as the risk of a heart attack or stroke in the next 10 years. A non-laboratory risk tool has been developed in South Africa (Knowledge Translation Unit, University of Cape Town Lung Institute and Western Cape Government, 2015). Counselling to reduce risk would be warranted in those with a risk of 10% or more. Treatment with statins is usually recommended if the risk is more than 20%.

#### Look for evidence of early target organ damage

If there is already evidence of early target organ damage, the cardiovascular risk is obviously increased:

- Heart: left ventricular hypertrophy on ECG
- Kidneys: microalbuminuria (if available), proteinuria

- Kidneys: slightly elevated creatinine (115–133 μmol/l in men and 07–124 μmol/l in women).

### Look for evidence of associated clinical conditions

If there are clinical signs and symptoms of associated clinical conditions, the need to treat is clear:

- Cardiac failure
- Ischaemic heart disease
- Peripheral vascular disease, for example, bruits over carotid and renal arteries and poor peripheral pulses
- Chronic kidney disease, for example, proteinuria, haematuria, raised creatinine and decreased glomerular filtration rate
- Stroke or transient ischaemic attack
- Advanced retinopathy, for example haemorrhages or exudates and papilloedema.

### Assess the patient on overall cardiovascular risk

Table 6.1 shows how one can combine the information on risk factors, target organ damage and associated clinical conditions with the blood pressure to make an assessment of cardiovascular risk. The management of the patient is based on this total risk assessment and not the isolated blood pressure reading as per Figure 6.1.

**Table 6.1** Stratification of cardiovascular risk in four categories

| Blood pressure (mmHg) | | | | | |
|---|---|---|---|---|---|
| | Normal SBP 120–129 Or DBP 80–84 | High normal SBP 130–139 or DBP 85–89 | Mildly raised SBP 140–159 or DBP 90–99 | Moderately raised SBP 160–179 or DBP 100–109 | Severely raised SBP > 180 or DBP > 110 |
| No other risk factors | Average risk | Average risk | Low added risk | Moderate added risk | High added risk |
| One to two risk factors | Low added risk | Low added risk | Moderate added risk | Moderate added risk | Very high added risk |
| Three or more risk factors, subclinical organ damage or diabetes | Moderate added risk | High added risk | High added risk | High added risk | Very high added risk |
| Established cardiovascular or renal disease | Very high added risk | Very high added risk | Very high added risk | Very high added risk | Very high added risk |

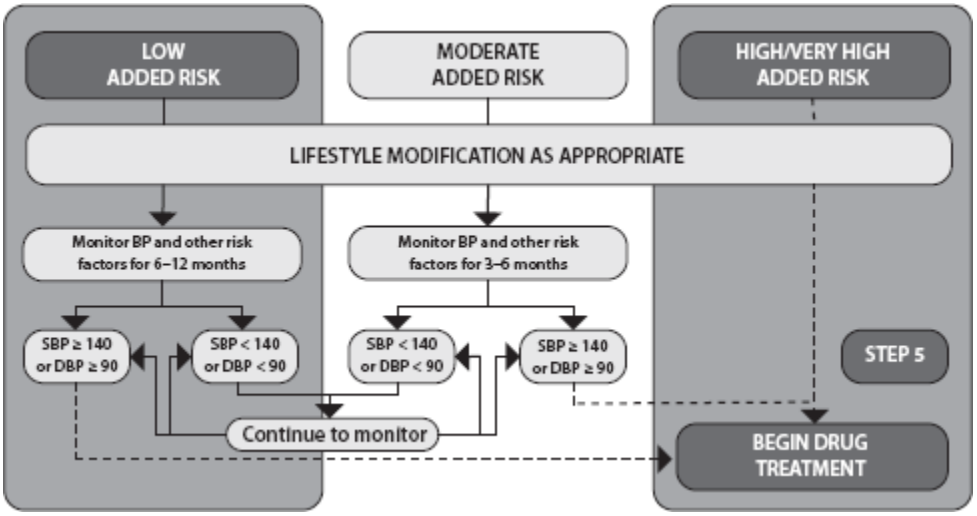



**Figure 6.1** South African Hypertension guidelines on when to initiate treatment

## Think about red flags for secondary causes

Most hypertension in primary care has no identifiable underlying disease – so-called essential hypertension, but in a small number of patients it is secondary to another diagnosis. The most common

secondary cause is chronic kidney disease. Patients with secondary hypertension may be more refractory to treatment.

Look out for red flags that may indicate an underlying problem:

- Pre-existing renal disease (for example, proteinuria, haematuria and raised creatinine)
- Coarctation of the aorta (for example, delayed brachial-femoral pulse and notching of ribs on chest radiograph)
- Conn's disease (for example, unexplained low potassium)
- Phaechromocytoma (for example, tachycardia, palpitations, anxiety and paroxysmal hypertension)
- Cushing's disease (for example, central obesity, moon face, bruising and striae).

### 6.2.3 Treatment goals

Management of hypertension is individualised. The goals of treatment are as follows:

1 The primary goal of treatment is to achieve maximum reduction in the long-term total risk of cardiovascular disease
2 This requires treatment of the raised BP *per se* as well as of all associated reversible risk factors
3 BP should be reduced to at least below 140/90 mmHg and to lower values, if tolerated, in all hypertensive patients
4 Target BP should be at least 130/80 mmHg in diabetics and in high or very high risk patients, such as those with associated clinical conditions (for example, stroke, myocardial infarction, renal dysfunction and proteinuria)
5 In order to more easily achieve goal BP, antihypertensive treatment should be initiated before significant cardiovascular damage develops.

#### Medication

Drug therapy consists of using a step care approach by starting with a low dose thiazide diuretic and then adding drugs from other classes. The second and third steps include the addition of an ACE inhibitor and/or a CCB. However, there may be compelling reasons why one

would use one class of drug in favour of these traditional steps as shown in Table 6.2. One would carry on adding drug therapy from other classes after increasing the drug dosage to the maximal tolerable dose until one gets good control.

**Table 6.2** Compelling indications to start treatment with a specific class

| Compelling indications | Drug class |
|---|---|
| Angina | Beta blocker OR CCB (rate lowering preferred) |
| Prior myocardial infarct | Beta blocker AND ACE (ARB if intolerant).<br>Verapamil if beta blockers contraindicated.<br>If heart failure, see below. |
| Heart failure | ACE (ARB if intolerant) AND certain beta blockers AND aldosterone antagonist<br>For combination ARB and ACE<br>Loop diuretics for volume overload |
| Left ventricular hypertrophy (confirmed by ECG)<br>Stroke: secondary prevention | ARB (preferred) OR ACE<br><br>Low-dose thiazide-like diuretic and ACE or ARB |
| Type-one or -two diabetes with or without evidence of microalbuminuria or proteinuria | ACE or ARB – usually in combination with a diuretic |
| Chronic kidney disease | ACE or ARB – usually in combination with a diuretic |
| Isolated systolic hypertension | Low-dose thiazide or thiazide-like diuretic or long-acting CCB |

ACE = Angiotensin I converting enzyme inhibitor, ARB = Angiotensin II receptor blocker, CCB = Calcium channel blocker

## Individual assessment and plan

Doctors frequently overestimate the adherence of patients to their treatment and do not spend enough time eliciting patient's ideas and beliefs on the seriousness of hypertension, risk of complications and effectiveness of treatment. Remember that patients with hypertension are often expected to take long-term medication when they do not feel ill to prevent some theoretical future cardiovascular event. Time spent on understanding the patient's perspective and exchanging information will not be wasted.

Consider brief behaviour change counselling on the following:

- Weight reduction
- Dietary salt reduction

- Restricted alcohol consumption
- Limited total fat intake
- Increased fruit and vegetable consumption.
- Limited free sugars
- Increased physical activity (150 minutes per week of moderate intensity aerobic exercise)
- Smoking cessation
- Psychosocial stress.

Lifestyle modification is attempted first in those with mild added risk (for six to twelve months) and moderate added risk (for three to six months) before prescribing medication.

#### Contextual assessment and plan

Lifestyle issues may need involvement of the family. Reduction of psychosocial stress may also assist with adherence and reduction in blood pressure.

### 6.2.4 Refractory hypertension

It is not uncommon for patients on treatment to have uncontrolled hypertension. Before labelling the patient as refractory, increasing the dose or just adding another medication to the prescription consider the following:

- Did the patient take their medication today? Medication is often omitted when patients get up early to go to the clinic.
- Poor adherence to treatment is very common and may be due to many different factors. Try and have a respectful, curious, open and non-judgemental conversation about this. For example, the patient may not understand the importance of taking treatment, may have experienced side effects, may not understand how to take the medication, may have concerns about the diagnosis or treatment, may have significant psychosocial problems, or may have not received all their treatment due to stock problems.
- Is the patient taking another medication that causes hypertension? For example, patients are often prescribed NSAIDs. Prednisolone

and hormonal medications may also interfere.

A patient not optimally controlled on three or more classes of antihypertensive drugs is classified as having refractory hypertension. In these patients one needs to exclude secondary causes of hypertension or refer the patient to a hypertensive expert.

## 6.3 Management of HIV and Aids

*(Oladele Adeniyi, Olufunso Sogbanmu, Parimalarani Yogeswaran)*

### 6.3.1 Introduction

After the last edition of this handbook was published, two guidelines were released by the National Department of Health in 2013 and 2015. There is a strong emphasis on the continuum of care – HIV testing, linkage to HIV medical care, retention in care, re-engagement in care and long-term continuous HIV medical care (Department of Health, 2015b). This handbook provides a synopsis of the important aspects of the care of people living with HIV. A three-stage comprehensive assessment provides a holistic approach to caring for people living with HIV.

### 6.3.2 HIV counselling and testing

HIV counselling and testing (HCT) provides the entry point to comprehensive HIV prevention, treatment, care and support (Department of Health, 2015b). HCT in children should be conducted in accordance with the Children's Amendment Act (No. 41 of 2007), section 130. Informed consent can be obtained from a child of 12 years and above if he/she demonstrates sufficient maturity to understand the benefits, risks, and social implications of the test. However, in children less than 12 years and those over 12 years with insufficient maturity, the parent or caregiver should give consent.

HCT should be voluntary and adhere to the World Health Organization's five Cs:

1 Consent
2 Confidentiality

3 Counselling (pre- and post-test)
4 Correct test results
5 Connections to care, treatment and prevention services (World Health Organization, 2015).

Provider-initiated counselling and testing (PICT) is advocated to increase the number of people diagnosed with HIV (World Health Organization, 2015). It should be noted that client-initiated counselling and testing (CICT) should still be encouraged at all levels of care. HCT should be performed in accordance with the Department of Health-testing algorithm (Figure 6.2). An age-appropriate HIV test should be performed – DNA PCR for children less than 18 months and HIV rapid test or ELISA for children over 18 months and adults (Department of Health, 2015b).

### 6.3.3 Clinical assessment and plan

A comprehensive approach to the patient with HIV diagnosis is provided in Table 6.3. Family-centred approaches focusing on women, partners and their children should be adopted (Department of Health, 2015b).

- The reason(s) for the consultation should be explored thoroughly in every patient. A comprehensive history (Table 6.3) including screening for opportunistic infections or diseases is mandatory during the consultation.
- Thorough clinical examination should be performed during consultations. Clinicians must examine the skin, the mouth and lymph nodes regions in individuals living with HIV.
- The clinical stage of HIV infection (Table 6.4) should be assessed at every consultation.
- Eligibility for HAART currently includes all HIV infected children, adolescents and adults qualify for ART treatment regardless of CD4 count. However, patients with CD4 ≤350 cells/μl should be prioritised. This change in guideline is inevitable in view of recent evidence from randomised trials (START and TEMPERANO Study,

2015). Therefore, South Africa has adopted a universal test and treat strategy to further address the HIV epidemic.

- ART should be initiated as soon as the patient is ready and within two weeks of CD4 count being done in accordance with the guideline (Table 6.5). If co-infected with TB, commence TB treatment and initiate ART within eight weeks. If CD4 < 50 cells/µl, initiate ART within two weeks of starting TB treatment when the patient's symptoms are improving and TB treatment is tolerated. If CD4 > 50 cells/ul, initiate ART within 2–8 weeks of starting TB treatment.
- Defer ART initiation for 4–6 weeks in Cryptococcal meningitis and eight weeks in TB meningitis irrespective of CD4 counts.
- Immediate initiation in pregnant or breastfeeding women, as long as there is no active TB or contraindication to fixed dose combination (TDF/FTC/EFV). If there is a contraindication, start AZT 300 mg bd immediately and switch to the triple regimen at the appropriate time.
- Prophylaxis may include co-trimoxazole, isoniazid/pyridoxine and fluconazole; assess eligibility.
- Nutritional rehabilitation should be offered patients with BMI < 18.5 $kg/m^2$.
- Close monitoring of patients following HAART initiation is recommended (Department of Health, 2015b). Patients should be educated about adverse effects of the ARTs. Failure to adequately manage adverse effects may lead to severe morbidity and mortality and impact negatively on adherence.
- Adherence to ART should be monitored at every visit. There are several measures of adherence: self-reporting, pill counts, pharmacy records and refill data, or electronic counters.
- Viral load, CD4 count and other investigations should be monitored at regular intervals (Table 6.5).

### 6.3.4 Individual assessment and plan

The goal of managing individuals living with HIV is to build their capacity towards self-care (activated patient). Counselling should focus

on helping the patients take responsibility for their health. Encourage patients to maintain a healthy self-esteem and build on the positive. Encourage the patient to continue to find meaning in their experience of the illness. Counsellors should guide patients to make informed decisions with the provision of relevant and accurate information. Provide a collaborative, empathic, confidential, non-judgemental, and respectful environment in which patients can explore their feelings and make their decisions.

An HIV diagnosis is associated with myriads of emotions such as fear, guilt, anger, anxiety and depression. Fears are embedded in the challenges of acceptance of an HIV diagnosis, disclosure, anticipated reactions of other people; stigma, rejection and economic consequences. All these fears and emotions should be addressed and managed during consultations.

### 6.3.5 Contextual assessment and plan

The patient may qualify for a temporary disability grant if they are too ill to work and they are yet to stabilise on ART. A permanent disability grant is often reserved for those with irreversible complications of HIV/Aids and disability from other conditions. A person caring for a patient with HIV/Aids can apply for a grant-in-aid.

The majority of individuals living with HIV can perform routine duties; hence, returning to full functions should be encouraged. Employers should provide a conducive atmosphere to encourage patients to return to work (Employment Equity Act (No. 55 1998)). Family and friends should be included in the management plan wherever possible. Explore who else in the family needs to know about the HIV and assist with disclosure and testing of partners and children.

Consider referring the patient to support groups in the community including religious groups for social, spiritual and practical support (for example, food parcels). Consider home-based care or referral for palliative care in advanced disease or if the family is having difficulty caring for the patient.

**Table 6.3** Assessment of HIV-positive persons at initial and subsequent visits

| | Assessment | At HIV diagnosis | Prior to starting ART | Follow-up frequency | Comment |
|---|---|---|---|---|---|
| **HISTORY** | | | | | |
| **Medical** | Complete medical history | + | + | First visit | Repeat if care transferred elsewhere |
| | • Family history (diabetes, hypertension, CKD, premature CVD) | + | | First visit | Premature CVD: cardiovascular events in a first degree relative (male < 55, female < 65 years) |
| | • Concomitant medication | + | + | Every visit | Check for drug-drug interactions |
| | • Past and current co-morbidities | + | + | Every visit | |
| **Psychosocial** | Current lifestyle (alcohol use, smoking, diet, exercise, drug use) | + | + | 6–12 months | Adverse lifestyle habits should be addressed more frequently |
| | Employment | + | + | | |
| | Social and welfare | + | + | | |
| | Depression | + | + | | Use patient health questionnaire 9 |
| | Partner and children | + | | | Encourage partner and children to test if at risk |

| | Assessment | At HIV diagnosis | Prior to starting ART | Follow-up frequency | Comment |
|---|---|---|---|---|---|
| **Sexual and reproductive health** | Sexual history (WHO 5Ps of sexual history taking) | + | + | 6–12 months | Address safe sexual practices and risk of transmission |
| | Pap smear | | | Annually | Exclude cervical intra-epithelial neoplasia/invasive carcinoma |
| | Conception plans/screen for pregnancy | + | + | | Encourage family planning/ contraception |
| **HIV Disease** | CD4 count | + | + | 12 months and annually | CD4 ≤ 500=eligible CD4 ≤ 350=prioritise CD4 ≤ 200=fast-track CD4 < 100=CLAT Repeat CD4 count every 6-months if not yet eligible for HAART |
| | Viral load | | | 6, 12 months and annually | VL > 1 000 copies/ml, step up adherence support and repeat after two months; If VL > still 1 000 copies/ml; manage as virological failure. Pregnancy: VL at three months. If VL > 1 000 copies, repeat after one month and if still > 1 000 copies/ml; switch to second-line regimen |

| | Assessment | At HIV diagnosis | Prior to starting ART | Follow-up frequency | Comment |
|---|---|---|---|---|---|
| **Co-infections** | TB symptom screening | + | + | Every visit | Any of fever, cough, weight loss or night sweats require further investigations<br>Assess eligibility for IPT |
| | Mantoux test | + | | | To determine duration of IPT |
| | Screen for STIs and Syphilis | + | | | Identify and treat STIs |
| | Hepatitis B screen (HBsAg) | + | | | HBV/HIV co-infection = TDF-based regimen if there is no contraindication.<br>Repeat if jaundice or indicated by elevated ALT level |
| | Cryptococcus antigen (CrAg) test | | + | | Perform CLAT if CD4 count < 100 cells/µl |
| **Investigations** | Urinalysis | | | Every visit | |
| | Creatinine/GFR if requires TDF | + | + | 3, 6, 12 months then annually | Repeat as indicated |
| | Hb or FBC if requires AZT | + | + | 3, six months then annually | Repeat as indicated |

| | Assessment | At HIV diagnosis | Prior to starting ART | Follow-up frequency | Comment |
|---|---|---|---|---|---|
| **Investigations** | ALT if requires NVP | | + | | Repeat as indicated; rash, hepatitis |
| | Fasting cholesterol and triglycerides if requires<br>Lop/r (Aluvia) | | + | 3 months | Repeat as indicated |
| **Anthropometry** | Weight and height | | + | | Weight < 40 kg, then align with the paediatric regimen.<br>BMI < 18.5 kg/m² = nutritional rehabilitation |

ABC = Abacavir, ALT = Alanine transaminase, CLAT = Cryptococcal latex agglutination test, CKD = Chronic kidney disease, CVD = Cardiovascular diseases, EFV = Efavirenz, FBC = Full blood count, NVP = Nevirapine, STI = Sexually transmitted infections, TB = Tuberculosis, TDF = Tenofovir disopropyl fumarate, VL = Viral load, WHO = World Health Organization

**Sources:** Adapted from the Department of Health (2015b) *National Consolidated Guidelines for PMTCT and the Management of HIV in Children, Adolescents and Adults*. Pretoria: Department of Health; European AIDS Clinical Society (2014) *Guidelines* version 7.1. [Online]. Available at: www.eacsociety.org. (Accessed 15 January 2016)

**Table 6.4** WHO clinical staging of HIV disease in adults and adolescents

**Clinical stage 1**

1 Asymptomatic
2 Persistent generalised lymphadenopathy (PGL)

**Clinical stage 2**

1 Moderate unexplained weight loss (under 10% of presumed or measured body weight)
2 Recurrent or chronic upper respiratory tract infections (sinusitis, tonsillitis, otitis media, pharyngitis)
3 Herpes zoster
4 Angular cheilitis
5 Seborrheic dermatitis
6 Recurrent oral ulcerations
7 Fungal nail infections
8 Unexplained persistent parotid enlargement
9 Lineal gingival erythema
10 Extensive molluscum contagiosum
11 Extensive wart virus infection
12 Papular pruritic eruptions
13 Unexplained persistent hepatosplenomegaly

**Clinical stage 3**

1 Unexplained severe weight loss (over 10% of the presumed or measured body weight)
2 Unexplained chronic diarrhoea for more than one month
3 Unexplained persistent fever (above 37,5°C, intermittent or constant for longer than one month)
4 Persistent oral candidiasis
5 Oral hairy leukoplakia
6 Pulmonary TB (current or in the last two years)
7 Severe bacterial infections (e.g.,: pneumonia, empyema, pyomyositis, bone or joint infection, meningitis, bacteraemia, severe pelvic inflammatory disease)
8 Acute necrotising ulcerative stomatitis, gingivitis or periodontitis

**Clinical stage 4**

1 HIV wasting syndrome
2 Pneumocystis jiroveci pneumonia
3 Recurrent severe bacterial pneumonia
4 Chronic herpes simplex infection (orolabial, genital or anorectal of more than one month duration or visceral herpes at any site )
5 Oesophageal candidiasis (or candidiasis of trachea, bronchi, or lungs)
6 Extrapulmonary tuberculosis
7 Kaposi sarcoma
8 Cytomegalovirus infection (retinitis or infection of other organs )
9 Central nervous system toxoplasmosis
10 HIV encephalopathy
11 Extrapulmonary cryptococcosis including meningitis
12 Disseminated non-tuberculosis mycobacteria infection
13 Progressive multifocal leukoencephalopathy
14 Chronic cryptosporidiosis
15 Chronic isosporiasis

| | |
|---|---|
| | 16 Disseminated mycosis (histoplasmosis, coccidiomycosis)<br>17 Recurrent septicaemia (including non-typhoidal Salmonella)<br>18 Lymphoma (cerebral or B cell non-Hodgkin)<br>19 Invasive cervical carcinoma |
| **Clinical stage 3** | **Clinical stage 4** |
| 9 Unexplained anaemia (Hb < 8g/dl, neutropaenia < $0.5xl0^9$/l, and/or chronic thrombocytopenia < $50xl0^9$/l) | 20 Atypical disseminated leishmaniasis<br>21 Symptomatic HIV-associated nephropathy<br>22 Symptomatic HIV-associated cardiomyopathy<br>23 HIV-associated rectovaginal fistula |

Hb=Haemoglobin, WHO=World Health Organization

**Source:** World Health Organization (nd.) *WHO Case Definitions of HIV for Surveillance and Revised Clinical Staging and Immunological Classification of HIV-Related Disease in Adults and Children, 2007*. New York: World Health Organization

**Table 6.5** Standardised national ART regimens for adults and adolescents (15 years)

| Population | Drugs | Comments |
|---|---|---|
| • Adolescents > 15 years and weighing > 40 kg<br>Adults<br>• All HIV/TB co-infection<br>• All HBV co-infection<br><br>On D4T<br><br>Adolescents < 15 years or weight < 40kg | TDF + 3TC (OR FTC) + EFV provide as fixed-dose combination (FDC)<br><br><br><br><br>Change D4T to TDF<br><br>ABC + 3TC + EFV | Replace EFV with NVP in patients:<br>• Significant psychiatric co-morbidity or EFV intolerance<br>• Shift workers<br>Change TDF to ABC, if GFR < 50ml/kg/1.73m$^2$<br>If VL is suppressed, GFR > 50ml/kg/1.73m$^2$<br>Manage as treatment failure if VL>1000 copies/ml<br>Align with paediatric regimen |
| **Second-line regimen: adolescent ≥ 15 years and adults** | | |
| Failing on TDF-based regimen<br><br><br><br>Failing on D4T or AZT-based first line regimen<br>Dyslipidaemia (total cholesterol >6mmol/L or diarrhoea associated with LPV/r<br><br>Anaemia and renal failure | AZT + 3TC +LPV/r<br>AZT + TDF + 3TC + LPV/ra (if HBV co-infected)<br>TDF + 3TC (or FTC) + LPV/r<br>Switch LPV/r to ATV/r<br><br>Switch to ABC | If non-adherent, address causes of non-adherence<br>If the VL >1000 copies/ml at any point, intensify adherence and repeat VL in 2 months<br>If VL remains at > 1000 copies/ml after two months, then switch to second-line regimen<br>Virological failure on second-regimen, consider genotypic resistance (PI resistance)<br>Specialist referral for third line regimen: Darunavir + Raltegravir + Etravirine |

3TC = Lamivudine, ABC = Abacavir, AZT = Zidovudine, D4T = Stavudine, EFV = Efavirenz, FBC = Full blood count, FDC = Fixed-dose combination, FTC = Emtricitabine, GFR = Glomerular filtration rate, HBV = Hepatitis B Virus, LPV = Lopinavir, NVP = Nevirapine, R = Ritonavir, TDF = Tenofovir disopropyl fumarate, VL = Viral load

**Source:** Department of Health (2015b) *National Consolidated Guidelines for PMTCT and the Management of HIV in Children, Adolescents and Adults*. Pretoria: Department of Health

## The modified Cockcroft-Gault equation:

$$\text{Creatinine clearance} = \frac{(140 - \text{age}) \times \text{ideal weight}^*}{\text{Serum creatinine}}$$

## (*For women, multiply the total by 0.85)

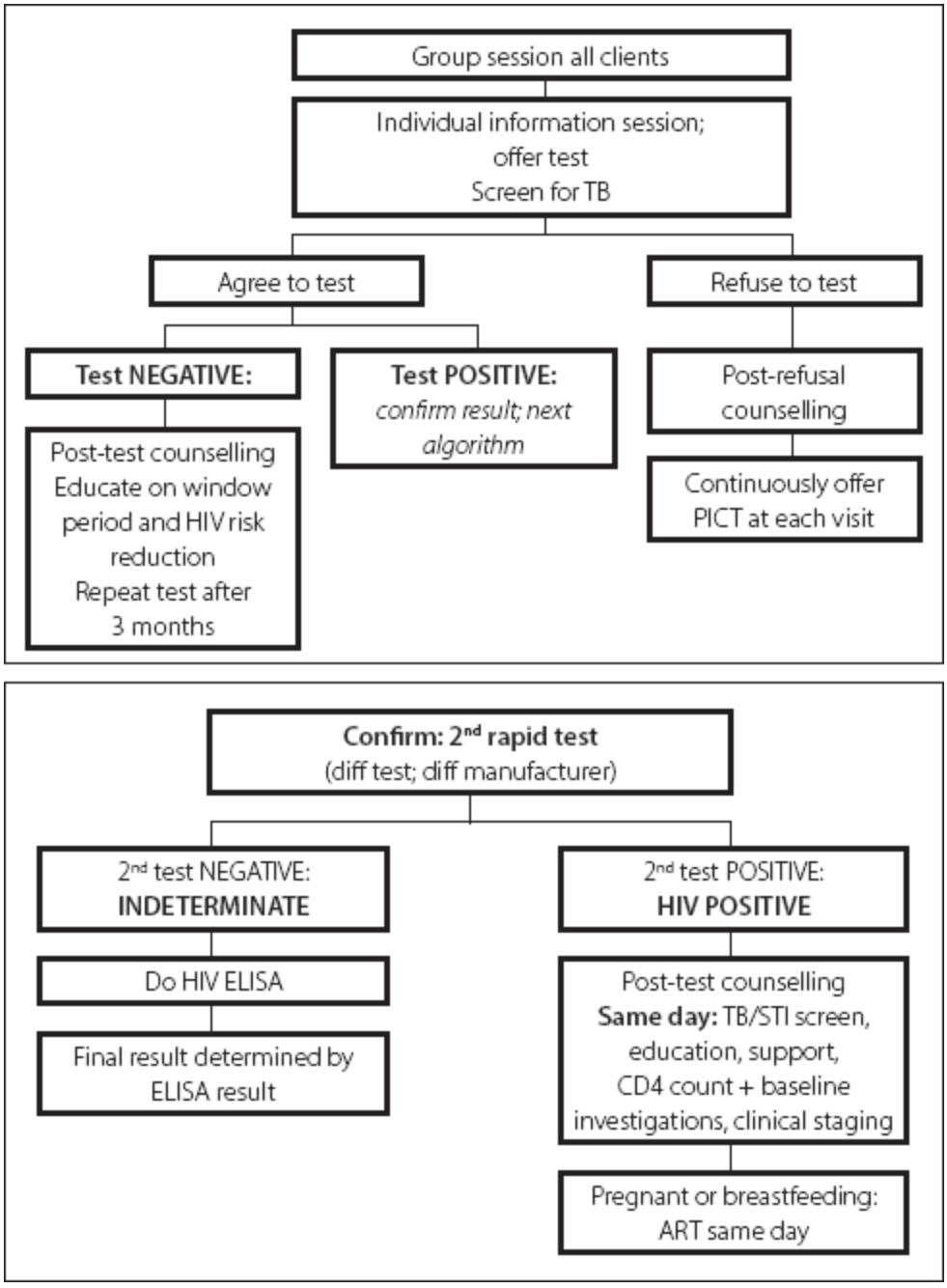



**Figure 6.2** HCT Algorithm

**Source:** Department of Health (2015b) *National Consolidated Guidelines for PMTCT and the Management of HIV in Children, Adolescents and Adults*. Pretoria: Department of Health

# 6.4 Management of type-two diabetes

*(Paul Kapp)*

Diabetes is a multisystem, devastating disease. In 2011, an estimated 366 million people worldwide suffered from diabetes with 80% of these in low- and middle-income countries. In South Africa, 6,5% of the adult population has diabetes (2 million adults). However 50–85% of diabetics remain undiagnosed and 67% of those diagnosed have glycated haemoglobin (HbA1c) levels greater than target (7%). At diagnosis, 20% already have complications. Type-two diabetes (insulin resistance) makes up 90% of all patients, type-one diabetes (insulin deficiency) makes up 5% and the rest are diverse causes.

The principles for the management of diabetes include:

1 Identify and treat life threatening emergencies
2 Prevent type-two diabetes
3 Early diagnosis
4 Control blood sugar
5 Mitigate other risk factors for cardiovascular disease
6 Prevent, identify and manage complications of diabetes.

### 6.4.1 Life threatening emergencies

- Hypoglycaemia: Presents with palpitations, sweatiness, and hunger, confusion, coma and fitting. Blood glucose is < 4 mmol/l. Treat with oral glucose and a meal if awake. Give 50 ml 50% glucose IV if patient has an impaired level of consciousness. If on long-acting oral agents or insulin, may require admission, depending on severity and response.
- Diabetic ketoacidosis: Hyperglycaemia with polyuria, polydipsia, tachypnoea from metabolic acidosis, dehydration, abdominal pain and ketonaemia. Patients need intravenous fluids (0,9% NaCl) 1 litre over 2 hours, 10U short-acting insulin and urgent referral.
- Hyperosmolar non-ketotic coma (HONK): Severe dehydration, severe hyperglycaemia, less acidotic without ketonuria. This is usually seen in older patients. Patients also need intravenous fluids (0,9% NaCl) 1 litre over 2 hours, 10U short-acting insulin and urgent referral.
- Sepsis with pyrexia is a serious condition in diabetics, especially if associated with hypotension. Refer urgently.

### 6.4.2 Preventing type 2 diabetes (insulin resistance)

Randomised control trials have shown that physical activity and dietary changes delay the progression of impaired glucose tolerance (IGT) to type-two diabetes. In 1999, the World Health Organization defined intermediate hyperglycaemia as a fasting blood glucose (FBG) between 5.6 and 7.0 mmol/l, oral glucose tolerance test (OGTT) two-hour post-prandial glucose (PPG) between 7 and 11.0 mmol/l in recognition that diabetes is a slow, progressive disease of lifestyle that may be prevented and there are benefits of early diagnosis and interventions. Prevention includes maintaining a BMI below 25 $kg/m^2$, a healthy diet and being physically active.

### 6.4.3 Early diagnosis

All high risk adults with a BMI of > $25kg/m^2$ (overweight or obese plus an additional risk factor (See Table 6.6) should be screened every three years (or annually if there are multiple risk factors including those with impaired fasting glucose (IFG) and impaired glucose tolerance (IGT) using a fasting plasma glucose (FPG), HbA1c or OGTT (preferred).

**Table 6.6** Risk factors for developing diabetes

| **Risk factors for diabetes** |
|---|
| Physical inactivity |
| BP > 140/90 |
| First-degree relative with diabetes |
| Dyslipidaemia |
| Polycystic ovarian syndrome |
| Gestational diabetes |
| OR a baby with a birthweight > 4kg |
| South Asian descent |
| History of cardiovascular disease |
| Previous IFG or IGT |
| Older than 45 years |

Diabetes is then diagnosed as per Table 6.7. If the patient is symptomatic (polyuria, polydipsia and weight loss) or presents with diabetic ketoacidosis (DKA) or hyperosmolar non-ketotic hyperglycaemia (HONK), a single test may suffice, otherwise diabetes is

confirmed by repeating the same test on another day. Hyperglycaemia may be transient, for example, in stress associated with trauma, infection or a cardiovascular event and therefore the test should be repeated before the diagnosis of diabetes is made.

**Table 6.7** The values of different tests used to diagnose diabetes

| Screening and diagnosis of type-two diabetes | | | |
|---|---|---|---|
| Fasting plasma glucose | < 5.6 mmol/l<br>Diabetes excluded | 5.6 to 6.9 mmol/l<br>Impaired fasting glucose | >7.0 mmol/l<br>Diabetes |
| 2-hour plasma glucose | < 7.8 mmol/l<br>Normal glucose tolerance | 7.8–11.0 mmol/l<br>Impaired glucose tolerance | >11.1 mmol/l<br>Diabetes |
| Random plasma glucose | < 5.5 mmol/l<br>Diabetes excluded | 5.6–11 mmol/l<br>Inconclusive | >11.1 mmol/l<br>Diabetes |
| HbA1c | < 5,7%<br>Diabetes excluded | 5,7–6,4%<br>Inconclusive | ≥6,5%<br>Diabetes |

Having diagnosed diabetes, we need to educate the patient about their disease so that they are empowered to care for themselves. Such patient education and counselling is often ad hoc, unsystematic and offered by health workers without expertise in diabetes. Group diabetes education is a successful approach to patient education and counselling when large numbers are involved and allows a structured systematic approach. A guiding and collaborative style is preferred as this motivates the patient to apply what they have learnt to their own situation more effectively. Skills in brief behaviour change counselling may also be useful in the consultation. Patient education materials should be available to supplement the counselling and reinforce it at home. Education is perhaps the most important aspect of care.

Patient education and counselling programmes should include the following topics:

- What is diabetes and the complications
- What are the goals of treating diabetes
- Portion size, cooking and regular meal consumption

- Dietary emphasis should be on regulating carbohydrate, fibre and fat intake
- Increased physical activity, aim for 30 minutes 5 times a week (150 minutes of moderate intensity activity)
- Appropriate weight loss if weight exceeds ideal weight
- Understanding the medication
- Education about foot care
- Attention to smoking cessation, harmful alcohol use, psychosocial stress and depression
- Recognising and responding to hypoglycaemia – all patients should wear a notification bracelet.
- How the clinic works and follow-up.

### 6.4.4 Controlling blood sugar levels

This is achieved with a combination of diet, exercise and medication. A dietician or diabetes counsellor/educator is the best person to address diet and exercise requirements.

#### Diet

The plate method is a good starting point to explain a diet: a 22 cm plate divided down the middle and the one half divided again to make quarters. The undivided half of the plate may be filled with fresh vegetables such as carrots, cabbage, peppers, beetroot, spinach, or broccoli. One quarter may be filled with (ideally low GI or whole grain) starches such as bread, rice, pasta, potatoes, beans or peas. The last quarter is filled with protein such as fish (at least twice a week), skinless chicken, lean meat, soya, tofu, eggs or low-fat cheese. Avoid processed meats such as viennas! A cup of low-fat milk or low-fat yoghurt is added for three servings a day. A small piece of fruit (small apple, orange or banana) or ½ a cup of fruit is added for three servings a day. The fruit servings can also be used as snacks between meals. Attention should be given to types of food, portion size and methods of cooking.

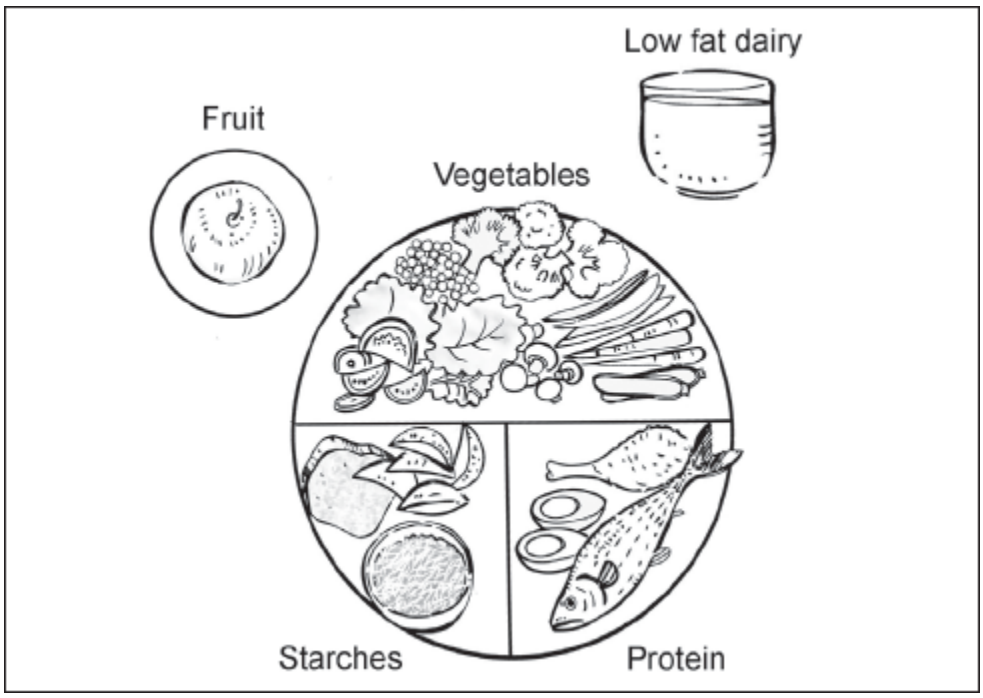



**Figure 6.3** The plate method

**Source:** Author's own work

## Physical activity

The goal should be 150 minutes of moderate intensity physical activity per week. Moderate intensity exercise causes you to sweat slightly and raises your heart rate and could include walking, jogging, running, swimming, and so on. Physical activity can be incorporated into a person's daily routine, for example, travelling to and from work, and does not imply playing formal sport or joining a gym necessarily. The goal could be achieved by, for example, 30 minutes of moderate activity five times a week. In addition, resistance exercises, such as weight machines or weight lifting, should be performed two to three times per week.

The aim of exercise and dietary measures includes weight loss and achieving a waist circumference of < 80 cm in woman and less than 94 cm in men (< 90 cm in Asian men). While it may be difficult to achieve the ideal BMI or waist circumference, there is benefit in simply reducing your weight from baseline by just 10%.

### Medication to control blood glucose

Treat to target, while individualising for each patient:

- For young, newly diagnosed diabetics without cardiovascular disease or risk factors, aim for an HbA1c of < 6,6%, a FPG between 4–7 mmol/l and PPG of 4.4–7.8 mmol/l
- The majority of patients, aim for an HbA1c of < 7,0%, FPG between 4–7.0 mmol/l and PPG 5–10 mmol/l
- In elderly patients, patients with established cardiovascular disease or at high risk for cardiovascular disease, aim for an HbA1c < 7,5–8,0%, FPG 5–8 mmol/l and PPG < 12 mmol/l.

Metformin (a biguanide) is the anchor of diabetes medications in type-two diabetes as it decreases gluconeogenesis in the liver and reduces peripheral insulin resistance. It should be started in all patients at diagnosis unless there is a contraindication. It is important to stay current with the contraindications as metformin has been found to be beneficial in many of the historical contraindications, for example, following myocardial infarction and renal impairment (however the dose is reduced if eGFR < 45 ml/min/$m^2$ and is contraindicated if eGFR is less than 30 ml/min/$m^2$). Lactic acidosis is a serious side effect, but is rare.

Gastrointestinal side effects may be responsible for poor adherence or lead to discontinuation. The extended release formulation has less gastrointestinal side effects and should be tried before changing to a sulphonylurea. The starting dose is 500 mg twice daily and the maximum dose is 850 mg thrice daily. Increase three monthly until the target HbA1c is achieved.

Sulphonylureas increase insulin secretion by the pancreas. They are added if the target HbA1c is not reached despite adherence to metformin at maximum dose and lifestyle changes. Hypoglycaemia is common especially with renal impairment, hepatic failure and the elderly. Gliclazide is safer than glimepiride or glipizide which are safer than glibenclamide (glibenclamide is also contraindicated if eGFR < 60 ml/min/$kg^2$). Sulphonylureas cause weight gain.

Basal insulin is added to the metformin-sulphonylurea combination if the target is still not achieved. Start with 10U at bedtime and up-titrate with 2U every 3–5 days until controlled. Alternatively use metformin alone (stop the sulphonylurea) with pre-mixed insulin (a mixture of short and intermediate insulin). The starting dose of pre-mixed insulin is 0.2U per kilogram per day. Give 2/3 in the morning and 1/3 in the evening increasing as necessary. Insulin carries a significant risk of hypoglycaemia and therefore education and self-monitoring of glucose is essential. Weight gain may also be problematic.

Should the target not be achieved with the above regimes, basal and mealtime insulin with/without metformin may be tried. However, such patients are best managed by an endocrinologist who may add an acarbose and/or an incretin.

#### Medication to reduce the risk of developing complications

Almost all diabetics will need a statin, as diabetes is considered a coronary risk equivalent. Target LDL cholesterol is < 1.8 mmo/l, HDL > 1.0 mmol/l in men and 1.2 mmol/l in woman with a total cholesterol < 4.5 mmol/l. Aim for triglycerides < 1.7 mmol/l. Aspirin should be given to patients with a 10-year cardiovascular risk greater than 10% if there are no contraindications. Hypertension must be treated and the target SBP is between 120–140 mmHg and DBP is between 70–80 mmHg. Lifestyle measures (exercise, weight loss, high fibre low salt diet) are initiated with an antihypertensive. An ACEI is used if the patient has microalbuminuria or a reduced eGFR. Calcium channel blockers (CCB) and thiazides are the other drug classes that are recommended. Black patients respond better to thiazides and CCBs. If eGFR is less than 50 ml/min, use a loop diuretic instead of a thiazide.

### 6.4.5 Prevent, identify and manage complications of diabetes

#### Complications

Diabetes leads to micro- and macrovascular disease that present with a variety of serious complications such as stroke, ischaemic heart disease, myocardial infarction, retinopathy, nephropathy, neuropathy, and

peripheral vascular disease. These complications can lead to heart failure, leg ulcers, amputation, end stage renal failure and blindness.

### Monitoring at follow-up

At every visit (one–three-monthly) measure the waist circumference, weight and blood pressure. Inspect the feet and calculate the BMI. The HbA1c should be done every three months or every time treatment is changed. If the HbA1c is at target, repeat six-monthly. At the initial visit and annually the patient requires a comprehensive feet exam, fundoscopy, lipid profile, urinary albumin:creatinine ratio, serum potassium, creatinine and eGFR as well as an ECG. All these actions need to be performed more frequently if there is any abnormal result.

### Feet care

As a result of peripheral neuropathy, impaired immunity and poor blood supply with poor healing, diabetics are prone to feet ulcers. Prevention is better than cure and ulcers often lead to amputations. The following guidelines should be given to patients regarding feet care:

- Only wear well-fitting, closed shoes
- Never walk barefoot
- Keep feet clean and dry
- Cut nails flush with end of toes
- Do not smoke
- Exercise
- Good sugar control
- Daily feet inspection; see health worker if there is any redness or skin changes
- Corns and calluses are caused by poor fitting shoes – see a chiropodist if possible or health worker
- Do not cut away calluses yourself
- Do not treat itchy athletes foot with steroid creams
- Ensure your health worker examines your feet regularly.

## 6.5 Management of tuberculosis

*(Olufunso Sogbanmu, Oladele Adeniyi, Parimalarani Yogeswaran)*

To achieve a success of the tuberculosis (TB) programme in South Africa, the drive must be geared towards a high cure rate for all new smear positive cases, a high treatment success rate for all pulmonary cases and a high smear conversion rate at the end of the intensive phase for new smear positive cases of 85% or more and 80% for retreatment cases. Furthermore, a low rate of interruption of treatment of 5% or below and a low level of acquired drug resistance of less than 1% is desired.

### 6.5.1 Case detection

Clinical screening should be incorporated into everyday clinical practice as opportunistic case finding. With pulmonary tuberculosis, persistent cough and fever for more than two weeks, drenching night sweat and weight loss are the common symptoms that should be excluded with every patient visit. Presence of any of these clinical symptoms may also be a pointer to presence of extrapulmonary TB. TB screening should be undertaken in special populations (HIV, diabetic) and all patients accessing health facilities.

### 6.5.2 TB testing

The Xpert algorithm should be followed to exclude TB in patients (see Figure 6.4). The quick turn-around time of less than two hours coupled with rifampicin sensitivity assessment of Xpert has revolutionised TB management.

### 6.5.3 Clinical assessment and plan

Prescribe medication according to the latest regimens as per the national TB programme (see Table 6.8). All TB cases are generally treated for six months; pulmonary or extrapulmonary, except in severe or complicated diseases (meningitis, TB bones/joints, miliary TB) which require an extended period of nine months (2RHZE/7HR). Treatment of TB in patients with severe co-morbidities (chronic renal or liver failure) and multidrug/extreme drug resistance are not covered in this book. If the patient has HIV:

- Continue with routine HIV care
- Ensure that the patient is on co-trimoxazole prophylaxis
- Give pyridoxine 25 mg daily (protection against neuropathy)
- Prepare for ARVs (timing of initiation of ARVs is determined by the CD4 count).

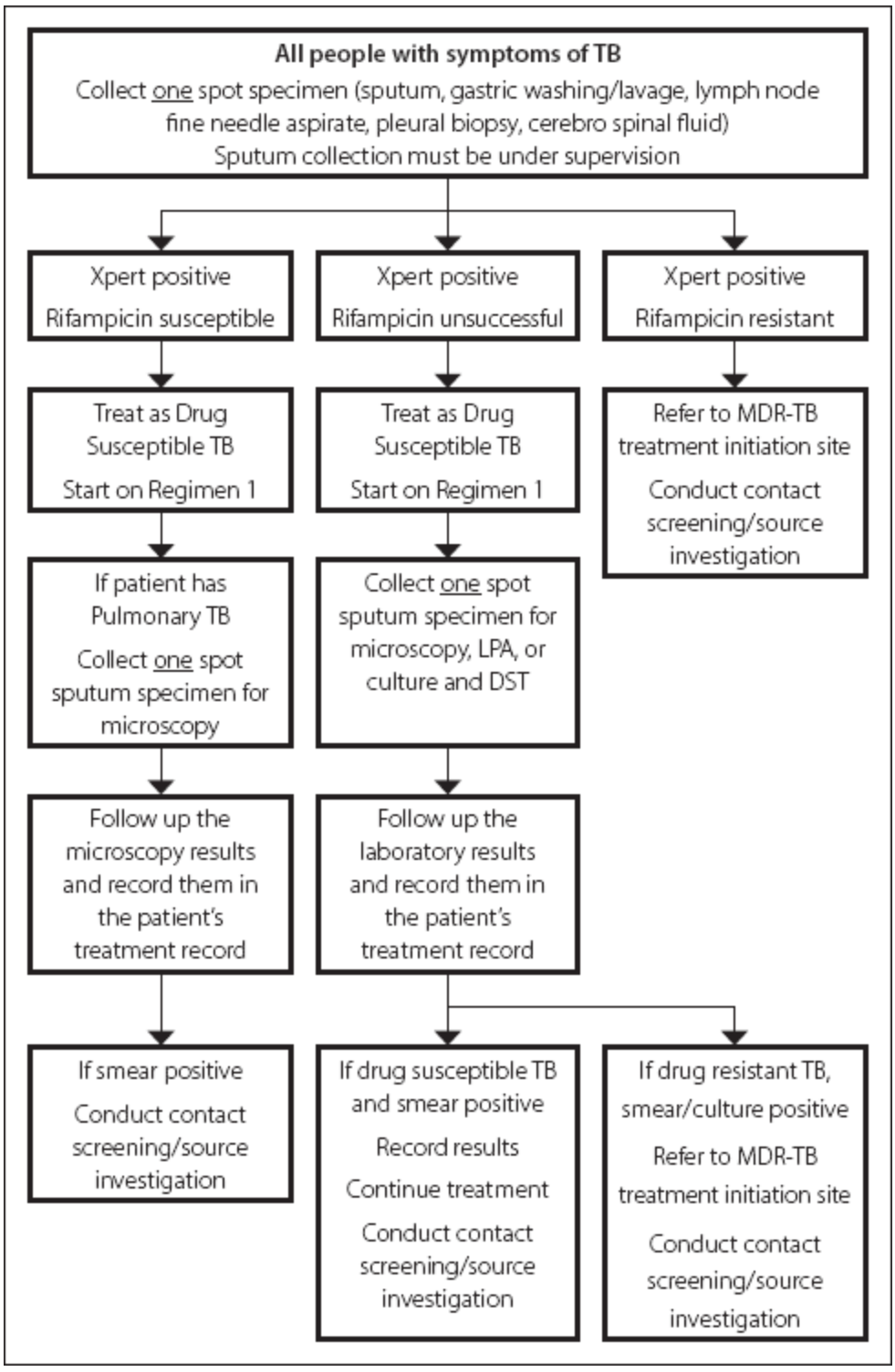
If the patient smokes, counsel the patient to quit smoking as this worsens the TB outcome.

For nutrition, encourage a healthy diet. If the BMI is 18.5 $kg/m^2$ or less, refer for nutritional support.

Stopping excess alcohol intake will improve adherence and nutrition.

In family planning, combined oral contraceptive should contain at least 0.05 mg ethinyloestradiol. Shorten pill free intervals to four days. Give injectable contraceptives at shorter intervals – medroxyprogesterone acetate 150 mg eight-weekly and norethisterone enanthate 200 mg six-weekly. If available, consider an intrauterine contraceptive device.

For HIV testing, all patients diagnosed with TB should be offered testing for HIV.




DST = Drug susceptibility test, LPA = Line probe assay

**Figure 6.4** Xpert diagnostic algorithm

**Source:** Department of Health (2014) *National Tuberculosis management guidelines*. Pretoria, South Africa: Department of Health

Arrange follow-up and safety netting. Ensure that patients are warned if their symptoms worsen or they develop side effects of the medication used (see Table 6.9).

**Table 6.8** TB treatment for adults and children over 8 years of age (weight above 30 kg)

| Pre-treatment body weight | Intensive phase 7 days a week for 2 months | Continuation phase 7 days a week for 4 months | |
|---|---|---|---|
| | RHZE (150, 75, 400, 275) | RH (150, 75) | RH (300, 150) |
| **30–37 kg** | 2 tabs | 2 tabs | |
| **38–54 kg** | 3 tabs | 3 tabs | |
| **55–70 kg** | 4 tabs | | 2 tabs |
| **> 70 kg** | 5 tabs | | 2 tabs |

Kg = Kilogram, TB = Tuberculosis, RHZE = Rifampicin, Isoniazid, Pyrazinamide, Ethambutol (fixed-dose combination), RH = Rifampicin, Isoniazid (fixed-dose combination)

**Table 6.9** Approach to management of side effects of TB drugs

| **Minor symptoms** | **Drug(s) responsible** | **Management** |
|---|---|---|
| **Anorexia, nausea, abdominal pain** | Rifampicin | Continue TB drugs. Give tablets last thing at night |
| **Joint pains** | Pyrazinamide | Continue TB drugs, Aspirin |
| **Burning sensation in feet** | Isoniazid | Continue TB drugs, add or increase dose of pyridoxine, analgesics |
| **Orange/red urine** | Rifampicin | Continue TB treatment, reassurance |
| **Major symptoms** | **Drug(s) responsible** | **Management** |
| **Skin itching/rash (anaphylactic reaction)** | Rifampicin, isoniazid | Stop offending agent |
| **Jaundice (other causes excluded)/ drug induced liver injury** | Most TB drugs | Stop all TB drugs. Monitor ALT & total bilirubin. Reinitiate one by one once ALT/bilirubin settles |
| **Visual impairment** | Ethambutol | Stop ethambutol |
| **Generalised reaction, shock, purpura** | Rifampicin | Stop rifampicin |

ALT = Alanine transaminase, TB = Tuberculosis

### 6.5.4 Individual assessment and plan

Ensure understanding of the illness and the management along with the importance of adhering to the TB treatment. Patients must complete treatment even when they feel well. Elicit and discuss patients' concerns about the illness and its management.

- Hear patients'concerns: 'How do you feel about being told that you have TB?'
- Explore potential barriers to adherence: 'What do you think will be most difficult about taking medication daily for the next six months?' Hausler (2000) highlighted that the majority of patients are able to predict their own adherence taking their lifestyle, habits and past experiences into consideration. Determine the patient's plans for the next six months. If relocating, ensure that a proper referral is done to the new TB clinic. Issues around poor adherence should be addressed non-judgementally. Efforts should be made to understand the circumstances surrounding poor adherence to the treatment.
- Empower your patient to be the master of his or her illness and to decide who will support them through their treatment period. Information given should be geared towards allowing the patient to be in control, rather than a passive participant in their care.

### 6.5.5 Contextual assessment and plan

- Contact tracing is essential to allow household contacts to be screened and enrolled into care if needed or provided with IPT
- Notify the diagnosis using the standard form
- Determine the reaction of the family to a diagnosis of TB, its impact on work and when to return to work
- Link to social and community support groups, and assess food intake and food supply for the family – refer to appropriate social services for food parcels
- Consider the need for a temporary disability grant.

### 6.5.6 Children

In children diagnosed with TB, always look for an adult source in the immediate family or context. Efforts should be made to obtain a microbiological diagnosis from gastric aspirate, induced sputum or aspirated lymph node. Where this is unavailable, the clinical response of the child is used as assessment of treatment efficacy.

### Isoniazid preventive therapy (IPT)

This is supported by robust evidence from randomised controlled trials. Hence, the national Department of Health recommended isoniazid in people living with HIV. Pyridoxine 25 mg should be prescribed in addition to isoniazid to prevent peripheral neuropathy. The duration of prophylaxis should be guided by the result of the Mantoux test (see Table 6.10).

**Table 6.10** IPT Eligibility criteria

| Population | Duration of IPT | Comment |
|---|---|---|
| **Pregnant/breastfeeding HIV positive women** | • Tuberculin sensitivity test (TST) positive: 36 month<br>• TST negative: 12 months<br>• TST not available: 12 months | • All should be on lifelong ART<br>• IPT can be started anytime during pregnancy/breastfeeding, but ART should be started first and IPT added after a minimum of 1 month<br>• Women who fall pregnant on IPT should continue<br>• If TST is negative, reassess TST status 1 year after completing IPT |
| **Children < 5 years old with recent exposure to TB contact**<br>**All HIV-positive children up to 15 years old with recent exposure to TB case** | • 6 months | Recent refers to < 12 months<br>• If re-exposed to a TB case after completion of 6 months IPT, repeat another course of IPT irrespective of interval between treatment and re-exposure<br>• If child is exposed to new infectious source while on IPT, continue IPT for as long as source remains infectious |
| **Pre-ART patients regardless of CD 4 (adolescent/adult)** | • TST positive: 36 months<br>• TST negative: No IPT<br>• TST not available: 6 months<br>• If later TST becomes negative-stop IPT<br>• If later IPT becomes positive – extend to 36 months | • Must be TST positive to get IPT regardless of CD4<br>• If TST negative, re-assess TST status annually<br>• IPT can be started anytime<br>• If patient becomes eligible for ART whilst on IPT, initiate ART, don't stop IPT<br>• If eligible for both ART and IPT, start ART, followed by IPT when stable on ART |
| **Patients on ART (adolescent/adult)** | • TST positive: 36 month<br>• TST negative: 12 months<br>• TST not available: 12 months<br>• If later IPT becomes positive: extend | • All eligible for IPT regardless of CD 4<br>• If TST negative, re-assess TST status and IPT eligibility 1 year after completing IPT |

| | | |
|---|---|---|
| | IPT to 36 months | |
| **Former TB adult patients (excluding MDR/XDR and children)** | | • There must be documented proof of bacteriological cure<br>• If there is no proof of cure, do not give IPT, re-assess for IPT eligibility after 3 months<br>• Can be started immediately after completing TB treatment |

MDR/XDR = Multidrug resistance/Extreme drug resistance, IPT = Isoniazid preventive therapy

## 6.6 Management of asthma

*(Arina Schlemmer)*

The management of asthma in adults is based on PACK (Knowledge Translation Unit, University of Cape Town Lung Institute and Western Cape Government, 2016). Symptoms must be assessed at every visit to determine if the asthma is controlled. Any of the following symptoms in the past month indicate uncontrolled asthma:

- Daytime cough, difficulty breathing, tight chest or wheezing more than twice a week
- Night time or early morning waking due to asthma symptoms
- Limitation of daily activities due to asthma symptoms.

Also ask about other symptoms such as:

- Sneezing, itchy and runny nose (hay fever). Treating it may improve asthma control.
- Ask patients using inhaled corticosteroids about a sore mouth, that is, oral thrush. Patients should rinse and gargle after each dose of inhaled corticosteroid.
- Ask about gastro-oesophageal reflux disease or peptic ulcer disease. Treating this may improve asthma control.

Ask at every visit about medication use:

- Ensure that the patient is adherent to the treatment before adjusting or adding treatment. If not adherent to the treatment, refer to the health educator and for community care worker support.

- Check that the patient understands when to use each inhaler and that the inhaler and spacer are used correctly. If they are not used correctly, refer to the health educator and community care workers.

Patients with asthma should be advised about the following factors:

- The risks of smoking – if the patient is smoking, offer brief behaviour change counselling as described in Chapter 2
- Ensure that the patient understands the need for the medication received:
  - Beta agonist inhaler only relieves symptoms
  - Inhaled corticosteroid prevents symptoms and controls asthma
- Advise the patient to avoid aspirin, NSAIDs and beta blockers which can make asthma worse.

Treat the client with asthma as follows:

- Give inhaled salbutamol 200 mcg (2 puffs) as needed up to four times per day
- If asthma is uncontrolled:
  - Start inhaled corticosteroid budesonide 200 mcg 12-hourly
  - If still uncontrolled, double the dose of budesonide to a maximum of 400 mcg 12-hourly
  - If still uncontrolled, add slow release theophylline 200 mg 12-hourly; increase to 300 mg if still uncontrolled – if the patient is not better after one month, stop the theophylline and refer to a specialist
- If asthma is controlled:
  - Continue inhaled corticosteroid at the same dose
  - If controlled for at least six months, decrease the inhaled corticosteroid dose by 200 mcg daily
  - Stop inhaled corticosteroid if controlled for at least six months on 200 mcg daily
  - Inhaled corticosteroids are not needed for the client with controlled exercise-induced asthma who has had no emergency visits for asthma in the past six months
- Give influenza vaccine yearly

- Oral prednisone is only used for emergency visits for asthma
- Controlled patients can be reviewed three-monthly and uncontrolled patients after one month
- Patients should be advised to return before their next appointment if there is no improvement or worsening of symptoms.

Using inhalers and spacers (see Figure 6.5):

- Add a spacer if the patient is unable to use an inhaler correctly to increase the drug delivery to the lungs and/or if using inhaled corticosteroids to prevent oral thrush
- Prime the new spacer initially with 15 puffs of medication
- Shake the inhaler and insert into the spacer
- Breathe out and then form a seal with the lips around the mouthpiece
- Press the pump once and take a deep breath from the spacer – do not pump the inhaler more than once for each breath
- Hold that breath and count to ten – then breathe out
- Rinse the mouth after using inhaled corticosteroids
- Clean the spacer weekly with soapy water and allow to drip-dry
- Prime the spacer with two puffs after washing and before use
- If the patient is unable to use the inhaler and spacer properly, refer to the health educator and community care worker for support.

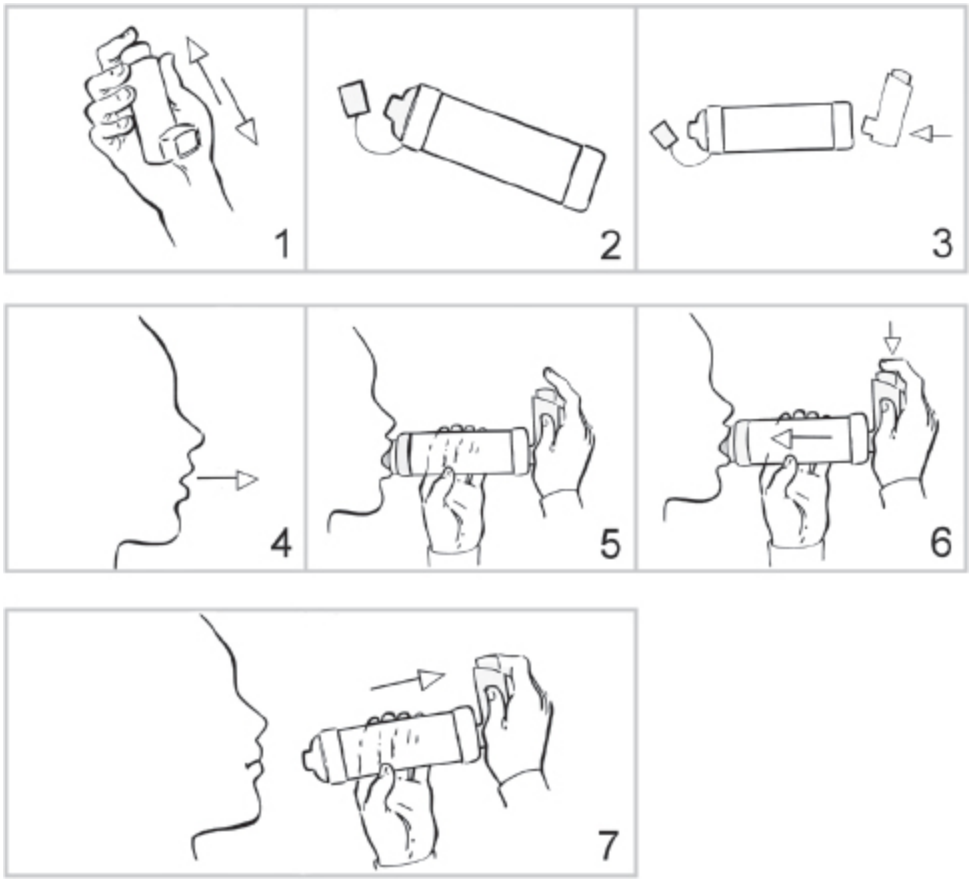



**Figure 6.5** Steps to use an inhaler and spacer

1 Shake MDI
2 Remove cap
3 Place MDI into spacer
4 Exhale
5 Make a tight seal with lips around the mouthpiece
6 Press pump once and take a deep breath from the spacer
7 Hold breath for 10 counts
8 Repeat from step 4 if a second puff is required.

The management of acute asthma in adults is illustrated in Figure 6.6.

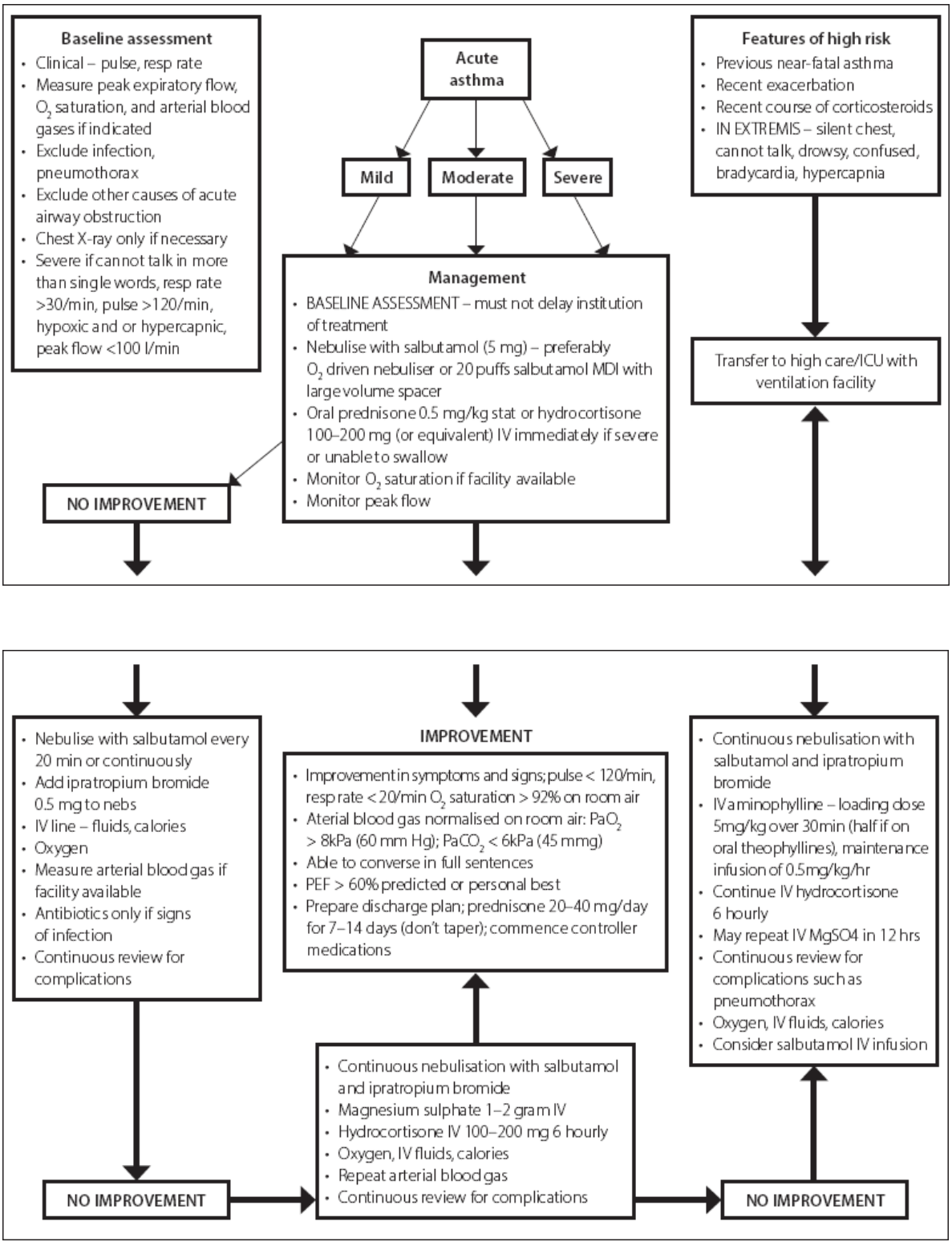



**Figure 6.6** The management of acute asthma

**Source:** Lalloo UG, Ainslie GM, Abdool-Gaffar MS (2013) Guideline for the management of acute asthma in adults. *SAMJ* 103(3)

In a child after assessing the severity of acute asthma, first-line management would include (Kling *et al.*, 2013):

- Oxygen for life-threatening asthma, severe asthma or oxygen saturation less than 92%.
- Short-acting beta-2-agonist (SABA) bronchodilators inhaled preferably by MDI with a spacer (2–10 puffs, each inhaled separately with five tidal breaths at 15–30-second intervals) or by oxygen-driven nebuliser. It can be given every 20–30 minutes or continuously depending on the severity.
- Steroid therapy must be given orally or IV early on in the management of an acute attack.
- Ipratropium bromide added if the child does not respond to three doses of SABA or if symptoms are severe. It can initially be used every 20–30 minutes for the first two hours and thereafter 4–6-hourly. It can be used in combination with the SABA in a nebuliser.

Possible additional therapy for acute asthma that does not improve on the above treatment are:

- IV low-dose bolus salbutamol
- IV salbutamol by continuous infusion
- IV aminophylline
- IV magnesium sulphate
- Subcutaneous adrenaline in a patient who is moribund
- IV fluid if the child is dehydrated.

Investigations include pulse oximetry, a chest X-ray film and arterial blood gases.

## 6.7 Management of epilepsy

*(I Govender, LH Mabuza, HI Okonta)*

Epilepsy is a chronic condition characterised by recurrent, unprovoked seizure activity. In the majority of patients with epilepsy there is no

identifiable cause.

### 6.7.1 Aetiology of seizures

Identifiable causes for seizures include:

- Children: congenital brain malformation, inborn errors of metabolism, febrile seizure
- Adult: intracranial infection, tumours, alcohol or drug withdrawal, trauma, eclampsia
- Elderly: cerebral degeneration, cerebro-vascular accident, tumours, drug reactions
- All ages: hyponatraemia, hypocalcaemia, hypoglycaemia, non-ketotic hyperglycaemia, uraemia, malignant hypertension, hypoxemia.

Seizures are sometimes confused with other conditions that cause collapse, abnormal movement or altered consciousness such as vertigo, syncope, disequilibrium, cerebro-vascular accidents, transient ischaemic attacks, panic attacks, hypoglycaemia, migraine, movement disorders, narcolepsy or alcoholic blackouts.

### 6.7.2 Classification of epilepsy

#### Partial (focal) seizures

- Simple partial – consciousness not impaired
  - With motor symptoms
  - With somato-sensory or special sensory symptoms
  - With autonomic symptoms/signs
  - With psychiatric signs
- Complex partial – impairment of consciousness
- Partial (simple or complex) evolving to secondary generalised seizure.

#### Generalised seizures

- Non-convulsive
- Convulsive.

The most important part of the history is a clear account of the seizure, ideally from an eye witness. In someone with known epilepsy, poor adherence to medication is the most common reason for presenting with a seizure. Epilepsy may be precipitated by sleep deprivation, drugs/alcohol, TV screens, strobe lighting, or an emotional upset. A clear diagnosis of the type of epilepsy should be made based on the classification above. During the seizure a variety of signs may be observed:

- A typical simple partial seizure may cause jerking of a limb (motor cortex involvement) or numbness of an arm (sensory cortex involvement). Sometimes the seizure progresses from fingers, to hand, to arm, to face in a so-called Jacksonian march. The patient is conscious.
- A typical complex partial seizure may arise in the temporal lobe and be associated with visual, olfactory or gustatory hallucinations, impaired consciousness, behavioural disturbance, repetitive activities (automatisms) such as chewing, walking and lip-smacking.
- A typical non-convulsive generalised seizure or absence seizure is usually found in children. The child maintains posture, does not shake, but speech and movement are arrested as the child stares into space. Seizures are very brief but may recur frequently and be associated with poor school performance blamed on daydreaming.
- A typical generalised convulsive seizure is associated with loss of consciousness and extension of the neck, back and limbs (tonic phase) for about a minute. The patient may cry out, bite his tongue or urinate and become cyanosed. This is followed by shaking of the limbs (clonic phase) which can last a few seconds or minutes. Following this the person is usually drowsy and confused before recovering.

### 6.7.3 Investigations

Investigations are used to identify underlying metabolic causes such as electrolytes, glucose, calcium, magnesium, creatinine, urea or liver function tests. A CT or MRI scan of the brain is necessary in most new

cases unless primary generalised epilepsy is definite. An EEG may confirm the diagnosis of epilepsy but is normal in 60% of epileptics when not having a seizure.

Investigations may also identify underlying infection such as a white cell count or lumbar puncture if there are signs of infection and no papilloedema or midline shift of brain structures. A toxic screen may investigate possible substance withdrawal (alcohol, benzodiazepines, cocaine, amphetamines).

### 6.7.4 Manage urgently the patient who is unconscious and fitting

- Ensure the patient is safe. Place in a lateral lying (recovery) position. Do not place anything in the mouth.
- Give 40% facemask oxygen.
- Check glucose. If < 3.5 or unable to measure, give 50 ml of dextrose 50% IV. Continue IV dextrose 5% in sodium chloride 0,9% slowly (30 drops per minute).
- If < 20 weeks pregnant or not pregnant, give lorazepam 4 mg IM/IV stat or diazepam 10 mg IV slow infusion over at least 5 minutes.

### 6.7.5 Clinical management and plan

Figure 8.8 and Table 6.11 shows an approach to the use of medication. The golden rule is for monotherapy and to increase to the maximum possible dose before substituting or adding another drug. Avoid continual increases and decreases in dose. Generally, the best medication for a woman who wants to become pregnant is the one that best controls her seizures at the lowest possible dose, but specialist help should be sought. Advise the patient that there are many drugs that interfere with antiepileptic drugs (AED) treatment and to discuss this with the doctor when starting any new medication. Choice of medication or dosage may need adjusting when combined with contraception or TB treatment due to the drug interactions. Advise the patient to keep a fits diary to record frequency dates and times of fits. Suggest a MedicAlert bracelet.

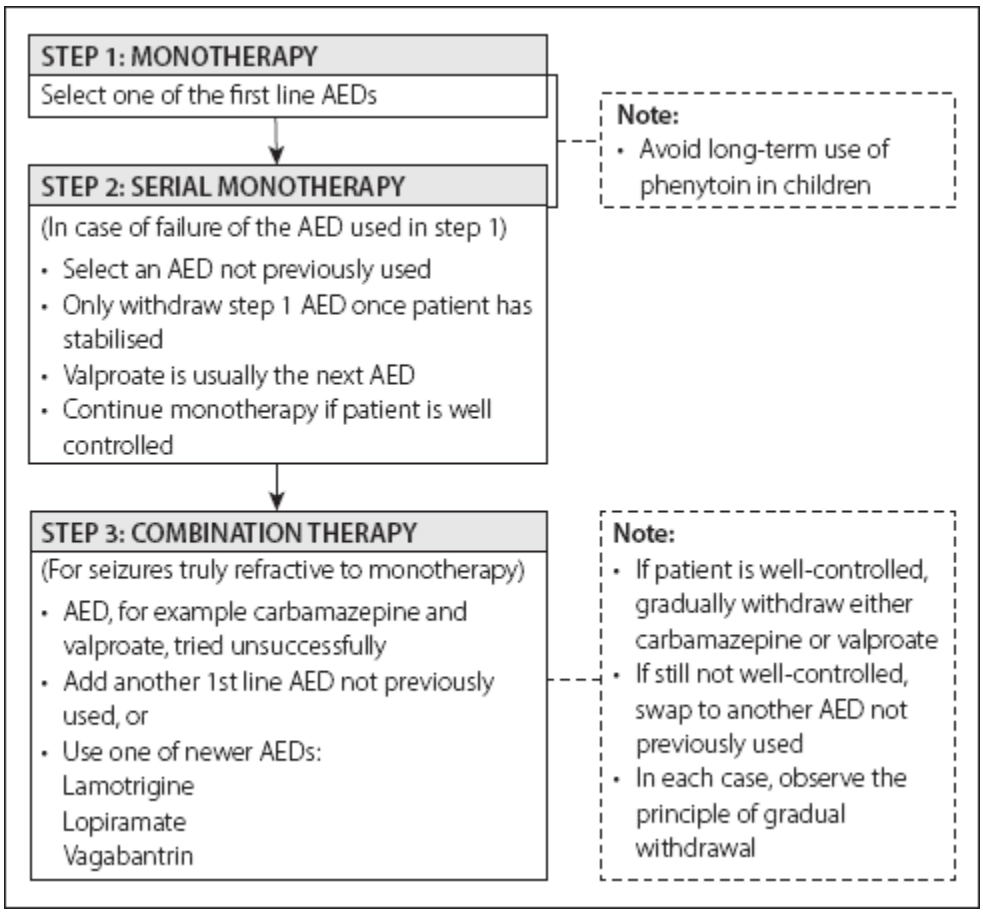



**Figure 6.7** A stepwise approach in the management of generalised epilepsy

**Table 6.11** Common AED used for epilepsy

| AED | Dose | Precaution |
|---|---|---|
| Phenytoin | Starting dose 150 mg daily and usual dose 300 mg daily. If not controlled, increase by 50 mg 2-weekly and check drug level. | Avoid in women as it can cause facial hair/coarse facial features.<br>Side effects: skin rash, slurred speech, drowsiness. Drug interactions: isoniazid, warfarin, furosemide, oral contraceptive, ART. |
| Carbamazepine | Start 100 mg 12-hourly. Increase daily dose by 100 mg every week until controlled.<br>Usual dose: 300–600 mg 12-hourly. | Side effects: skin rash, blurred or double vision, ataxia, nausea. Drug interactions: isoniazid, warfarin, fluoxetine, theophylline, amitriptyline, oral contraceptives, ART. |
| Lamotrigine | 25 mg daily for 2 weeks, thereafter 50 mg daily for 2 weeks. Then increase by 50 mg 2-weekly until controlled. Usual dose: 100–200 mg/day as single dose. | Use in HIV. Increase dose if fits on TB treatment or lopinavir/ritonavir. Side effects: skin rash, blurred or double vision. Drug interactions: paracetamol, rifampicin, ART. |
| Valproic acid (Sodium valproate) | Adults: Initially 600 mg/daily in divided doses. Increase by 200 mg/d at 3 day intervals until control is achieved. Usual dose 20–30 mg/kg/day), max dose 2.5 g/day.<br>Paediatrics: > 20 kg; initially 400 mg/day in divided doses increase gradually until control is achieved. Usual dose 20–30 mg/kg/day.<br>< 20 kg; Usual dose 20 mg/kg/day. | Contraindicated in liver disease and porphyria. Highest risk of teratogeneis especially in first trimester, use lowest dose possible with folic acid supplementation. Hepatic enzyme inducer interacts with: carbamazepine, carbapenems, ethosuximide, lamotrigine, phenobarbital, phenytoin, warfarin, asparin, dipyridamole, AZT. |

Routine care for a patients with epilepsy is summarised in Table 6.12 (Knowledge Translation Unit, University of Cape Town Lung Institute and Western Cape Government, 2016).

**Table 6.12** Routine care for the patient with epilepsy

| Assess | When to assess | Note |
|---|---|---|
| Symptoms | Every visit | Manage symptoms |
| Fit frequency | Every visit | Review fit diary. Assess if fits prevent patient from leading a normal lifestyle. |
| Adherence | Every visit, if fits occur | Assess attendance, pill counts and if still fitting on treatment, drug level (doctor decision). |
| Side effects | If fits occur, discuss at diagnosis, every visit | Side effects often explain poor adherence. Patient may need to weigh side effects with fit control. |
| Other medication | If fit occurs | Check if patient has started other medication like TB treatment, ART or oral contraceptive. |
| Substance abuse | At diagnosis, if fits occurs or adherence poor | > 21 alcohol units/week (man) or > 14 alcohol units week (woman) and/or > 5 drinks/session or misuse of illicit or prescription drugs. |
| Family planning | Every visit | Refer if patient is pregnant or planning to be, for epilepsy and antenatal care. Assess family planning needs: avoid oral contraceptives on carbamazepine or phenytoin. |
| Drug level | Only if needed | To check drug level if unsure about adherence or on higher than maximum dose of phenytoin. |

**Source:** PACK, Knowledge Translation Unit, University of Cape Town Lung Institute and Western Cape Government, 2015

When monotherapy fails to control seizures satisfactorily, the following factors should be considered:

- Poor adherence
- Seizures not caused by epilepsy (20%)
- Psychological problem
- Underlying neurological problem
- Use of wrong medication.

The following factors may predict intractability:

- Onset of seizures at young age (< two years)
- Frequent generalised seizures
- Evidence of brain damage
- Severe EEG abnormality
- Low IQ
- Atypical absence seizures.

### 6.7.6 Individual management and plan

The diagnosis of epilepsy is associated with stigma and often strong cultural beliefs regarding causation or treatment. Try to understand the patient's perspective to clarify misunderstandings. Discuss issues related to adherence and the risks or benefits of treatment. Avoid dangers like heights, fires, swimming alone, cycling on busy roads, and operating machinery. Avoid driving their own vehicle until free of fits for one year.

### 6.7.7 Contextual management and plan

It is essential to involve the family so that they can understand the disease, know what to do during a seizure and can support adherence to treatment. Frequently the person with epilepsy has problems at school, at work or with finding employment. Consider the implications for driving vehicles and for disability grants. Link the patient with any organisation that help with skills training or employment such as the South African National Epilepsy League (SANEL).

## 6.8 Management of lower respiratory tract infections

*(Paul Kapp)*

Lower respiratory tract infections are managed according to the following principles:

1 Decide if the patient is severely ill or not
2 Identify comorbidities (including advanced age)
3 Establish if the patient has received antibiotics in the past three months
4 Exclude asthma/COPD (wheezing), heart failure (peripheral oedema)
5 Consider atypical pneumonia and TB (cough more than two weeks)
6 Consider if it is a viral or bacterial infection (sputum colour changes: yellow, brown or green).

### 6.8.1 Adult patients, ambulatory care

Patients usually have fever, pleuritic chest pain and new or increasing sputum production, but are not severely ill. Patients whose HIV status is unknown should be counselled and tested.

Treat symptoms with bed rest, analgesia (paracetamol), promote oral fluid intake and brief behaviour change counselling to stop smoking.

Patients with suspected bacterial infection (yellow, brown or green sputum) and HIV positive patients need antibiotics. Amoxicillin 1 g orally twice daily is evidence based. If the patient is older than 65 years or at risk of severe respiratory infection (a diabetic, has heart/lung or liver disease, an alcoholic) give ceftriaxone 1 g IVI/IMI stat and treat with co-amoxiclav 1 g orally twice daily, or cefuroxime 500 mg orally twice daily. Follow up in two days and confirm that the patient is improving.

### 6.8.2 Adult patients, hospital care

The following patients require admission:

- Patients with poor socio-economic status
- Elderly patients
- Patients with comorbidities
- Cyanosis
- Multilobular disease
- Other complications on chest X-rays, for example, pneumothorax.

The CURB-65 score is a useful tool to decide on the severity of the illness. The pneumonic stands for:

- C – Confusion
- U – Urea ≥ 7 mmol/l
- Respiratory rate ≥ 30 breaths/minute
- Blood pressure systolic < 90 mmHg, diastolic < 60 mmHg
- Age > 65 years.

Patients requiring admission that have a CURB-65 score of one or less, are younger than 65 years and have no comorbidities may be treated with IVI penicillin or ampicillin ± a macrolide. Patients older than 65 years or having comorbidities should be treated with IVI co-amoxiclav

or cefuroxime or ceftriaxone ± a macrolide. Patients with a CURB-65 score of two or more should be treated with IVI co-amoxiclav or ceftriaxone plus an aminoglycoside plus a macrolide.

The use of the newer respiratory fluoroquinolones needs to be restricted to patients who are not responding to the above regimes and who are critically ill to reduce the development of antibiotic resistance. In addition, quinolones are an important component of the treatment regime for multidrug resistant tuberculosis (MDR TB). Indiscriminate use of quinolones will lead to extreme drug resistant tuberculosis (XDR TB).

## 6.9 Management of chronic obstructive pulmonary disease

*(Arina Schlemmer)*

Tobacco smoking is the most common cause of chronic pulmonary disease (COPD), but exposure to the burning of biomass fuels (indoor air pollution), TB and smoking marijuana are important additional causes. Spirometry is important for the diagnosis and staging of COPD (Abdool-Gaffar, 2011), unfortunately this is not readily available in the primary care setting. A chest X-ray may show evidence of hyperinflation or previous TB, but frequently appears normal. COPD is often either undiagnosed or diagnosed too late, so limiting the benefit of therapeutic interventions (Abdool-Gaffar *et al.*, 2011).

The management of a patient with COPD in the primary care is outlined in the sections that follow and based on PACK (Knowledge Translation Unit, University of Cape Town Lung Institute and Western Cape Government, 2015).

Assess the disease severity at every visit:

- Mild COPD: difficulty breathing occurs with strenuous activity like climbing stairs
- Moderate COPD: difficulty breathing occurs at normal pace like walking
- Severe COPD: difficulty breathing occurs with activities of daily living like dressing.

Ask at every visit about coughing:

- Treat for a chest infection if the sputum increases or changes colour to yellow/green
- Investigate for TB only if other TB symptoms like weight loss and sweating are present.

Ask at every visit about other symptoms:

- If on inhaled corticosteroids, ask about a sore mouth which could indicate oral thrush
- Leg swelling which could indicate heart failure.

Ask at every visit about medication use:

- Ensure that the patient is adherent to treatment before adjusting or adding treatment. If not adherent, refer for health educator and community care worker support.
- Check that the patient can use the inhaler and spacer correctly (see Figure 6.5). If unable to, refer to the health educator and community care worker support.

When diagnosing the patient with COPD, assess the cardiovascular disease (CVD) risk because these patients are at an increased risk of CVD.

Advise the patient:

- About smoking. If smoking, offer brief behaviour change counselling (see Chapter 2). This is the mainstay of COPD treatment
- About exercise: Encourage daily walking and to increase activities of daily living such as gardening, housework and using the stairs
- To rinse and gargle after each dose of inhaled corticosteroid.

Treat the client with COPD:

- Give an inhaled bronchodilator salbutamol 200 mcg (2 puffs) when needed up to four times a day to reduce wheezing or a tight chest
- Give influenza vaccinations yearly
- If moderate or severe COPD, add inhaled bronchodilator ipratropium bromide 40 mcg (2 puffs) eight hourly, increasing to six hourly if needed.

- If still uncontrolled and COPD is severe, add slow-release theophylline 200 mg 12 hourly long term. If no better, increase to 300 mg 12 hourly
- Give inhaled corticosteroid budesonide 400 mcg 12 hourly if COPD is moderate or severe and the patient has two or more chest infections or emergency visits for COPD per year
- Treat for chest infection if sputum increases or changes in colour to yellow/green:
  - Give amoxicillin 500 mg eight hourly for ten days or doxycycline 100 mg 12 hourly for ten days
  - If breathlessness increases, give oral prednisone 40 mg daily for seven days.

Review patients with COPD 3–6 monthly if stable.

In addition to the medication mentioned above, the following can also aid in the management of COPD but are not readily available in primary care:

- Inhaled long-acting beta-2 agonists (LABA) salmeterol and formoterol
- Long-acting anticholinergic such as tiotropium.

See Figure 6.8 for combinations of drugs used for COPD treatment.

<table>
<tr><th>Stage 1: Mild</th><th>Stage 2: Moderate</th><th>Stage 3: Severe</th><th>Stage 4: Very severe</th></tr>
<tr><td colspan="4">Active reduction of risk factors (smoking cessation, influenza vaccination) and rehabilitation.</td></tr>
<tr><td colspan="4">Add bronchodilators (short-acting beta-2 agonists or short-acting anticholinergic or both) as needed or regularly and/or oral theophylline.</td></tr>
<tr><td></td><td colspan="3">Add regular treatment with long-acting anticholinergic or long-acting beta-2 agonist or both.</td></tr>
<tr><td></td><td colspan="3">Add inhaled glucocorticosteroids especially for frequent exacerbations (> 2/yr).</td></tr>
<tr><td></td><td></td><td colspan="2">Add long-term oxygen therapy if chronic respiratory failure.</td></tr>
</table>

**Figure 6.8** Combinations of drugs used for COPD treatment

**Source:** Abdool-Gaffar MS, Ambaram A, Ainslie GM *et al*., (2011) Guideline for the management of chronic obstructive pulmonary disease-2011 update. *SAMJ* January, 101(1): 63–73

Nebuliser treatment is an alternative for stage 3 and 4 patients with poor inhalation technique and/or dyspnoea. Nebulisers tend to be overused though and nebuliser solution is not available in the public sector for the patient to take home any longer.

Mucolytics, mucokinetics, cough syrups and acetylcysteine are not effective. The physiotherapist has an important role in directing the conditioning (exercise) programme and in advising on breathing and coughing techniques. Venesection should be considered if the haematocrit is high.

In an acute exacerbation, oxygen should be started at 24% or 1–2 L/minute by nasal canula. Increases should be gradual to avoid carbon dioxide narcosis. The aim is to maintain saturation above 90%.

Long-term oxygen therapy (LTOT) indications are as follows:

- Stable, severe COPD on optimal bronchodilator therapy
- Arterial hypoxemia or saturation < 90% at rest
- Smoking cessation for more than three months
- Must have fully recovered from an acute exacerbation.

Indications for referral to hospital are (Abdool-Gaffar *et al.*, 2011):

- Severe exacerbation of COPD
- Any of the following features:
  - Sustained failure to improve on outpatient management
  - Inability to walk between rooms
  - Family and or physician unable to manage patient at home
  - There is a high risk co-morbid condition
  - Prolonged progressive worsening of symptoms before emergency visit
  - Altered mental state
  - Worsening hypoxemia and new or worsening hypercapnia
  - New onset arrhythmia
  - Elderly or frail patient
  - New or worsening right-sided cardiac failure unresponsive to outpatient management.

### 6.9.1 Prevention and treatment of complications

- The management of right heart failure:
  - Identify and treat the precipitating cause. This might include an acute respiratory infection, worsening airflow obstruction or worsening hypoxemia from, for example, a move to a higher altitude or a thromboembolic event.
  - Correction of hypoxemia with LTOT as indicated previously.
  - Diuretics: Avoid large decreases in preload which may precipitate hypotension and renal impairment.
  - Digoxin must be avoided except in the presence of atrial fibrillation (AF) and/or left ventricular dysfunction/ failure.
  - ACE inhibitors and calcium antagonists are not indicated for the management of cor pulmonale or right ventricular failure.
  - Prophylaxis with subcutaneous heparin to prevent deep vein thrombosis during periods of exacerbation or prolonged immobilisation.
  - Chronic treatment with oral anticoagulants needs to be considered in COPD patients with AF or thromboembolic complications
- Pneumothorax:
  - Consider the development of a spontaneous pneumothorax when patients with stable COPD suddenly deteriorate
- Surgery for COPD: Surgical techniques that can improve lung function and symptoms of COPD include:
  - Bullectomy
  - Lung volume reduction surgery
  - Lung transplantation.

## 6.10 Management of acute coronary syndromes

*(Francois Coetzee)*

Acute coronary syndromes (ACS) are major events for patients since they are often accompanied with severe discomfort, anxiety about the possible outcomes, guilt about poor lifestyle choices and the possibility of significant impairment or death.

Acute coronary syndromes include:

- Unstable angina – angina with any of the following characteristics: at rest, increasing in frequency or severity, not relieved by rest or nitrates
- ST elevation myocardial infarction (STEMI)
- Non-ST segment elevation myocardial infarction (non-STEMI).

### 6.10.1 Clinical assessment and planning

In the patient that presents with acute chest pain:

- Provide oxygen and start emergency management according to the hemodynamic status of the patient, see the next section.
- Do an ECG as soon as possible, especially with typical ACS pain or with a history of such pain: sensation of pressure on chest worsened by exertion, spreading down the arms or to the jaw or the abdomen, relieved by rest or nitrates, associated nausea/sweating/fainting/dyspnea.
- Screen for cardiovascular risk factors: Age, gender, tobacco smoking, hypertension, dyslipidemia, diabetes mellitus, overweight/obesity, family history of premature cardiovascular disease.
- Perform a focused clinical examination while considering other causes of chest pain, see an approach to chest pain in Chapter 5. In the patient with a low blood pressure and chest pain, consider tension pneumothorax, dissecting aortic aneurism, pneumonia with septicemia and pulmonary embolism.
- Investigate appropriately to confirm or exclude ACS and detect precipitants:
  - Hemoglobin, white cell count, renal function and electrolytes
  - Serial ECG's and troponins
  - CXR where pulmonary causes or dissecting aorta aneurism is suspected.

#### Emergency management of ACS

***Unstable angina and non-STEMI***

- Oxygen mask – maintain normal oxygen saturation

- Give a 200 ml bolus of 0,9% saline if hypotensive, repeat after 30 minutes if necessary
- Give aspirin 300 mg/clopidogrel 300 mg per os stat
- Give clexane 1 mg/kg subcutaneously stat
- Give isosorbide dinitrate 5 mg sublingual, repeat after ten minutes if the pain is not relieved and the blood pressure is stable
- Give 1 mg/ml morphine intravenously every minute in addition to the sublingual nitrates until the pain is relieved
- Risk stratify the patient with ACS according to the ECG changes. See Table 6.13. An alternative is to use the TIMI scoring which is available at the following web site: http://www.mdcalc.com/timi-risk-score-for-uanstemi/
- Admit to the hospital for follow-up ECG and troponins
- Refer non-urgently for stress ECG if the patient stabilises in the ward, has no further episodes of chest pain, follow-up troponins are not raised, and ECG remains unchanged
- **Refer urgently** to a regional or tertiary hospital level care if the patient has a TIMI score of three or more, continued chest pain, more episodes of chest pain, received streptokinase within the past six weeks, hemodynamic instability, or ventricular arrhythmias.

***STEMI***

Followc the same steps as for unstable angina AND:

- Arrange percutaneous coronary intervention (PCI) if the facility can offer it within a reasonable time (90 minutes is what the American guidelines said for performing the procedure)
- If PCI cannot be performed, give streptokinase 1,5 MU in 200 ml saline over 60 minutes if the patient meets the criteria for thrombolysis:
  - ST elevation of >1 mm in two or more contiguous leads, reciprocal ST depression or a new left bundle branch block
  - The patient presented within six hours of onset of the chest pain
  - Absence of contraindications: active bleeding, bleeding disorder, previous hemorrhagic stroke, gastrointestinal bleeding in the past three months, peptic ulcer disease

- Admit to the hospital if the patient is hemodynamically stable and reperfusion has taken place: ST elevation halved, chest pain minimal or gone at review after 90 minutes
- Refer for PCI at a tertiary hospital if reperfusion was unsuccessful or if the patient experiences another episode of chest pain while admitted to hospital.

### 6.10.2 Individual assessment and planning

Good care during subacute management of patients admitted for ACS can significantly reduce the likelihood of another event, readmission and death (Mercado, 2013). This should include:

- Reviewing all medications and explaining to the patient the purpose of each medication and possible side effects
- Patient-centered discharge planning
- Arranging appropriate referrals and follow-up and paying attention to the patient's context.

#### Medication review

Start by asking the patient to explain the purpose of each of the current medications in their own words to assess to what extent education is needed. It is often useful to have a supportive family member present in order to increase the likelihood of adherence with the prescribed medication.

The patient's current medication should be reviewed in terms of its necessity, possible drug interactions (for example, NSAIDS and aspirin), and possible harm that can be caused by it. If any changes are made to a patient's medication, it should be done in consultation with the patient and effort has to be made to ensure that the patient understands why the changes are made. See Table 6.13 for recommendations on medications post ACS.

**Table 6.13** Medications to be prescribed to patients post ACS event

| Medication | When to start | Notes |
|---|---|---|
| Aspirin 150 mg/day | As soon as the patient is stabilised | 300 mg/day in the acute period, continue 150 mg/day indefinitely if tolerated well. |
| Clopidogrel | During acute period (MI) | Used in combination with aspirin for three months or nine months when PCI inserts drug eluting stents. |
| Beta blocker | Before discharge | Reduction in mortality post MI not proved. In patients with an ejection fraction < 40% or cardiac failure post MI, the dose should be titrated carefully. |
| ACE inhibitor | As soon as patient is stabilised | Compelling indications include:<br>• Hypertension<br>• Diabetes<br>• Chronic kidney disease<br>• LV ejection fraction < 40%.<br>Do not combine with angiotensin receptor blocker (ARB). Give ARB only if the patient cannot tolerate ACE inhibitor. Avoid in patients with acute renal failure, hyperkalemia, and hypotension. |
| Statin | Before discharge | Recommended dose is 10 mg simvastatin nocte, can be increased to 20 mg nocte if adequate reduction of cholesterol is not achieved on the standard dose. |
| Spironolactone | At time of diagnosis of low ejection fraction or cardiac failure | Monitor potassium and glomerular filtration rate closely if also on an ACE inhibitor. |

## Patient-centered discharge planning

Planning starts at admission. Being admitted for an acute chest pain almost always goes with high levels of patient anxiety for both the patient and the family members. The treating doctors are to create opportunities where patients can communicate their ideas and concerns about their condition and the treatments offered and also respond to them with compassion.

Ideally the treating clinician will inform the patient soon after admission about the diagnosis and care plan. The investigations and treatments are individualised according to the extent of the pathology. Yet it remains important to keep the patient well informed about all planned treatments and investigations. See Table 6.14.

**Table 6.14** Characteristics of a good discharge plan

- It involves the patient (and family where appropriate) in the decision-making process in planning lifestyle changes and physical activity/an exercise programme
- It empowers the patient with a plan of action in case of a recurrence of symptoms or an emergency
- It informs the patients of important symptoms that constitutes an emergency
- It provides a contact person and contact details in case more information is required about the condition or treatment
- It informs the patient about pending results for tests performed and how and when to access the results
- It includes strategies to decrease the likelihood of premature discontinuation of medication and rehabilitation, for example, the use of a pill box, limiting the number of medications and frequent follow-up dates
- It provides a discharge summary with the reason for admission, significant clinical events during admission, medication prescribed on discharge, indications and instructions for the use of the medications, referrals made and follow-up arranged
- It has built in communication with the regular physician or clinic of the patient which can be by means of a telephone conversation or an expedited discharge summary via email or fax
- It creates an opportunity where the patient can share his/her understanding of the discharge plan
- It includes a telephone call to the patient two or three days after discharge to address any questions or problems encountered.

### Arranging appropriate referrals and follow up

All patients should be considered for referral to a dietician and a physiotherapist. The physiotherapist may be able to help the patient to plan an appropriate exercise programme or return to previous physical activities. An admission for an ACS event often leads to at least six weeks of unemployment and a social worker can assist the patient with a temporary source of income and/or make arrangements with the patient's employer.

## 6.10.3 Contextual assessment and planning

It is important to engage early on with the patient's family. A family meeting/family conference can be arranged to take place during the admission or on a follow-up visit. A genogram is useful to map the full extent of ischemic heart disease (and other risk factors like diabetes and/or other vascular events like strokes) in the family and can be used as a tool to facilitate health promotion and disease prevention in the patient's family. Issues that need to be considered at a family meeting/family conference comprise:

- Concerns and ideas of the family members including financial concerns
- Support structures within the family and community
- Assisting the patient and family members in stopping to smoke
- Plans for healthy eating habits and physical activity
- Action plan in case of emergency.

**Table 6.15** ECG scoring to risk stratify ACS patients

| ECG changes | Group/Risk | Action |
|---|---|---|
| ST elevation > 1 mm | STEMI | PCI/Thrombolysis* |
| ST depression or new T-wave inversion | Unstable angina or NSTEMI – HIGH risk | Refer/Admit |
| Non-diagnostic ECG | Unstable angina – LOW risk | TIMI – scoring: Admit or refer |

*If criteria are met

**Table 6.16** TIMI Scoring to risk stratify unstable angina patients

| TIMI – 1 point per category | Score |
|---|---|
| Age > 65 years | /1 |
| 3 or more risk factors for CAD* | /1 |
| Known CAD (stenosis > 50%) | /1 |
| Aspirin use in the past seven days | /1 |
| 2 or more episodes of unstable angina in past 24 hours | /1 |
| ST deviation $^{3}$ 0.5 mm | /1 |
| Elevated cardiac marker level | /1 |
| **Total score** | |
| **RISK of life-threatening MI based on total TIMI score** | |
| 0–1 | 5% |
| 2 | 8% |
| 3 | 13% |
| 4 | 20% |
| 5 | 26% |
| 6–7 | 41% |

*Family history of CAD, hypertension, hypercholesterolemia, diabetes mellitus, tobacco use

# 6.11 The management of heart failure

*(Paul Kapp)*

Heart failure (HF) is a syndrome that presents with dyspnoea or wheezing especially when lying down. Patients also have peripheral oedema, fatigue as well as other symptoms such as palpitations or chest pain depending on the cause. It is important to identify reversible or treatable causes such as myocardial ischaemia, valvular heart disease, alcohol abuse, HIV, thyroid disease as well as conditions that may worsen HF such as anaemia, diabetes, hypertension or renal failure.

On first presentation, most patients require admission to achieve euvolaemia (dry body weight) and workup for the underlying cause and precipitating factors. Ideally all patients should have echocardiography to confirm the diagnosis, although B-natriuretic peptide (BNP) may be used where echocardiography is not freely available. An ECG must be done. A patient with a normal ECG is unlikely to have HF. A chest X-ray will identify lung disease. Findings on X-rays in HF are an increased cardiothoracic ratio (> 50%), right-sided pleural effusion, fluid in fissures and upper-lobe blood diversion. Blood workup includes serum BNP, potassium, creatinine, white cell count and haemoglobin, TSH and blood glucose.

The aim of treatment for HF is threefold:

1 Reduce symptoms
2 Reduce hospitalisation
3 Prolong life.

Euvolaemia is achieved by fluid restriction (< one litre per day) and diuretics. Success is monitored by daily weight. Loop diuretics are used for patients with severe fluid overload, pulmonary oedema or renal impairment. Thiazide diuretics may be used for less severe cases with normal renal function. Serum potassium needs to be carefully monitored (especially when using intravenous furosemide) and replaced (1 200 mg of potassium salt for every 40 mg of furosemide). The potassium replacement is decreased or stopped when adding drugs that retain potassium such as mineralocorticoid receptor antagonists (MRA) or angiotensin-converting enzyme inhibitor (ACEI) or an angiotensin receptor blocker (ARB).

Three neurohumoral antagonists have been shown to reduce symptoms, decrease hospitalisation and reduce the risk of premature death: ACEIs, beta blockers (BBs) and MRAs. They should be considered for all HF patients.

ACEI (enalapril, captopril, lisinopril) may worsen renal function, cause hyperkalaemia, hypotension, cough and angioedema. Therefore use with caution in patients with a creatinine > 222 mmol/l or eGFR < 30 ml/min/1.73m$^2$. Do not use if serum potassium > 5.2mmol/l. If the patient develops symptomatic hypotension, reduce or temporarily stop the diuretic rather than stopping the ACEI. Start low and titrate to target dose over 2–4 weeks. The patient must be contacted after two days of treatment to enquire about side effects. A follow-up appointment in one week must be booked to check blood pressure (BP), urea, creatinine and potassium. An ARB may be used if a patient is unable to tolerate an ACEI and is still symptomatic despite a BB and an MRA. It may also be used in addition to an ACEI to reduce hospitalisation in symptomatic patients on an ACEI and BB who are unable to tolerate an MRA. A combination of nitrates and hydralazine may be used in patients unable to tolerate ACEI and ARBs. They should still be receiving a BB and MRA.

BB (carvedilol or bisoprolol) should be started once signs of fluid retention have improved and the patient is no longer on intravenous medications. Start low and gradually increase to target dose.

MRA (spironolactone or eplerenone) is recommended when patients continue to be symptomatic despite an ACEI and BB. Both may cause hyperkalaemia and worsening renal function, therefore only use if creatinine < 222 mmol/l or eGFR > 30 ml/min/1.73 m$^2$ and potassium < 5.2 mmol/l. Follow-up creatinine and potassium in five days and again after another week as well as with dose adjustments.

Digoxin is occasionally used in patients with HF and atrial fibrillation. However, rate control is best achieved using a BB. Digoxin may be used in addition to the BB but has a narrow therapeutic index. Toxic digoxin levels are common in the setting of the elderly, low BMI, renal impairment, hypokalaemia and CAD. Digoxin may also be used in patients in sinus rhythm on full background therapy that are still symptomatic to control symptoms and reduce hospitalisation. It has no

mortality benefit. It is best to consult a cardiologist before prescribing digoxin.

**Table 6.17** Commonly-used drugs with starting and target doses

| Drugs commonly used | Starting dose (mg) | Target dose (mg) |
|---|---|---|
| Enalapril | 2.5 bd | 10–20 bd |
| Captopril | 6.25 tds | 50 tds |
| Losartan | 50 dly | 150 dly |
| Valsartan | 40 bd | 160 bd |
| Carvedilol | 3.125 bd | 25–50 bd |
| Bisoprolol | 1.25 dly | 10 dly |
| Eplerenone/Spironolactone | 25 dly | 25–50 dly |

Exercise training improves quality of life and reduces hospital admissions. A multidisciplinary team approach should be used in all patients with HF.

Treatment of hypertension reduces the incidence of HF. ACEI, BB, MRA and diuretics are the drugs of choice. Short-acting nifedipine is contraindicated in HF as are negative inotropic calcium channel blockers (diltiazem and verapamil). If hypertension is not controlled with the drugs of choice, one may add hydralazine or amlodipine/felodipine.

Other treatment options include implantable cardioverter-defibrillators to prevent sudden death from ventricular fibrillation, cardiac resynchronisation therapy, and heart transplant.

The New York Heart Association functional class classification is useful to monitor progression of disease as well as for prognostication.

**Table 6.18** New York Heart Association Functional Class Classification

| Functional capacity | Objective assessment |
|---|---|
| **Class I.** Patients with cardiac disease but without resulting limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, dyspnoea, or anginal pain. | **A.** No objective evidence of cardiovascular disease. |
| **Class II.** Patients with cardiac disease resulting in slight limitation of physical activity. They are comfortable at rest. Ordinary physical activity results in fatigue, palpitation, dyspnoea, or anginal pain. | **B.** Objective evidence of minimal cardiovascular disease. |
| **Class III.** Patients with cardiac disease resulting in marked limitation of physical activity. They are comfortable at rest. Less than ordinary activity causes fatigue, palpitation, dyspnoea, or anginal pain. | **C.** Objective evidence of moderately severe cardiovascular disease. |
| **Class IV.** Patients with cardiac disease resulting in inability to carry on any physical activity without discomfort. Symptoms of heart failure or the anginal syndrome may be present even at rest. If any physical activity is undertaken, discomfort is increased. | **D.** Objective evidence of severe cardiovascular disease. |

# 6.12 Management of stroke

*(Francois Coetzee)*

Strokes or cerebrovascular accidents are unfortunately common events in elderly patients and patients with poorly controlled chronic diseases such as hypertension, diabetes, or ischaemic heart disease and the risk is considerably increased by smoking. Each cerebrovascular accident causes significant morbidity for both patients and their families. The estimated mortality rate for stroke as a cause of death in South Africa is 160/100 000 of the population and stroke is the most common cause of death in patients older than 50 years of age (Breyer *et al.*, 2010). Primary prevention is important through attention to reducing cardiovascular risk from tobacco smoking, hypertension, diabetes, obesity and associated sedentary lifestyle and poor diets.

This section is focused on the management of ischemic strokes.

## 6.12.1 Clinical assessment and planning

### Emergency management of an acute stroke

- Give oxygen via facemask if saturation < 94%

- Exclude or treat hypoglycemia, give up to 50 ml 50% dextrose if HGT < 3.5 mmol/l
- Assess the person's ability to speak and if there are any limitations, refrain from giving fluids or solids per os until the swallowing is formally assessed
- Take a history and do a full neurological and focused systemic clinical examination while considering risk factors for a stroke: previous stroke or uncontrolled hypertension, diabetes mellitus, smoking, hypercholesterolemia, atrial fibrillation, carotid artery disease, structural heart disease, HIV, renal failure, clotting disorders (decreased or increased clotting)
- The differential diagnoses include transient ischaemic attack, delirium, post ictal state, hypertensive encephalopathy, meningitis, brain tumors/metastases, post-traumatic brain injury/hemorrhage, complex migraine, carotid artery dissection, and space occupying lesions (for example, brain abscess)
- All patients with a first episode of stroke should be admitted and assessed for treatment and rehabilitation potential
- If the patient can reach a stroke unit within four hours from the onset of symptoms, refer the patient for imaging to confirm the diagnosis and consider thrombolysis.

### Management priorities for the first 48 hours

- Manage hypertension conservatively for the first 24 hours after the stroke, and treat only if the blood pressure exceeds 220/120 or if a hypertensive emergency is present.
- A hemorrhagic stroke often presents acutely with focal symptoms and the addition of any combination of the following symptoms: nausea and vomiting/headache/decreased level of consciousness/neck stiffness/seizures. A large ischemic stroke may present in a similar way and imaging is mandatory to make a definite diagnosis. Arrange for imaging as soon as possible to exclude a hemorrhagic stroke. Classify the stroke using the Oxford classification of stroke (see Table 6.19).

- If the patient is below the age of 40 years of age or does not have any known risk factors, do the following laboratory investigations: urea, creatinine, sodium, potassium, full blood count and differential count, syphilis serology, INR, serum cholesterol. A full lipid profile and blood tests for protein C and protein S can be considered as deemed necessary.

**Table 6.19** The Oxford stroke classification

| Clinical picture | Type of stroke | Syndrome | Infarct | Hemorrhage |
|---|---|---|---|---|
| Unilateral weakness (and/or sensory deficit) + Homonymous hemianopia + dysphasia/ visual-spatial abnormality | Total anterior circulation | TACS | TACI | TACH |
| **Any two of:** Unilateral weakness (and/ or sensory deficit) + Homonymous hemianopia + dysphasia/ visual-spatial abnormality | Partial anterior circulation | PACS | PACI | PACH |
| Cerebellar or brainstem syndromes **or** loss of consciousness **or** isolated homonymous hemianopia | Posterior circulation | POCS | POCI | POCH |
| Unilateral weakness (and/or sensory deficit) **or** pure sensory stroke **or** ataxic hemiparesis | Lacunar stroke | LACS | LACI | LACH |

### 6.12.2 Individual assessment and planning

More than 95% of patients that suffer a new stroke will not qualify for thrombolytic therapy because of time delays and limited access to it. They require admission to hospital and subacute management. Current thinking is that this management should take place over the two weeks following the acute event and then community rehabilitation should take place as indicated (Bernheisel, 2011).

Care plans need to be individualised to suit the patient and according to what resources are available. But care plans should focus on preventing and treating complications (See Table 6.20), the recovery of function, prevention of a recurrence and prevention of mortality. These goals are best achieved when stroke patients' management is approached by a team of professionals that work together. Weekly to two-weekly interprofessional ward rounds or patient discussions are ideal platforms for good communication and collaboration among team members. See Table 6.21 for a list of health-care professionals that could contribute to the care of a stroke patient.

**Table 6.20** Complications that may arise from a stroke

| Complication | Notes |
|---|---|
| Aspiration & pneumonia | Perform a swallowing assessment on admission, feed the patient according to the recommendations of the swallowing assessment |
| Deep venous thrombosis | Prescribe prophylactic doses of low molecular weight heparin for patients with restricted mobility. If the risk of DVT and PE is thought to outweigh the risk of intracranial haemorrhagic complications in ischaemic stroke. Avoid in haemorrhagic stroke until the bleeding has ceased |
| Hypostatic pneumonia | Encourage deep breathing and early mobilisation |
| Urinary tract infections | Avoid trans-urethral catheters; weigh up against the risk of pressure sores if the patient is incontinent |
| Pressure sores | Provide meticulous pressure care or an inflatable pressure care mattress if the patient has a problem mobilising in bed |
| Depression | Requires active screening and treatment to be initiated early |
| Delirium | Avoid sedatives and anticholinergic medications, treat infections early and maintain a normal sleeping pattern |
| Dehydration | Start an intravenous fluid infusion timely for patients unable to take in sufficient fluids per os |
| Malnutrition | Enlist the help of the dietician promptly, if the patient has a feeding tube |
| Contractures | Ensure correct positioning of the patient, according to the instructions of the physiotherapist |
| Hemorrhagic conversion (bleeding from surrounding brain tissue) | Avoid high doses of heparin and persistently uncontrolled hypertension |
| Recurrence of stroke | Start aspirin early (if no contraindications), achieve good control of BP and diabetes, start a statin before discharge and agree on lifestyle modifications |
| Loss of function and decreased participation | Start evaluating patient for rehabilitation potential early after admission and start rehabilitation early – refer for community rehabilitation on discharge and where available, referral to a rehabilitation centre should be considered |

**Table 6.21** Health-care professionals that can play a role in managing a stroke patient

| Health-care professional | Possible roles |
|---|---|
| Human nutrition therapist | Prescribe diets for patients with a nasogastric tube or percutaneous (PEG) tube. Provide advice on feeding to staff. |
| Medical doctor | Stabilise the patient and request appropriate investigations during the acute phase. Decrease the risk for a recurrence and complications. Review of medications and prescription of medications. Arrange a family meeting to discuss the illness and discharge plan. Provision of a discharge plan to the patient and community practitioners. |
| Nurse practitioner | Report on observations of patient behaviour and patient interactions with the family. Provision of pressure care to prevent pressure sores. |
| Occupational therapist | Provide assistive devices and provide training in using them. Provide advice on home modifications needed for activities of daily living. |
| Physiotherapist | Recovery of muscle function and prevention of contractures. Train other health-care professionals, the patient and the family on how to move the patient and on how to position the limbs. |
| Pharmacist | Identify drug interactions or inappropriate scripts. |
| Social worker | Communicate with family members to determine social circumstances and assist with discharge planning. Arrange financial assistance for the patient and/or family. |
| Speech therapist | Do swallowing assessment, treat dysphagia and communication problems and provide communication devices. Give advice on feeding to staff. |
| All of the above | Assist in determining the rehabilitation potential of the patient. Take on the role of the case manager of the patient. Provide family training to prevent complications. Report on the patient's mood and ability to cope. Recognise complications early on and report to the team. |

### 6.12.3 Contextual assessment and planning

Community rehabilitation of stroke patients is unfortunately not a reality for many patients in South Africa. This presents a major challenge for achieving or maintaining good outcomes for patients that have suffered a stroke. The clinical picture of a stroke patient at the time of discharge may vary from a person with minor deficits in speech and/or limb function to a patient that is unconscious with a PEG tube inserted, unable to communicate and with multiple complications. Likewise, the social circumstances may vary from well-resourced and supportive environments to poverty-stricken informal settlements with difficult access to health care. The international classification (ICF) is a tool that can facilitate discharge planning when faced with complex situations such as these (Sabariego *et al.*, 2013; Grill *et al.*, 2007).

See Figure 6.9 to get a better understanding of the complex interactions that may arise between the disease, the individual and the context, which should be considered when planning the discharge of the patient. Also refer to the characteristics of a good discharge plan in the section on acute coronary syndromes.

Arranging a family meeting is often helpful in dealing with the family members' concerns and in facilitating solutions for the challenges in caring for a family member that suffered a stroke. It may also serve as an opportunity for family members to reconsider their own habits and lifestyle in order to avoid a stroke.

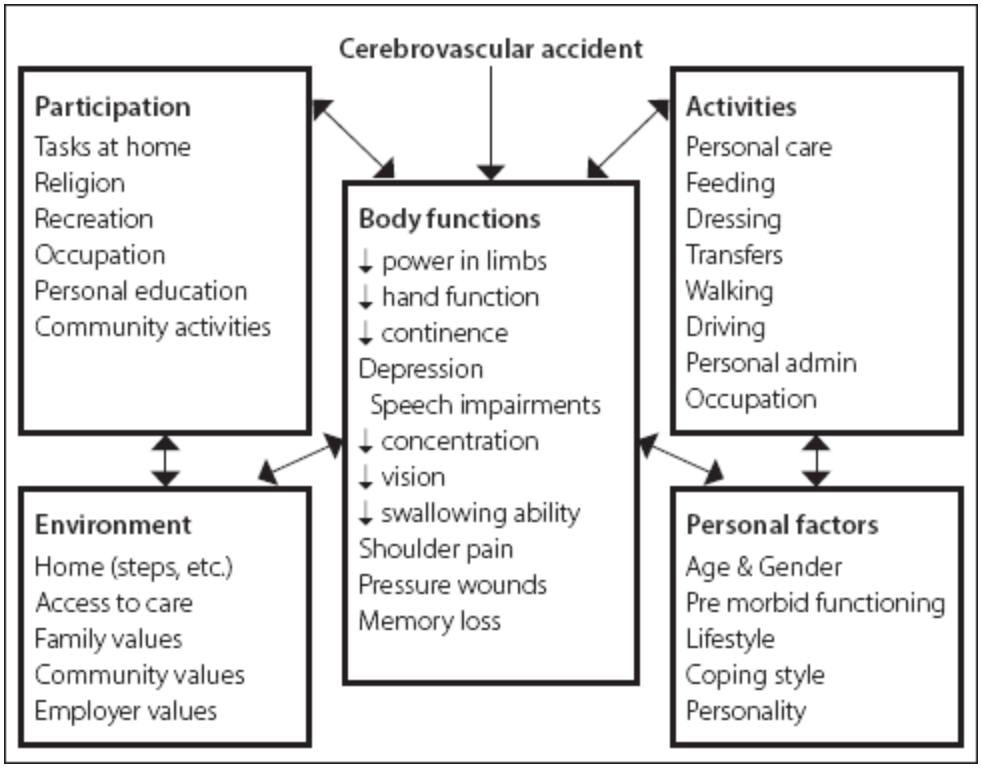



**Figure 6.9** Factors that influence outcomes after a stroke in terms of the ICF

**Source:** Based on World Health Organization (2013c) *International classification of functioning, disability and health*. Geneva: World Health Organization. [Online]. Available at: http://www.who.int/classifications/icf/icf_more/en/

# 6.13 Peripheral vascular disease

*(Francois Coetzee)*

Atherosclerosis and thrombosis are the most common pathological processes causing peripheral vascular disease. See Figure 6.10 for arteries that are commonly affected by atherosclerosis. Thrombosis in an artery is almost always associated with pre-existing disease (for example, ruptured atherosclerotic plaques or an acute vasculitis) or trauma. Peripheral arteries may also be affected by other pathologic processes such as aneurism formation, embolism, inflammation and trauma. Risk factors for peripheral artery disease include atherosclerosis and risk factors related to atherosclerosis (hypertension smoking, diabetes mellitus and hypercholesterolemia), intravenous drug use, previous vascular surgery, autoimmune disease and clotting disorders.

Among patients with peripheral arterial disease in the lower limbs:

- 10% of patients have classic claudication symptoms: cramping, aching or squeezing pain in the calf and or buttocks that is worse with exertion and relieved within 10 minutes of resting
- 40% of patients are asymptomatic
- 50% of patients have atypical leg pain
- An ankle brachial index of below 0.9 signifies an increased risk for cardiovascular events and mortality.

### 6.13.1 Clinical assessment and plan

The clinical assessment should focus on determining risk factors, considering a differential diagnosis (Table 6.22), determining the severity of symptoms and the extent of the disease.

Look for signs of peripheral artery disease:

- Shiny, cool skin, non-healing wounds, absence of hair
- Prolonged capillary refill time, absent pulses, bruits
- Pallor induced on elevation of the limb.

Exclude acute arterial occlusion by considering the 6 Ps (pain, pallor, paresthesiae, pulselessness, paralysis and perishing cold).

Patients with claudication need to be evaluated for pain at rest, presence of gangrene, presence of lower limb ulcers and presence of an aortic aneurism. If any of these conditions are present, the patient

requires an evaluation by a surgeon to determine the need and/or urgency for an operative intervention.

The extent of disease is determined by doing an ankle brachial index (see Table 6.23), and if indicated, by computed tomographic angiography, magnetic resonance angiography and contrast-enhanced angiography. The imaging investigations are reserved for patients that are candidates for surgical interventions.

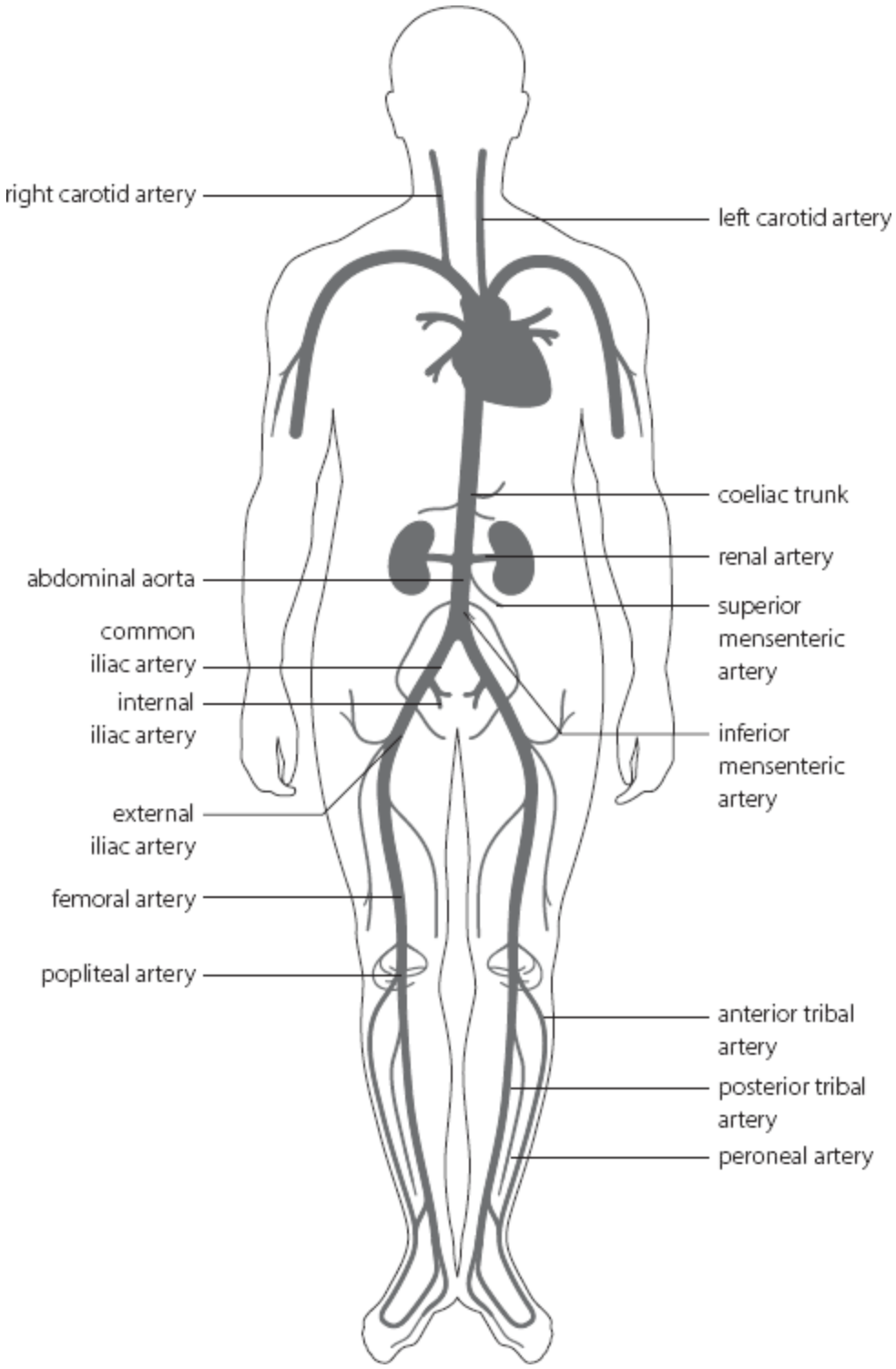



**Figure 6.10** Arteries commonly affected by atherosclerosis

**Source:** British Heart Foundation (nd.). [Online]. Available at: https://www.bhf.org.uk/heart-matters-magazine/medical/peripheral-arterial-disease

Take note that symptoms might worsen with the prescription of a beta blocker or if anemia is left untreated.

Interventions for patients with uncomplicated claudication:

- Smoking cessation – for brief behaviour change counselling see Chapter 2
- Exercise program – supervised programmes have better outcomes
- Pharmacologic therapy – statins and aspirin. Clopidogrel if aspirin is contraindicated.

In complicated claudication or advanced disease, surgical interventions include:

- Endarterectomy (limited to iliac artery disease)
- Bypass grafting
- Percutaneous transluminal dilatation
- Amputation of the toe(s)/foot/below the knee/above the knee if gangrene is present.

**Table 6.22** Differential diagnosis of common conditions causing lower limb pain

| Key features | Diagnosis | Confirmatory investigations |
|---|---|---|
| Back pain, numbness and weakness in legs, relieved by bending and rest | Spinal stenosis (spinal claudication) | Radiological studies |
| History of immobility or other risk factors for hyper-coaguability, leg swelling and tenderness | Deep venous thrombosis | Duplex Doppler |
| Swelling of both legs, stasis dermatitis | Venous insufficiency | Normal ABI |
| Burning pain, prominent at night and worse at rest | Disc herniation and nerve root compression | Clinical examination – straight leg raising test |
| Discomfort worse on weight bearing and bending | Rheumatoid conditions (OA, RA, gout) | See Chapter 5 |
| Numbness, 'pins-and needles', glove stocking distribution – diabetic/alcoholic/HAART/TB treatment | Peripheral neuropathy | Typical history, Normal ABI |
| Swelling of knee or calf provoked by activity | Bakers cyst | Sonar of calf, Normal ABI |

**Table 6.23** Interpreting ankle brachial index values

| Value | Diagnosis | Action |
|---|---|---|
| 0.9–1.3 | Normal | None |
| 0.7–0.9 | Mild PAD | Conservative management |
| 0.4–0.69 | Moderate PAD | Refer to surgical OPD |
| ≤ 0.4 | Severe PAD | Refer for urgent surgical OPD date |

### 6.13.2 Individual assessment and plan

The individual assessment should focus on determining the loss of function due to symptoms caused by the disease, the patient's ideas and preferences regarding further investigations and the treatment options. Most patients have a fair amount of anxiety about surgical interventions and care should be taken to explain procedures clearly and in terms that they can understand and to allow for questions.

### 6.13.3 Contextual assessment and plan

Drawing a genogram and indicating which family members smoke and what complications they have developed might help to encourage the patient to stop smoking. It is also useful to get an indication of how often the patient is exposed to passive smoking and to ask the patient how he/she could manage triggers that bring about the urge to smoke.

In patients who continue to smoke, it might be useful to have a family meeting and to engage with the whole family to encourage smoking cessation for all smoking family members. It is more likely to succeed in families who have supportive relationships and who are committed to improving the patient's wellness and their own wellness. Increasing physical activity for the whole family should also be considered.

## 6.14 Management of depression

*(I Govender, HI Okonta, LH Mabuza)*

The global burden of disease study suggests that by the end of 2020, major depressive disorder (MDD) will be one of the leading causes of death and disability worldwide. MDD is the most frequently treated psychiatric disorder and antidepressants are among the most frequently prescribed medications.

### 6.14.1 Presentation

Depressed patients often present with non-specific physical symptoms such as chronic fatigue or pain (for example, headache, back pain), sleep problems, somatisation and/or increased use of medical services for non-specific complaints. Depression is more disruptive of social functioning than other chronic medical conditions.

It is important to simultaneously consider mental problems alongside physical problems when assessing patients and not to only consider them once physical problems have been excluded. Primary care providers in South Africa are very poor at recognising depression and anxiety disorders. MDD is often a comorbid condition and also worsens the medical outcomes for other conditions (for example, diabetes) and increases health-care utilisation. Depression is a clinical diagnosis and tests are done to exclude other causes for the symptoms.

### 6.14.2 Recognition and diagnosis

Patients respond just as successfully to depression treatment in the PHC context as in specialised psychiatry practices. Family physicians can use screening questions during the consultation such as:

- 'What has your mood been like?' or 'Have you felt sad or like crying for no reason?' to detect low mood/sadness
- 'Have you been losing interest in things?' to detect loss of interest or pleasure.

These questions elicit the core symptoms and if detected, the other depressive symptoms should be investigated:

- Decreased energy or fatigue: 'Do you feel exhausted or tired even when you are not working hard?'
- Sleep disturbance (insomnia/hypersomnia): 'How are you sleeping at the moment?'
- Change in appetite (increase or decrease) or loss of weight (> 5%): 'How are you eating at the moment?'
- Difficulty concentrating or making decisions: 'Does your mind have difficulty working?'

- Psychomotor retardation or agitation: 'Do you feel slowed down and take longer to do things?'
- Decreased libido: 'Have you lost interest in sex?'
- Loss of confidence and self-esteem: 'Do you feel less worthy than or beneath other people?'
- Suicidal thoughts: 'Have you thought about ending your life?'
- Feelings of guilt or worthlessness: 'How are other people feeling about you? Is it your fault?'

A diagnosis of depression usually depends on having the two core symptoms and at least five of the other nine features most of the time for two weeks or more. A number of tools are available to screen for or rate depression:

- Clinically useful depression outcome scale (CUDOS)
- Inventory of depressive symptomatology (IDS)
- Quick inventory of depressive symptomatology (QIDS).

Always consider the suicide risk of a depressed patient.

Depression in children may be more difficult to recognise and present with behavioural change or with separation anxiety. In the elderly, depression is common and may manifest as agitation, histrionic behaviour, delusions or disordered thinking. It must be distinguished from dementia or psychosis.

Depression is often precipitated by a loss such as a bereavement, loss of a relationship, employment or health.

### 6.14.3 Consider other medical conditions

Other medical conditions may cause symptoms of depression, such as:

- Malignancy, for example, lung-, pancreatic-, adrenal cancer
- Diabetes
- Hypothyroidism
- Hyperparathyroidism
- Cushing's syndrome
- Pernicious anaemia

- Post-infective states, for example, encephalitis.

### 6.14.4 Consider medication

Some medication may cause symptoms of depression such as:

- Reserpine, methyldopa, clonidine
- Beta blockers
- Corticosteroids
- Antiparkinson's drugs
- Cytotoxic agents
- NSAIDs
- Oral contraceptives.

### 6.14.5 Consider other mental problems or co-morbidity

Anxiety frequently coexists with depression and an anxiety disorder should also be considered. Alcohol use disorders or other substance abuse should be considered.

Depression may also be co-morbid with other chronic conditions such as diabetes, intimate partner violence, cancer or disability.

Depression commonly develops after a bereavement or other significant losses.

### 6.14.6 Classify depression

- Depressive disorders – major depression (single or recurrent episode), adjustment disorders with depressed mood, and dysthymia
- Bipolar disorders – manic and depressive episodes:
  - Bipolar I – single episode, most recent hypomanic, recent manic, mixed, most recent depressed, unspecified
  - Bipolar II – recurrent major depressive episodes with hypomania
  - Cyclothymic – manic depressed moods that are chronic and continual
- Postpartum – onset of depression within four weeks of giving birth.

### 6.14.7 Management

Management of depression usually involves supportive counselling as well as medication. Supportive counselling may be sufficient for mild depression and can include approaches to dealing with negative thinking or problem solving. Cognitive-behavioural therapy in the short term or analytical long-term psychotherapy are effective. This implies that management is often multidisciplinary and may involve the family physician, mental health nurse, lay counsellor, psychologist, psychiatrist, family therapist or social worker.

Medication should be gradually increased to the recommended target dose while monitoring for side effects. There is usually no additional benefit from dosing higher than the minimal effective dose. Medication usually takes time for a response to be seen (at least two weeks) and an adequate trial of treatment is for up to 12 weeks at a therapeutic dose. Only switch to a new antidepressant once adequate dose and duration have been applied without response. The new drug should affect a different monoamine neurotransmitter mechanism. If the response is greater than 30%, augmentation/combination is indicated.

A range of antidepressants drugs are now available with different modes of action and side effect profiles:

- Tricyclic antidepressants (TCAs), for example, amitriptyline, imipramine
- Selective serotonin reuptake inhibitors (SSRI), for example, fluoxetine, paroxetine
- Selective serotonin norepinephrine re-uptake inhibitors (SNRI), for example, venlafaxine, duloxetine
- Monoamine oxidase inhibitors (MAOIs) – dietary restrictions and medical interactions limit their use, for example, phenelzine, isocarboxazid, moclobemide
- Serotonin dopamine reuptake inhibitors (SDRIs), for example, bupropion
- Noradrenergic and specific reuptake inhibitors (NASSA), for example, mirtazapine.

Lithium is a mood stabiliser with antidepressant effects that is useful in bipolar mood disorder. Electroconvulsive therapy (ECT) is used in psychotic depression, patients who do not respond to medication and with a substantial suicide risk.

## 6.15 Management of substance abuse

*(Mergan Naidoo)*

The most commonly abused substances in treatment centres in South Africa are alcohol, followed by cannabis, crack/cocaine, heroin/opiates, methamphetamine (tik), prescription/over-the-counter drugs and cannabis/mandrax (Ramlagan, Peltzer, Matseke, 2010). Substances may be abused for their perceived improvements of mood and sensation (Van Loggerenberg, 2012).

Primary care practitioners are often faced with managing the acute medical complications of substance abuse as well as dealing with the long-term rehabilitation of the individual. Patients present to the emergency centre with a variety of presentations, some of which are life-threatening. Table 6.24 depicts the presentations that the primary care doctor may be exposed to, the potential offending drug, the mechanism of action of the drug and the treatment option (Devlin, Henry, 2008).

**Table 6.24** Major complications associated with illicit drug abuse

| Presentation | | Substances implicated | Mechanism | Specific treatment |
|---|---|---|---|---|
| Respiratory compromise | Pneumothorax haemothorax | Cocaine, cannabis | Barotrauma | Chest drainage |
| | 'Crack lung' | Cocaine | Interstitial and alveolar inflammatory infiltration | Systemic corticosteroid administration |
| | Pulmonary oedema | Cocaine | | Oxygen, diuretics, nitrates |

| Presentation | | Substances implicated | Mechanism | Specific treatment |
|---|---|---|---|---|
| | Interstitial pneumonitis, BOOP | Cocaine | | Ventilation where necessary |
| Chest pain/ cardiovascular collapse | Pneumome-diastinum Pneumopericar-dium | Cocaine, cannabis | Barotrauma | Drainage where necessary |
| | Acute coronary syndromes | Cocaine | Alpha-adrenergic vasoconstric-tion, platelet aggregation | Sublingual nitrates, benzo-diazepines |
| | Arrhythmias and sudden death | Cocaine | Sodium channel blockade | |
| | | Amphetamines | Sympathetic hyper stimulation | |
| | | Cannabis | | |
| Confusion, convulsions collapse, coma | With respiratory depression | Opioids, ben-zodiazepines, ethanol, GHB | Central sedation | Airway protection, ventilation |
| | With hyponatu-raemia | MDMA | Cerebral oedema (excess fluid consumption and ADH release) | Fluid restriction, hypertonic saline administration |
| | Predominantly seizure activity | Cocaine amphetamines | Central nervous system stimulation | Benzodiaz-epines |
| | | Opioids, GHB benzodiaz-epines, ethanol | Withdrawal | Benzodiaz-epines, fluid resuscitation |
| Hyperthermia | With agitated paranoid behaviour collapse, and death | Cocaine (excited delirium | | |

| Presentation | | Substances implicated | Mechanism | Specific treatment |
|---|---|---|---|---|
| | In extremis without rigidity | MDMA (exertional hyperpyrexia) | Exertion, dehydration, physical exertion, environmental warming, alterations in skeletal muscle excitation-contraction coupling | Active cooling ±dantrolene |
| | With rigidity | MDMA (serotonin syndrome) | Contraction of antagonistic muscle groups | Paralysis |
| Rhabdomyolysis | With coma | Opioids, benzodiazepines, ethanol, GHB | Pressure necrosis | Fluid administration, monitor for acute renal failure |
| | With excessive muscle contraction | MDMA | Diffuse tissue disruption | |
| | Traumatic | Any | impaired judgement, risk-taking behaviours | |

ADH = Antidiuretic hormone, BOOP = Bronchiolitis obliterans with organising pneumonia, GHB = Gamma hydroxybutyrate, MDMA = 3.4-methylenedioxymethamphetamine

**Source:** Devlin RJ, Henry JA. (2008) Clinical review: Major consequences of illicit drug consumption. *Crit Care* 12(1): 202

Patients presenting to the emergency centre may also present as a toxic syndrome recognised by clinical signs and symptoms. Table 6.25 describes the various toxic syndromes with the clinical features and the implicated drug.

**Table 6.25** Common toxic syndromes presenting to the emergency centre

| Toxidrome | Features | Drugs implicated |
|---|---|---|
| Adrenergic | Hypertension, tachycardia, mydriasis, diaphoresis, agitation, dry mucus membranes | Amphetamines, cocaine, ephedrine, phencyclidine |
| Sedative | Stupor and coma, confusion, slurred speech, apnoea | Barbiturates, benzodiazepines, ethanol, opiates |
| Hallucinogenic | Hallucinations, psychosis, panic, fever, hyperthermia | Amphetamines, cannabinoids, cocaine |
| Narcotic | Altered mental status, slow shallow breaths, miosis, bradycardia, hypotension, hypothermia, decreased bowel sounds | Opiates |
| Epileptogenic | Hyperthermia, hyper-reflexia, tremors, seizures | Cocaine, phencyclidine |

**Sources:** Devlin RJ, Henry JA. (2008) Clinical review: Major consequences of illicit drug consumption. *Crit Care* 12(1): 202; Van Loggerenberg CJ (2012) Emergency management of drug abuse in South Africa: Drug abuse remains both a global scourge and a significant social and medical problem in South Africa. *Continuing Medical Education* 30(11): 409–13

Recognition of the syndrome may give the astute clinician clues to the offending drug of abuse, but one needs to bear in mind that polysubstance abuse is common and access to rapid urine diagnostic tests may prove very helpful.

The South African Department of Social Development has a National Drug Master Plan with the following two objectives that are pertinent to the clinician:

1 The reduction of the bio-psychosocial and economic impact of substance abuse
2 Ability of all people in South Africa to deal with problems related to substance abuse within communities (Department of Social Development, 2013).

Guidelines from the Department of Health in the United Kingdom recommend:

1 The needs of all substance abusers should be assessed across the four domains of substance misuse, health, social functioning and criminal involvement
2 Risks to dependent children should be assessed for all substance abusing parents

3 All substance abusers entering structured treatment programmes should have a care plan which is regularly reviewed
4 Substance abusers may require a range of interventions, which may include specific prescribed drugs
5 A named health-care provider should ideally deliver aspects of the patient's care plan
6 Testing for substances of abuse could prove to be very useful when assessing and monitoring compliance to the care plan (United Kingdom. Department of Health, 2007).

Assessment after the acute presentation should include history, examination, drug testing, assessing the degree of dependence, identifying physical and mental health problems, identifying social problems and assessing risk behaviour (United Kingdom. Department of Health, 2007).

Psychosocial interventions provided by the multidisciplinary team working in organisations such as the South African National Council on Alcoholism & Drug Dependence (SANCA) would include the following:

1 Drug-related advice and information
2 Advice and support for social problems
3 Harm reduction such as preventing overdose for substances
4 Motivational interviewing and other motivational enhancement techniques
5 Relapse prevention
6 Mapping techniques using cognitive behaviour principles
7 Other non-pharmacological interventions such as sport, exercise or skills-based interventions
8 Complementary and alternative therapies such as relaxation techniques (United Kingdom. Department of Health, 2007).

Organisations like SANCA could also facilitate formal psychosocial interventions which could include the following:

1 Brief motivational interventions
2 Contingency management involves providing a variety of incentives.
3 Behavioural couples therapy

4 Family therapy
5 Mutual aid (self-help) approaches such as belonging to Alcoholic Anonymous or Narcotic Anonymous
6 Self-help approaches such as using manuals and web sites with specific resources
7 Other forms of psychosocial therapies such as community reinforcement approaches and social behaviour network therapy (United Kingdom. Department of Health, 2007).

Pharmacological interventions may be necessary for the long-term treatment and should form part of the overall care plan. Some of the key points for prescribing such drugs are:

1 Methadone (used in heroin and morphine addiction), used optimally, is effective medicine for maintenance treatment
2 Dose escalation of the drug should aim to achieve an effective dose while also exercising caution about the inherent risks of too rapid an increase
3 Supervised consumption should be available for all patients for a length of time appropriate to their needs and risks
4 Patients must be made aware of the risks of their medication and of the importance of protecting children from accidental ingestion
5 Clinicians should discontinue pharmacological treatment interventions for patients who are not benefiting from treatment
6 Opioid detoxification should be offered in an appropriate setting to patients ready for and committed to abstinence
7 Methadone, buprenorphine and lofexidine are all effective in detoxification regimens
8 Opioid detoxification should be offered as part of a package including preparation and post-detoxification support to prevent relapse
9 Benzodiazepines prescribed for benzodiazepine dependence should be at the lowest possible dose to control dependence and doses should be reduced as soon as possible
10 There are no effective pharmacological treatment to eliminate the symptoms of withdrawal from stimulants (including cocaine)

11 Psychosocial interventions are the mainstay of treatment
12 Injectable opioid treatment may be suitable for a small minority of patients who have failed in optimised oral treatment (United Kingdom. Department of Health, 2007).

## 6.16 Management of a patient with psychosis or mania

*(Mergan Naidoo)*

Patients with acute psychoses and mania usually present to the emergency centre with the following history (Wilson, Maistry, nd.):

1 Aggression
2 Destructive behaviour
3 Disruptive and irrational behaviour
4 Psychotic symptoms such as delusions, hallucinations or disordered thought processes
5 Agitation.

It is important to take a brief history, including information from collateral sources, to understand the presenting complaints, past medical and psychiatric history, family history and a history of substance abuse. Patients may present with positive symptoms (paranoid or grandiose delusions, delusions of thought interference, thought echo, auditory hallucinations or hallucinations in any modality and thought disorder) or negative symptoms (apathy, emotional withdrawal, lack of attention to appearance or personal hygiene and poor rapport) (Byrne, 2007). A focused mental state examination is also warranted which should include the general appearance and behaviour, the presence of positive and negative signs, the level of consciousness (impaired in the case of delirium), speech, affect, mood, suicidal ideation, thought processes, perceptions, concentration and insight (Byrne, 2007).

These patients often need admission and may be admitted under the Mental Health Care Act (No. 17 of 2002) (MHCA) for a 72 hour observation as voluntary, assisted, involuntary or emergency mental health-care users (Mental Health Care Act (No. 17 of 2002)). The 72-

hour observation period allows for the health-care provider to rule out a medical cause for the mental status.

### 6.16.1 Management guideline

1 Sedate the patient if the behaviour is very disruptive or poses a danger to the family, other patients and staff.
2 First, offer sedation to the patient and if this is accepted, document this in the patient's clinical notes.
3 If the patient refuses sedation or does not display sufficient insight to give consent and delirium has been excluded after performing the focused history and examination, sedate the patient after ensuring that one MHCA 04 form (usually filled in by a relative), two MHCA 05 forms (filled in by two health-care providers) and one MHCA 07 form (filled in by the head of the health establishment) have been completed.
4 With an uncooperative patient who resists sedation ensure that at least six assistants are used. Five security guards will each restrain a limb and the head while a nursing assistant will assist with the administration of the sedation.
5 The following drugs are recommended:
  5.1 Lorazepam (1–4 mg IM/ IV). Watch for respiratory depression when administering intravenously. It is preferable to administer this slowly at a rate of 2 mg/minute.
  5.1 Haloperidol 2–5 mg IM/IV. Watch out for extrapyramidal side effects.
6 Ensure that the patient is fully sedated and that mechanical restraint is no longer needed.
7 Prescribe maintenance sedation using lorazepam and haloperidol 6–8 hourly.
8 Vital signs should be monitored 2–4 hourly depending on the level of sedation.
9 Maintain hydration and nutritional status of the patient.
10 After initial sedation, examination, monitoring and work-up are needed to arrive at a definitive diagnosis.

11 If after the 72-hour observation period the patient remains agitated or psychotic and a physical cause has been excluded, the patient should be discussed with the psychiatrist from the regional referral centre and a plan for transfer/further management formulated. At this stage, if further involuntary inpatient care is needed, the treating practitioner should fill in one MHCA 06 form and the head of the health establishment one MHCA 08 form. If the patient requires transfer to a psychiatric hospital, the managing doctor will fill in the MHCA 11 form and this needs to be signed by the head of the health establishment.

12 Medical staff, relatives and management need to ensure that all the necessary documentation are correctly filled in to comply with the MHCA (Wilson, Maistry, nd.; Byrne, 2007; Mental Health Care Act (No. 17 of 2007); Kloeck, 2015).

Further management includes the following:

1 Identify bio-psychosocial factors that may have precipitated the psychotic/manic symptoms.

2 Ensure that collateral history is obtained from the patient's relatives that will allow one to best manage future relapses and identify harmful aspects of the ward environment.

3 Consult with social workers, psychologists and the community/regional psychiatrist at the beginning of treatment.

4 Always exclude substance abuse as a cause of the episode and intervene against substance misuse.

5 Patients with mania should have benzodiazepines used initially with antipsychotics as adjuncts, whereas patients with psychoses should have antipsychotics as the first-line treatment with benzodiazepines as adjuncts.

6 If new symptoms occur, one should consider drug side effects.

7 Physical examination with appropriate investigations is an essential part of ongoing clinical review.

8 Allied professionals such as community health workers may be invaluable in facilitating early discharge and preventing readmission (Byrne, 2007).

9 Ongoing pharmaceutical management for bipolar disorders include lithium which is given at a dose of 5–10 mg/kg/day. Therapeutic drug monitoring is essential as well as the monitoring of TSH, calcium, urea and electrolytes. Lithium has many drug interactions, and therefore co-prescription with drugs such as ACE inhibitors, NSAIDS and diuretics may cause lithium toxicity. In patients with depressive episodes, valproate 600 mg/daily may be co-prescribed with lithium (Department of Health, 2012).

10 Options for long-term treatment of schizophrenia include depot injections of long-acting antipsychotic drugs such as flupentixol (20–40 mg), zuclopenthixol 200 mg given IM every 4 weeks (especially if adherence problems exist) with/without oral haloperidol 1.5–10 mg daily or chlorpromazine 75–300 mg daily. If first-line oral agents fail and if there is no adherence problems, second-line atypical antipsychotic drugs such as respiridone (1–4 mg daily) or clozapine (300–450 mg daily) may be initiated after discussion with a psychiatrist (Department of Health, 2012a).

11 In South Africa, many patients first consult with traditional healers prior to seeking formal medical assistance which may delay early intervention in the first episode of psychosis. It is very important that public awareness be raised to ensure that early access is facilitated. In addition, discussion with traditional healers on referring such patients early may be warranted (Burns, Jhazbhay, Emsley, 2011).

## 6.17 Management of dementia

*(Mergan Naidoo)*

For the primary care physician a good working knowledge in detecting and managing dementia is necessary in order to deal with this common mental health disorder. Early cognitive decline often presents to the primary care provider and this affords the health-care provider the opportunity to address reversible causes of dementia and manage co-morbidities (Murphy *et al.*, 2014).

Dementia is defined as a progressive loss of cognitive function, which includes changes to personality and memory that reduce the ability of the patient to perform everyday activities (Department of

Health, 2012a; National Institute of Health and Clinical Excellence, 2006). Diagnosis is based on the history, cognitive and mental state examination, directed investigations, review of current medication and an evaluation to exclude substance abuse (National Institute of Health and Clinical Excellence, 2006). Cognitive assessment in these patients would include an examination of attention, concentration, orientation, short- and long-term memory, praxis, language and executive function which is contained in the Mini Mental State Examination (MMSE). Appropriate investigations will be determined by the presenting symptoms and signs and may include thyroid function tests, vitamin B12 levels, an HIV test, syphilis serology, renal and liver function tests, urea and electrolytes including calcium levels and a full blood count. Chest X-rays, an electrocardiograph and a CT scan may be warranted (Department of Health, 2012; National Institute of Health and Clinical Excellence, 2006).

Causes of dementia that may respond to the appropriate medical intervention include:

1 Hypothyroidism
2 Vitamin B12 deficiencies
3 Wernicke's syndrome (thiamine deficiency usually in chronic alcoholism)
4 Pellagra
5 Substance abuse
6 HIV-associated dementia.
7 Syphilis
8 Normal pressure hydrocephalus
9 Management of risk factors of vascular disease may prevent further deterioration in multi-infarct dementia (Department of Health, 2012a).

The items of the MMSE include tests of orientation, attention, concentration, memory, abstracting ability, intelligence, insight, judgement and use of language. The maximum score is 30, but this needs to be adapted for the level of education (Mash, Blitz-Lindeque, 2014). A score below 24 suggests moderate dementia (Mash, Blitz-

Lindeque, 2014). The mean score for people living at home and over 65 years of age is 27 (Cockrell, Folstein, 2002).

Following a diagnosis of dementia, health-care workers should provide patients and their families information on:

1 The signs and symptoms of the disease
2 The course and prognosis of the illness
3 Treatment options that are available
4 Local care and support services available at a community level
5 Support groups in their area
6 Sources of financial and legal advice, and advocacy
7 Medico-legal issues, including driving (National Institute of Health and Clinical Excellence, 2006).

When developing care plans with the caregivers, one needs to discuss the following in detail:

1 The need for maintaining the same, familiar health-care providers
2 Retaining a familiar environment and minimising relocations
3 A flexibility to accommodate fluctuating abilities
4 Involvement of an occupational therapist in developing skills for activities of daily living
5 Assessment of independent toileting skills and management of incontinence should it occur
6 Modifying the environment to aid independent functioning
7 Assessment of physical exercise needs and involvement of a physiotherapist when needed
8 Support for patients to set their own pace and participate in activities they prefer (National Institute of Health and Clinical Excellence, 2006).

The acetylcholinesterase (AChE) inhibitors donepezil, galantamine and rivastigmine are recommended for managing mild to moderate Alzheimer's disease. Memantine is recommended for people with moderate Alzheimer's disease who are intolerant of or have a contraindication to AChE inhibitors or in severe Alzheimer's disease (National Institute of Health and Clinical Excellence, 2006). These drugs

are not available in the public sector in South Africa and specialist psychiatrist motivation is usually needed.

Patients with dementia who develop non-cognitive symptoms that causes distress or who develop behaviour that is disturbing should be offered an assessment at an early opportunity to establish likely factors that may cause, aggravate or improve such behaviour. The clinical assessment should be holistic and include a physical examination to exclude pain disorders or infections, a mental state examination specifically ruling out depression, and evaluating if the behaviour may be due to drug side effects. An evaluation of the patient's perspective which includes the patient's ideas, concerns, expectations, feelings and the effects of the illness on the physical, social and occupational functioning of the patient is required (National Institute of Health and Clinical Excellence, 2006).

Non-pharmacological intervention to address these behavioural problems include:

1 Aromatherapy
2 Multisensory stimulation
3 Therapeutic use of music and/or dancing
4 Animal-assisted therapy
5 Massage (National Institute of Health and Clinical Excellence, 2006).

Patients with mild to moderate behavioural disturbances should not be prescribed antipsychotics. Patients with severe non-cognitive symptoms (psychosis and/or agitated behaviour causing significant distress) should be offered treatment with an antipsychotic drug after a comprehensive evaluation and discussion with the patient and the caregivers (National Institute of Health and Clinical Excellence, 2006). The recommended drugs in the South African public sector are haloperidol 0.5–1mg eight hourly with a higher dose advised at night Department of Health, 2012). If rapid sedation is needed, a combination of IM haloperidol and IM lorazepam can be used (National Institute of Health and Clinical Excellence, 2006).

Patients with dementia should as far as possible be managed in the community using a multidisciplinary team approach. Occasionally

admission for co-morbid conditions or severe agitation may be needed (National Institute of Health and Clinical Excellence, 2006).

Dementia care should incorporate palliative care from diagnosis until death. The aim is to provide support and improve the quality of life to ensure that patients die with dignity and in the place of their choice while also supporting caregivers during their grieving process (National Institute of Health and Clinical Excellence, 2006).