REFERRAL

- no response to treatment

15.5 GENERALISED ANXIETY DISORDER

F41.9

DESCRIPTION

Generalised anxiety disorder is characterised by excessive and inappropriate worry/concern about a range of issues. The patient may report disturbances in sleep or concentration as well as mood as a consequence of such concerns. Physical symptoms such as muscle tension or tremulousness may also be reported. Such symptoms will interfere with normal functioning.

NON-DRUG TREATMENT

Crisis management may be needed.
Psychotherapy, e.g. supportive and cognitive-behaviour therapy.
Most patients can be treated as outpatients, but some may need to be admitted.

DRUG TREATMENT

Indicated where the symptoms are interfering with normal functions of daily living. Where there is concomitant drug/alcohol dependence or a comorbid major depressive episode, an antidepressant, e.g. an SSRI may be the more appropriate agent of choice.

Acute management

For an acute episode or intense prolonged anxiety:
Benzodiazepines, e.g.:

- diazepam, oral, 2–5 mg as a single dose. Repeat if required up to twice daily.
  Duration of therapy: up to 2 weeks tapering off to zero within 6 weeks.

Maintenance therapy

SSRI:

- fluoxetine, oral, 20–40 mg daily. Specialist initiated.
  Duration of therapy: variable, although the condition tends to be chronic.
  Extended drug treatment should be monitored by a specialist.

CAUTION

Prolonged treatment with benzodiazepines often leads to tolerance and withdrawal symptoms if the drug is discontinued abruptly.
Drug abuse may occur.
Combination therapy with more than one benzodiazepine is not indicated.

REFERRAL

- ongoing symptoms
- non/poor response to treatment

15.6 OBSESSIVE-COMPULSIVE DISORDER

F42

DESCRIPTION

This condition is characterised by the presence of obsessions, i.e. persistent intrusive thoughts or concerns e.g. related to contamination and is usually associated with compulsions, i.e. mental acts or behaviours related to the obsessions e.g. excessive hand washing. Such thoughts and actions may take up excessive periods of the patients' day and interfere with daily functioning. Generally the features are distressing to the patient.

REFERRAL

- all

15.7 PANIC DISORDER

F41.0

DESCRIPTION

A panic attack is generally characterised by an acute onset of intense anxiety accompanied by a sense of dread/impending threat, usually for no apparent reason. The patient will experience significant fear and emotional discomfort. There will usually be accompanying physical symptoms such as rapid pulse/palpitations as well as shortness of breath, possible dizziness and sweating. A tendency towards panic attacks, i.e. recurrent episodes, may signify the presence of a panic disorder. Such a condition does, by definition, significantly impair the patient, interfering with their ability to function normally.

NON-DRUG TREATMENT

Psycho-education and reassurance.
Psychotherapy, e.g. cognitive-behaviour therapy.
Always consider the possibility of an underlying medical condition, e.g. thyrotoxicisis, etc.

DRUG TREATMENT

PANIC ATTACK

Acute management

The initial aim is to control the panic symptoms and exclude an underlying medical cause.
Benzodiazepines, repeated as necessary to control symptoms, e.g.:

- diazepam, IV/oral, 2–5 mg as a single dose
  OR
  clonazepam, IM/oral, 0.5–1 mg immediately

Maintenance antidepressant therapy

If panic disorder is diagnosed, long-term treatment may be required. Refer the patient. Most patients can be treated as outpatients, but some may need to be admitted.

Treatment of choice: **SSRI**, e.g.:

- fluoxetine, oral
  Start with the lowest possible dose available because of increased sensitivity to side effects.
  Duration of therapy: variable, initially 6 months–1 year.
  Extended drug treatment over many years and even life-long may be necessary, except where cognitive-behaviour therapy has been successful.
  Relapses may occur when treatment is discontinued.

REFERRAL

- recurrent panic attacks/panic disorder

15.8 ACUTE STRESS DISORDER AND POSTTRAUMATIC STRESS DISORDER

F43.1

DESCRIPTION

Acute stress and posttraumatic stress disorder arise in response to stressful events experienced by the patient as traumatic. In this regard, the patient should have experienced the event as life threatening or as a physical threat to themselves or others, at which time they felt fear and helplessness. A range of symptoms are associated with either of these conditions and include:

- re-experiencing of the event, e.g. flashbacks, dreams
- avoidance of situations associated with the event
- features of anxiety or increased arousal, e.g. hypervigilance, heightened startle response and insomnia.

The conditions are symptomatically similar but differ with regard to the duration of the onset of symptoms. The symptoms of acute stress disorder arise within 4 weeks of the event and last between 2 days and 4 weeks whereas the symptoms posttraumatic stress disorder last longer than 4 weeks.

NON DRUG TREATMENT

Reassurance and support of patient and family.
Appropriate medical attention.
Psychotherapy, as indicated by clinical presentation and usually of a supportive/cognitive-behavioural nature. Trauma debriefing has been questioned as a routine approach.

DRUG TREATMENT

Acute management

For anxiety and insomnia:
Benzodiazepines, repeated as necessary to control symptoms, e.g.:

- diazepam, IV/oral, 2–5 mg as a single dose
  OR
  clonazepam, IM/oral, 0.5–1 mg immediately

Maintenance antidepressant therapy
Indicated for features of Posttraumatic Stress Disorder as well as the possibility of an emergent, co-morbid, major depressive disorder.
See Section 15.3: Depressive Disorder, Major.

REFERRAL
- persistent symptoms
- inadequate response to treatment
- comorbid conditions

15.9 PSYCHOSIS, ACUTE

DESCRIPTION
Psychosis is a clinical state characterised by loss of contact with reality. In such an instance the patient may be experiencing perceptual disturbances, e.g. hallucinations that are generally auditory, as well as disturbances of thought content i.e. delusions. There may be accompanying behavioural disturbances related to both the perceptual and thought disturbances. This presentation is characteristic of Psychotic Disorders, such as Schizophrenia. However, this presentation may occur in other psychiatric conditions e.g. bipolar mania, major depression as well as medical conditions e.g. certain types of epilepsy and HIV. The presentation may be acute or chronic. Patients generally have no insight into their symptoms and may be resistant to intervention.
See Section 15.1: Bipolar disorder and Section 15.10: Schizophrenia.

15.10 SCHIZOPHRENIA
F20

DESCRIPTION
Schizophrenia is characterised by psychotic episodes, and is typically accompanied by a deterioration in social and occupational functioning as well functioning generally i.e. tasks of daily living such as hygiene and grooming. Whilst the presentations may be acute, typically the sufferer's illness tends to have a chronic course.

NON-DRUG TREATMENT
Supportive psychotherapy and psycho-educational group therapy for patients and family members.

DRUG TREATMENT

PSYCHOTIC EPISODE

Acute management

For agitated and acutely disturbed patient:

- haloperidol, IM, 2–5 mg
  This can be repeated in 60 minutes if required.
  Monitor vital signs and beware of acute dystonia.
  Exercise caution when the total dose exceeds 10 mg as the patient may be exposed to an increased risk of side effects without necessarily adding to the anti-psychotic effect.

AND/OR

Benzodiazepine, repeat as necessary, to achieve containment, e.g.:

- lorazepam, IM, 2 mg
  OR
  diazepam, IV, 10 mg
  OR
  clonazepam, IM, 2 mg

CAUTION

Benzodiazepines, especially diazepam IV, can cause respiratory depression. Monitor patients closely as benzodiazepines can exacerbate an abnormal mental state or mask important neurological signs of deterioration.

If patient is known to be schizophrenic:

- zuclopenthixol acetate, IM, 50–150 mg. Repeat after 2–3 days if necessary.
  Beware of dystonia, i.e. muscle spasm which can involve any group of muscles but may also impact on respiration and are generally experienced as distressing for the patient.

Prophylactic anticholinergics:

- orphenadrine, oral, 50 mg twice daily

If dystonic reactions develops:

- biperiden, IM, 2 mg
  Do not further administer antipsychotic.
  Benzodiazepines may be required.

Repeated doses of high potency antipsychotics may lead to the development of a neuroleptic malignant syndrome. In this regard any increase in temperature, muscle rigidity and alterations in consciousness should lead to caution and investigation. If suspected, cease antipsychotic drug use and monitor medically.

Maintenance therapy

Specialist initiated.
Review patients every six months by a psychiatrist.

Before progressing to long-term therapy:

- haloperidol, oral, 1.5–10 mg/day
  OR
  chlorpromazine, oral, 75–300 mg/day in divided doses
  OR

If adherence is a problem:

  flupenthixol decanoate, IM, 20–40 mg every 4 weeks
  OR
  fluphenazine decanoate, IM, 12.5–50 mg every 4 weeks
  OR
  zuclopenthixol decanoate, IM, 200 mg every 4 weeks

If haloperidol and chlorpromazine fail and adherence problems have been ruled out: Refer for consideration of clozapine or other antipsychotics including “atypicals”.

- clozapine, oral, 300–450 mg daily. Psychiatrist initiated.
  Titrate doses.
  Frequent WCC monitoring – See package insert.
  OR
  risperidone, oral, 1–4 mg daily. Psychiatrist initiated.
  OR
  sulpiride, oral, 600–800 mg/day in divided doses. Psychiatrist initiated.

If extrapyramidal side-effects occur with the lowest effective dose of antipsychotic medication, anticholinergic agent, e.g.:

- orphenadrine, oral, 50–150 mg daily according to individual response
  Usual dose: 50 mg twice daily.
  Do not prescribe more than 150 mg/day.
  Use with caution in the elderly as it may cause confusion and urinary retention.
  OR
  biperiden, IM/slow IV, 2 mg
  Repeat every 30 minutes if necessary up to a maximum of 4 doses daily.
  Higher doses of up to 5 mg have been used.

REFERRAL

- for consideration of clozapine or other atypical antipsychotics if haloperidol and chlorpromazine fail and adherence is a problem
- psychotic patients with uncertain diagnosis
- patients who relapse and refuse treatment or become aggressive or suicidal, refer to the Mental Health Care Act in terms of involuntary treatment
- patients with complications due to medication which cannot be managed easily

15.11 WITHDRAWAL FROM SUBSTANCES OF ABUSE

15.11.1 ALCOHOL

F10.4

NON-DRUG TREATMENT

Admit patients with:

- convulsions
- psychosis
- suicidal ideation
- significant medical comorbidity such as heart failure, liver disease
- inadequate support at home
- history of withdrawal delirium

Assess for comorbid infections and other pathology.

Ensure adequate hydration. Overhydration is a common error made in this setting.

DRUG TREATMENT

UNCOMPLICATED WITHDRAWAL

Alcohol detoxification may be managed on an outpatient basis in cases of uncomplicated withdrawal.

- thiamine, oral, 100 mg daily for 14 days

AND

- diazepam, oral, 10 mg immediately,
  then 5 mg 6 hourly for 3 days
  then 5 mg twice daily for 2 days
  then 5 mg daily for 2 days
  then stop.

COMPLICATED WITHDRAWAL

See Section 14.2.1: Alcohol Withdrawal Delirium (Delirium Tremens)

15.11.2 OPIATES E.G. HEROIN

F11.2

Withdrawal is generally poorly tolerated, but not dangerous, except in very frail debilitated patients or during the first trimester of pregnancy.

MILD WITHDRAWAL

May be done on an outpatient basis.

Symptomatic treatment

- diazepam, oral, 5–20 mg/day in divided doses
  Taper off over 5–7 days.

For stomach cramps:

- hyoscine butylbromide, oral, 20 mg up to 3 times daily as required

For diarrhoea:
- loperamide, oral, 4 mg immediately, then 2 mg after each loose stool

MODERATE TO SEVERE WITHDRAWAL
Hospitalise patient.

Substitution treatment
Methadone syrup is used under specialist guidance, ideally in a specialist centre. The dose is determined by titrating it according to the level of tolerance. Methadone may be used in conjunction with symptomatic treatment to reduce the methadone requirement.

Day 1
Only if clinical signs of withdrawal are present:
- methadone, oral, 10 mg (= 25 mL)
  If symptoms are still present after 1 hour, give another 5–10 mg.
  If symptoms are still present after 1 hour, give a repeat dose of 5–10 mg.
  The initial dose to suppress withdrawal symptoms may be repeated after 12 hours.
  The total 24-hour dose should **rarely** be more than 30 mg.

Day 2
Repeat total dose of day 1 as a single or 2 divided doses.

Day 3 onwards
Decrease by 5 mg/day to a total of 10 mg. Thereafter reduce by 2 mg/day.
The withdrawal regimen may be shortened if the patient's withdrawal symptoms allow it.

15.11.3 STIMULANTS INCLUDING METHAMPHETAMINES AND COCAINE

F14.2.

NON-DRUG TREATMENT
These patients usually do not require admission.
Beware of depression and assess suicide risk.

DRUG TREATMENT
No substitute drug available for detoxification.

For severe anxiety, irritability and insomnia, short-term benzodiazepines, e.g.:
- diazepam, oral, 5–10 mg 3 times daily for 5–7 days

15.11.4 METHAQUALONE AND/OR CANNABIS

F12.2

Only for intolerable withdrawal symptoms:

- diazepam, oral, 5 mg as needed
  Maximum dose: 20 mg daily.

15.11.5 BENZODIAZEPINES

F13.2

NON-DRUG TREATMENT

The **therapeutic relationship** between client and doctor is extremely important in initiating dose reduction. Take time to explain concepts like tolerance and withdrawal to the patient and then convince them that stopping the benzodiazepine is the best thing to do. Encourage the patient not to seek medication from other doctors. Negotiate each reduction with the patient.

Avoid abrupt withdrawal of benzodiazepines.
Withdrawal from benzodiazepines takes time. Be patient.
The patient will require regular monitoring and motivation.

DRUG TREATMENT

Replace short-acting benzodiazepine with an equivalent diazepam (long acting benzodiazepine) dose.
Approximate equivalent doses to diazepam 5 mg are:

- chlordiazepoxide 15 mg
- lorazepam 1 mg
- alprazolam 0.25 mg
- bromazepam 1.5 mg
- flunitrazepam 0.5 mg
- nitrazepam 5 mg
- oxazepam 15 mg
- temazepam 15 mg
- zoplicone 7.5 mg
- zolpidem 10 mg

Note: drugs have been included for comparison only.

Decrease the dose of diazepam every 2 weeks by 2.5 mg. If symptoms reappear increase the dose a little and reduce more.

CHAPTER 16
RESPIRATORY SYSTEM

16.1 ASTHMA, ACUTE

J46

NON-DRUG TREATMENT

Prevent exposure to known allergens and inhaled irritants.
Oxygen if hypoxic.
Ensure adequate hydration.

DRUG TREATMENT

ß$_2$-stimulants, e.g.:

- salbutamol or fenoterol, MDI, 1–2 mg immediately via larger volume spacer (1–2 mg = 1 000–2 000 mcg = 10–20 puffs of 100 mcg)
  If patient responds, follow with 200 mcg 4–6 hourly.
  OR
  salbutamol, nebulised, 2.5–5 mg, administered:
  - undiluted and nebulise over 3 minutes
    or
  - diluted with sodium chloride 0.9% to a total volume of 4–5 mL and nebulise over 20 minutes

  Repeat 4–6 hourly.
  OR
  fenoterol, nebulised, 1.25–2.5 mg undiluted administered over 3 minutes
  Repeat 4–6 hourly.

  Take cognisance of the proper use of available nebulisers.
  Continue with this inhalation until peak flow returns to 80% of predicted, or of personal best.
  In very severe cases, and in patients not responding to standard dosages, these dosages may be given more frequently, i.e. every 20 minutes for 1 hour or continuously, after which patient should be reassessed clinically, and by peak flow meter and pulse oximetry/oxygen saturation and monitoring of pulse, BP and respiratory rate.

Consider admission to an intensive care unit in life-threatening asthma, when there is no response to treatment, as intubation and ventilatory support may be required.

Corticosteroids
Patients having an acute attack of asthma, unless the attack is very mild and the response to ß$_2$-stimulants very rapid:

- prednisone, oral, 40 mg immediately

Follow with:

- prednisone, oral, 20–40 mg daily for 7–10 days

OR
In patients who cannot use oral therapy:

- hydrocortisone, IV, 100 mg immediately

Once oral medication can be taken, follow with:

- prednisone, oral, 20–40 mg daily for 7–10 days
  Monitor response closely by measurement and clinical signs. Exclude causes of intractable asthma.
  If there is a good response, prednisone can be discontinued abruptly after 7–14 days.
  If used for longer, dosage must be tapered and then stopped.

THEOPHYLLINE NAÏVE PATIENTS

Aminophylline should be reserved for severely ill cases and/or cases not responding to initial bronchodilator or corticosteroid therapy.

In a Cochrane review aminophylline has not been shown to be beneficial in acute asthma in adults who are given sufficient nebulised $ß_2$-stimulants. It is a toxic drug and is not a first line drug in the treatment of asthma, but it may have a role in cases not responding to initial bronchodilator and corticosteroid therapy. Because of its toxicity, blood levels must be monitored if it is used. Potassium levels should be monitored and corrected at initiation and continuously during treatment.

Patients not currently using oral theophylline preparations:

- aminophylline, IV, 6 mg/kg loading dose administered over 10–20 minutes
  Specialist initiated.
  Maintenance dose: 0.6 mg/kg/hour diluted in 200 mL sodium chloride 0.9% administered as a continuous infusion. The dose should be titrated to a plasma level of 10–20 mcg/mL, if therapeutic drug monitoring is available.

Patients currently using oral theophylline preparations:

No loading dose is needed. Commence immediately with:

- aminophylline, IV, 0.6 mg/kg/hour diluted in 200 mL sodium chloride 0.9% administered as a continuous infusion. The dose should be titrated to a plasma level of 10–20 mcg/mL, if therapeutic drug monitoring is available.

Anticholinergics, e.g.:

For the duration of the acute attack, until peak flow returns to 80% of predicted or of personal best:

- ipratropium bromide, MDI, 40–120 mcg 3–4 times daily via large volume spacer
  OR
  ipratropium bromide, nebulised, 0.5 mg 4 hourly
  Dilute 2 mL in 3 mL sterile sodium chloride solution 0.9%.

REFERRAL

- severe non-responding bronchospasm
- patients presenting with repeated asthma exacerbations
- patients with previous life-threatening exacerbations
- when there are unsatisfactory social and personal factors, e.g. inadequate access to health care, unavailability of transport, difficult home conditions or difficulty with the home management plan

16.2 ASTHMA, CHRONIC PERSISTENT

J45

NON-DRUG TREATMENT

Patient education.
Eliminate/decrease exposure to triggers, e.g. house dust mite, pollens, grasses, pets, smoke, fumes, etc.
Psychological support.

DRUG TREATMENT

Concomitant use of preparations of the same pharmacological classification is hazardous and must be avoided.
Nocturnal asthma and/or regular need for bronchodilators are usually indicative of poor control of asthma. Consider adjustment of treatment.
Note:
All regular nebulised therapy should be prescribed by a specialist.
Correct use of inhaler therapy technique should be demonstrated and checked regularly by way of placebo inhalers, as the majority of asthmatic patients do not use their inhalers correctly.

MAINTENANCE THERAPY

Inhaled corticosteroids
Administer all inhaled corticosteroids via a spacer.
Indicated in all patients with daytime symptoms > twice a week or nocturnal symptoms > once a month.
If no peak flow or other lung function test assessment available:

- budesonide, inhaled, 200 mcg twice daily
  Maximum total daily dose: 1 200 mcg.
  Doses in excess of 800 mcg daily are reserved for specialist only, and should not normally be used as higher dosages cause significant metabolic adverse effects.
  OR
  beclomethasone, inhaled, 200 mcg twice daily
  Maximum total daily dose: 1 000 mcg.
  Doses in excess of 1 500 mcg daily are reserved for specialist only, and should not normally be used as higher dosages cause significant metabolic adverse effects.

PLUS
As reliever/rescue therapy:
ß$_2$-stimulants, e.g.:

- salbutamol, MDI, 100–200 mcg, 4–6 hourly as necessary
  Do not exceed dose in chronic asthma except in acute severe attacks, as higher doses may be hazardous, especially in the elderly and those with cardiac disease.
  OR
  salbutamol, nebulised, 2.5–5 mg, administered:
  - undiluted and nebulise over 3 minutes
    or
  - diluted with sodium chloride 0.9% to a total volume of 4–5 mL and nebulise over 20 minutes

  Repeat 4–6 hourly.

Exercise-induced asthma may be an isolated symptom of asthma and may require the use of an inhaled ß$_2$-stimulant 15–20 minutes before exercise.
Note:
Nebulised bronchodilator therapy is not recommended for chronic maintenance therapy of asthma, except under specialist direction.

If insufficient response to salbutamol:
ADD
Anticholinergics, e.g.:

- ipratropium bromide, MDI, 40–120 mcg 6–8 hourly. Specialist initiated.

If asthma is still not well controlled:
ADD

- theophylline slow release, oral. Specialist initiated.
  Initial dose: 150–200 mg 12 hourly followed by increments of 150–200 mg/day every third day, if tolerated.
  Maximum dose: 14 mg/kg daily or 900 mg daily.
  Higher dosages of theophylline should ideally be guided by blood level monitoring where available.
  The elderly are more susceptible to theophylline toxicity. Theophylline dosages need to be reduced by ± 30%.
  Combinations of xanthine derivatives with ephedrine-like substances and sedatives have no place in the treatment of asthma.
  Oral theophylline has a limited place in the treatment of asthma after insufficient response to inhaled ß$_2$-stimulants and corticosteroids in sufficient doses and should be prescribed only on the basis of proven benefit via pulmonary function testing in individual patients.
  Ongoing use of theophylline should be re-evaluated periodically. If there is no benefit after 4 weeks, discontinue theophylline.

If asthma is still not well controlled:
ADD
Long acting ß-agonist, e.g.:

- salmeterol, inhaled, 50 mcg twice daily. Specialist only.
  OR
  formoterol, inhaled, 12 mcg twice daily. Specialist only.
  A three month trial of long acting beta agonist therapy, verified by lung function assessments, is indicated in treatment-compliant patients who have a demonstrated adequate technique in the use of inhalers and whose asthma is uncontrolled with high doses of inhaled corticosteroids, regular inhaled $ß_2$-stimulant and ipratroprium bromide and who have theophylline dosages adjusted to therapeutic blood levels. If clinical benefit is objectively and convincingly demonstrated by significant lung function improvement, i.e. FEV_1 increase by >10%, decreased hospitalisations, decreased exacerbations and decreased nocturnal awakenings, long acting ß-agonist therapy should be continued and oral theophylline may be tried to be withdrawn.

PLUS
If required, i.e. inadequate response to high dose inhaled corticosteroids (800 mcg daily):

- prednisone, oral, 5–10 mg daily
  For short-term exacerbations in patients not responding to the above, doses of 20–40 mg daily for 7–10 days may be required.
  These patients should be referred to a tertiary centre.

Cromoglycate and nedocromil provide no additional benefit over corticosteroids.

INTERCURRENT BACTERIAL INFECTIONS
Bacterial infections are seldom present in acute exacerbations of asthma and yellow sputum is usually related to presence of eosinophils.

- amoxicillin, oral, 500 mg 8 hourly for 5–10 days

Penicillin allergy:

- doxycycline, oral, 100 mg twice daily taken with an adequate amount of fluid

REFERRAL

- to assess and confirm diagnosis when in doubt
- for treatment optimisation
- to treat complications
- patients not responding to optimal therapy
- acute severe non-responding attacks of bronchospasm

16.3 BRONCHIECTASIS

J47

NON-DRUG TREATMENT

Patient education.
Advice on early self-referral for suspected acute infections.

Physiotherapy:
- regular and continued postural drainage is the mainstay of therapy and must be emphasised.
- demonstrate postural drainage to the patients. Check adherence to the correct technique at each visit.
- regular home physiotherapy, including cough and chest drainage techniques are the basis of therapy and must be emphasised repetitively

DRUG TREATMENT

Antimicrobial therapy

Antibiotic therapy in patients with bronchiectasis should only be used when there are features of systemic sepsis i.e.:
- temperature
- white cell count > 14 000
- significant reduction in effort tolerance and /or new infiltrates on chest X-ray

Treatment may need to be prolonged for several weeks, depending on the extent of the bronchiectasis and the organisms suspected.
In patients who do not respond or improve on treatment below, sputum culture and sensitivity should be done to determine antimicrobial resistance.

In patients otherwise stable and with mild bronchiectasis:
- amoxicillin, oral, 1 g 8 hourly for at least 10 days, or longer depending on the response

Penicillin allergy:
- doxycycline, oral, 100 mg twice daily for at least 10 days, or longer depending on the response

More severely ill patients may require hospitalisation and initiation of parenteral antibiotic therapy.
Sputum cultures and sensitivity determination are indicated in all cases.
- ampicillin, IV, 1 g 6 hourly

PLUS
- gentamicin, IV, 5 mg/kg once daily

Depending on the background resistance patterns of common organisms, the following initial therapy may be justified:
- amoxicillin/clavulanic acid, IV, 1.2 g 6 hourly

Switch to oral treatment once there is an improvement:
- amoxicillin/clavulanic acid, oral, 625 mg 8 hourly

Subsequent antibiotic therapy should be based on results of sputum investigations.
Note:
Treat cor pulmonale along conventional lines. See Section 3.3 Congestive Cardiac Failure.

Inhaled bronchodilators
Bronchodilators may be used as for asthma or COPD, if air flow obstruction is present. There is no indication for inhaled corticosteroids.

REFERRAL

- confirmation of the diagnosis and exclusion of a possible foreign body
- non-responsive infections
- cardiovascular and other systemic complications
- major haemoptysis
- assessment for possible surgical removal of a bronchiectatic segment

16.4 CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

J44.9

NON-DRUG TREATMENT

Lifestyle adjustment, e.g. smoking cessation.
Avoid precipitants, e.g. infections, inhaled irritants, etc.
Chest X-ray to exclude TB, carcinoma or a surgically correctable abnormality e.g. a large single bulla.
Pulmonary rehabilitation, including exercise rehabilitation and cough techniques.
Psychological support.
Educate patient and family regarding the disease.
Ensure adequate nutrition and physical conditioning.
Treat complicating infections early.

DRUG TREATMENT

Note:
Correct use of inhaler therapy technique should be demonstrated and checked regularly by way of placebo inhalers, as the majority of patients do not use their inhalers correctly.

$ß_2$-stimulants, e.g.:

- salbutamol, MDI, 200 mcg 4–6 hourly as needed using a larger volume spacer
  OR
  salbutamol, nebulised, 2.5–5 mg, administered:
  - undiluted and nebulise over 3 minutes
    or
  - diluted with sodium chloride 0.9% to a total volume of 4–5 mL and nebulise over 20 minutes

  Repeat 4–6 hourly.

Anticholinergics, e.g.:

- ipratropium bromide, MDI with spacer, 40–120 mcg 6–8 hourly as needed

Note:
Restrict nebulised therapy.
Do not use as maintenance therapy except under specialist direction.

Theophylline

In a Cochrane review there was evidence of marginal improvement in lung function but the clinical relevance of this is unclear.

- theophylline, oral, 125–150 mg 12 hourly for three days
  Titrate upwards by 125–150 mg per day every third day.
  Maximum dose: 14 mg/kg daily or 900 mg daily, whichever is the higher.
  Doses exceeding these should be titrated upward using plasma theophylline level monitoring.
  Ongoing use of theophylline should be re-evaluated periodically. If there is no benefit after 4 weeks, discontinue theophylline.
  If the 12 hourly daily doses are different, the higher dose should be given at night.
  A slow release formulation is preferred to avoid wide trough to peak level differences during the day.
  Side effects are dose-related and include nausea, gastric intolerance, tachycardia and seizures. Titrate doses slowly upwards to reduce side effects. Titration may be interrupted or reversed to the previous tolerated dose.
  Interacts with many other drugs including antibiotics such as erythromycin and quinolones.

Corticosteroids

A trial of corticosteroids, unless contraindicated, is recommended for all new patients. This is to exclude asthma and to evaluate whether there is significant reversibility. Patients should be in a stable condition.
Monitor steroid usage by objective parameters such as FEV_1 and six minute walking test.

- prednisone, oral, 40 mg daily for 14 days
  Taper to 20 mg for a further 2 weeks, after which lung function testing needs to be repeated.
  If there is a significant improvement, reduce dose to 10 mg daily for one month while inhaled steroids are introduced. Long-term oral steroids beyond this time increase mortality and morbidity.
  If no significant improvement in lung function values, i.e. FEV_1 increase by > 12% and 200 mL, stop prednisone.

Antibiotic therapy

Exacerbations of chronic bronchitis are, in contrast to exacerbations in asthma, frequently related to bacterial infections.

5 days antibiotic treatment in these patients is often insufficient and leads to incomplete response and recurrence of symptoms.

- amoxicillin, oral, 500 mg 8 hourly for 10 days

Penicillin allergy:
- doxycycline, oral, 100 mg twice daily for 10 days

REFERRAL
- to establish the diagnosis and an optimal treatment protocol
- treatment-resistant acute or chronic airflow limitation
- pre-operative assessment for surgical procedures
- assessment regarding long-term domiciliary oxygen therapy

16.5 LUNG ABSCESS
J85

NON-DRUG TREATMENT
Physiotherapy and regular emphasis on postural drainage is of extreme importance in the management.
Instruct patient to do postural drainage for at least 10 minutes 4 times a day.
Nutritional support.

DRUG TREATMENT
- benzylpenicillin (Penicillin G), IV, 5 million units 6 hourly

PLUS
- metronidazole, oral, 400 mg 8 hourly

Follow with:
- amoxicillin, oral, 500 mg 8 hourly

PLUS
- metronidazole, oral, 400 mg 8 hourly

Until infection has clinically and radiologically resolved.

In situations where gram negative organisms are suspected or cultured and depending on the background resistance patterns of common organisms:
- amoxicillin/clavulanic acid, IV, 1.2 g 8 hourly until the patient is no longer pyrexial for 48 hours

Follow with:
- amoxicillin/clavulanic acid, oral, 625 mg 8 hourly

Penicillin allergy:
- clindamycin, IV, 600 mg 8 hourly

Follow with:
- clindamycin, oral, 300 mg 8 hourly

Duration of therapy is until there are no features of sepsis and there is no fluid level, and is usual for several weeks.

REFERRAL

- all patients for specialist opinion regarding surgical intervention once the acute infection has settled
- diagnostic work-up, including bronchoscopy to exclude foreign body or tumour
- no response to treatment
- surgery, if indicated, for lung abscess
- complications, such as empyema, septicaemia, haemoptysis, etc.

16.6 PNEUMONIA, COMMUNITY ACQUIRED

J18

NON-DRUG TREATMENT

Bed rest.
Frequent monitoring of temperature, blood pressure and pulse rate in order to detect complications early and monitor response to therapy.
Attention should be given to fluid and nutritional replacements.
Oxygen via nasal prongs or facial mask.

Even in clinically classic cases of pneumonia, tuberculosis may need to be excluded by way of a sputum examination. An initial chest X-ray should routinely be followed by a follow up X-ray after the completion of therapy in all but very mild cases in otherwise healthy adults, to ensure complete resolution of the pneumonia. With an uncomplicated clinical course this should only be done after 4–6 weeks, as radiological resolution may be delayed. Follow up X-rays are indicated earlier only when complications are suspected, e.g. empyema, abscess or pneumothorax.

At the onset of the pneumonia the X-ray changes may be unimpressive, and may only develop fully after a few days.
A control chest X-ray is always indicated after attempted pleural fluid aspiration to exclude pneumothorax, as hydro-pneumothorax in this setting often leads to empyema with high morbidity and prolonged hospitalisation.

Empyema, detected early by a low pH and leucocytosis in pleural aspirate and a cloudy or clearly infected pleural aspirate, should be drained completely by chest tube drainage.

DRUG TREATMENT

NON-SPECIFIC/SUPPORTIVE

Adequate analgesia with paracetamol or morphine for pleuritic pain. If NSAIDs are to be used then sufficient hydration in the patient must be ensured.
Blood pressure support may be needed.

SPECIFIC

Antimicrobial therapy
Duration of antibiotic therapy is guided by clinical response, but should be at least 5 days.

Prolonged fever and clinical signs may be due to any of the complications, or to the incorrect choice of antibiotic, or due to an underlying bronchus obstruction (foreign body or carcinoma). These patients should be further investigated.

UNCOMPLICATED COMMUNITY-ACQUIRED PNEUMONIA

- benzylpenicillin (Penicillin G), IV, 2 million units 6 hourly
  OR
  ampicillin, IV, 1 g 6 hourly

When temperature has settled follow with:

- amoxicillin, oral, 500 mg 8 hourly

If poor response after 48–72 hours:
ADD

- doxycycline, oral, 200 mg immediately, followed by 100 mg twice daily for 14 days
  OR
  erythromycin, oral, 500 mg 6 hourly for 14 days

Penicillin allergy:

- erythromycin, oral, 500 mg 6 hourly

HOSPITALISED PATIENTS > 65, COMORBID DISEASE, INCLUDING HIV INFECTION, DIABETES MELLITUS, CARDIAC FAILURE, KIDNEY DISEASE, ETC.
3rd generation cephalosporin e.g.:

- ceftriaxone, IV, 1 g 12 hourly

Penicillin allergy:

- moxifloxacin, oral, 400 mg daily

If poor response after 48–72 hours:
ADD

- doxycycline, oral, 200 mg immediately, followed by 100 mg twice daily for 14 days
  OR
  erythromycin, oral, 500 mg 6 hourly for 14 days

SEVERE PNEUMONIA

- ceftriaxone, IV, 1 g 12 hourly

PLUS

- erythromycin, oral, 500 mg 6 hourly

In severe penicillin allergy:

- moxifloxacin, oral/IV, 400 mg daily for 5–10 days

16.7 PNEUMONIA, ASPIRATION

J69.0

DESCRIPTION

Pneumonia following aspiration of gastric content and/or commensal organisms from the oropharynx.
There may be solid (food) particles or other foreign bodies aspirated. The organisms involved are polymicrobial, i.e. gram-positive and anaerobes. The manifestations are as those of community acquired pneumonia, except that patients tend to be more ill.

Aspiration pneumonia should be suspected in patients with episodic or prolonged decreased level of consciousness, e.g. in alcoholics, drug overdoses, epileptics, strokes, etc, or swallowing problems.
Aspiration of gastric acid causes an acute fulminating chemical pneumonia with rapidly developing severe hypoxia and has a high mortality, requiring admission to an ICU for ventilatory support in all cases.

DRUG TREATMENT

Antimicrobial therapy

Continue therapy until there are no features of sepsis and there is no fluid level. Once the acute infection has settled, refer all patients for specialist opinion regarding surgical intervention.
Gram-negative organisms are only frequently seen in nosocomial aspiration and in nursing home residents. In this setting add gentamicin for 5 days with trough level monitoring. In patients with renal impairment, use a third generation cephalosporin.

- amoxicillin/clavulanic acid, IV, 1.2 g 8 hourly until the patient is no longer pyrexial

Follow with:

- amoxicillin/clavulanic acid, oral, 375 mg 8 hourly

  AND

  amoxicillin, oral, 500 mg 8 hourly

PLUS

- metronidazole, oral, 400 mg 8 hourly

OR

- benzylpenicillin (Penicillin G), IV, 2 million units 6 hourly

PLUS

- metronidazole, oral, 400 mg 8 hourly

Penicillin allergy:

- clindamycin, IV, 600 mg 8 hourly

PLUS

Aminoglycoside, e.g.:

- gentamicin, IV, 5 mg/kg daily

REFERRAL
- suspected foreign body aspiration
- suspected chemical aspiration pneumonia
- non-resolving pneumonia

16.8 EMPYEMA
J86.9

DESCRIPTION
Pus in the pleural cavity.
An empyema is always secondary to another process, usually pneumonia, aspiration pneumonia, lung abscess, tuberculosis, bacteraemia or a penetrating chest wall injury.

NON-DRUG TREATMENT
Aspirate and analyse all pleural effusions.
A parapneumonic effusion should be distinguished from an empyema by biochemical analysis, fluid microscopy and culture.
The primary management of empyemas is early and complete drainage, by insertion of an intercostal drain, to prevent long-term complications.

DRUG TREATMENT
Antimicrobial therapy
Antimicrobial therapy is that of the primary condition.

PENETRATING CHEST WALL INJURY
- cloxacillin, IV, 2 g 6 hourly

REFERRAL
- complicated empyema requiring ultrasound guided drainage or surgical resection
- chronic empyema with pleural thickening and restrictive lung disease, requiring surgical decortication

16.9 CYSTIC FIBROSIS
E84

DESCRIPTION
A genitically inherited disease of exocrine glands, leading to thick viscoid secretions, leading to recurrent respiratory tract infections and bronchiectasis and to malabsorption due to pancreatic insufficiency.

NON-DRUG TREATMENT
Premarital gene typing and counselling.
Counselling of parents.
CF support groups.
Adequate hydration and electrolyte replacement, especially in warm weather.
Early treatment of infections.
Active chest physiotherapy, i.e. frequent postural drainage.
Diet: high protein, high calorie and low fat diet.

DRUG TREATMENT

Treat each feature according to its severity.
Vitamin supplementation.

CHRONIC PANCREATITIS

Pancreatic enzymes as a combination capsule containing amylase, lipase and protease.
Dose according to response.
See Section 1.1.9: Chronic Pancreatitis.

RESPIRATORY TRACT INFECTIONS

Prophylaxis

There is no convincing evidence of a beneficial effect of the use of prophylactic antibiotics to prevent respiratory tract infections.

Established infections

It is essential to monitor sputum culture sensitivity, as antimicrobial resistance commonly develops in patients with cystic fibrosis.
For pseudomonas species or other gram negative organisms, combinations of a ß-lactam antibiotic, e.g. piperacillin, or a third generation cephalosporin, such as ceftazidime or ceftriaxone, with an aminoglycoside, or ciprofloxacin may be needed depending on microbial sensitivity.
The duration of therapy is related to clinical and bacteriological response. Antibiotic treatment should be continued for 10–14 days after the clinical manifestations have subsided.
After an acute infection has cleared, patients need to be followed up at short intervals, to ensure successful outcome.

S. aureus

- cloxacillin, IV, 1 g 6 hourly
  OR
  flucloxacillin, oral, 500 mg 6 hourly

Proven resistance of *S. aureus* to the above, treat according to sensitivity:

- vancomycin, IV, 10 mg/kg 6 hourly
  Maximum dose: 2 g daily.

Pseudomonas species

Monotherapy is acceptable as there is no convincing evidence that combination therapy has a better out come.

- ß-lactam, e.g.:
  piperacillin, IV, 300 mg/kg/day
  OR
  3rd generation cephalosporin, e.g.:
  ceftazidime, IV, 2 g 8 hourly

PLUS

- gentamicin , IV, 5 mg/kg once daily
  Measure peak and trough levels.

OR
ciprofloxacin, oral, 750 mg twice daily
OR
ciprofloxacin, IV, 2.5–5 mg/kg 12 hourly

REFERRAL

- for confirmation of diagnosis and screening of relatives
- to plan management
- to manage complications such as:
  - malnutrition and deficiencies
  - severe haemoptysis, which may require pulmonary artery embolisation
  - recurrent pneumothorax for pleurodesis or pleurectomy
  - cor pulmonale
  - obstructive GIT complications for surgical correction

16.10 TUBERCULOSIS, PULMONARY

A16.9
* A notifiable condition

Tuberculosis (TB) treatment guidelines are updated regularly. The most recent National Tuberculosis Control Programme Guidelines should be consulted.

DESCRIPTION

A chronic, granulomatous infection of the lungs caused by *M. tuberculosis*. Pulmonary tuberculosis is a serious and growing health problem in South Africa, which is expanded and complicated by HIV/AIDS and multidrug resistant tuberculosis (MDR-TB).

Note:
All patients on TB treatment must be entered into a TB register to enable the completion of quarterly reports for case finding and case holding. This is essential for TB control at local, provincial and national level.

DIAGNOSIS

The diagnosis in adults is made on Ziehl-Nielsen stained sputum or gastric aspirate smears, positive for acid-fast bacilli (AFB) and/or culture. Sputum induction with hypertonic ultrasonic nebulised saline 5% has been shown to increase the yield of positive smear or culture. This may be of special value in the context of HIV/AIDS, as in these patients TB frequently presents without cavitation and there consequently often is a low sputum yield of organisms. In exceptional cases bronchial washings may have to be done to confirm the diagnosis.

MDR-TB is diagnosed exclusively on culture and sensitivity essays.

NATIONAL TUBERCULOSIS CONTROL PROGRAMME GUIDELINES

Directly observed therapy (DOT), short-course, using fixed medicine combinations is recommended to avoid the development of antimicrobial resistance.

Treatment should be given five times per week in both the intensive (initial) and the continuation phases.

Note:

In order to avoid dosage errors, clinics should adhere to either a five-times per week (preferred) or a three-times per week dosage (not recommended) schedule in the follow-up treatment phase.

Fixed dose drug combinations available:

RH – 150/75 mg	RH – 300/150 mg
RH – 150/150 mg*	RHZE – 150/75/400/275 mg
R – Rifampicin Z – Pyrazinamide	H – Isoniazid (INH) E – Ethambutol

*RH (150/150 mg) should be used only when treatment is given THREE times weekly in the continuation phase (not recommended).

Regimen 1 – New cases with age above 8 years and adults

New smear-positive and new smear-negative patients with pulmonary and extrapulmonary TB:

Pretreatment body weight	Two months initial phase given five times a week	Four months continuation phase	
		When given five times a week	
	RHZE (150/75/400/275)	RH (150/75)	RH (300/150)
30–37 kg	2 tablets	2 tablets	
38–54 kg	3 tablets	3 tablets	
55–70 kg	4 tablets		2 tablets
71 kg and over	5 tablets		2 tablets

Regimen 2 – Retreatment cases
Previously treated TB patients after cure, completion, interruption and failure:

Pretreatment body weight	Two months initial phase treatment given five times a week		3rd month initial phase given five times a week	Five months continuation phase When given five times a week			
	RHZE (150/75/ 400/275)	Strepto mycin*	RHZE (150/75/ 400/275)	RH (150/ 75)	E (400)	RH (300/ 150)	E (400)
30–37 kg	2 tablets	500 mg	2 tablets	2 tablets	2 tablets		
38–54 kg	3 tablets	750 mg	3 tablets	3 tablets	2 tablets		
55–70 kg	4 tablets	1 g	4 tablets			2 tablets	3 tablets
71 kg and over	5 tablets	1 g	5 tablets			2 tablets	3 tablets

* Do NOT give streptomycin during pregnancy and to those over 65 years.

16.11 TUBERCULOSIS, PLEURAL (TB PLEURISY)

A16.5

DESCRIPTION

TB pleurisy is caused by *M.tuberculosis* entering the pleural cavity, leading to an inflammatory process accompanied by the formation of a pleural exudative effusion. It usually presents with a few weeks' history, starting with pleuritic pain, and often associated with a dry cough, fever, malaise and, sometimes, progressive shortness of breath.

DIAGNOSIS

The diagnosis is suspected on clinical manifestations and on the demonstration of a pleural effusion on a chest X-ray. Although a definite diagnosis can only be made by demonstrating the organisms by ZN staining or culture of a (needle) pleural biopsy, the presence of a pleural exudate with a high adenosine de-aminase (ADA) level on biochemistry and a predominantly lymphocytic cells profile on cytology of the pleural fluid, is usually adequate to diagnose TB pleurisy in the appropriate settings.

Treatment is as for pulmonary TB.

Note:
Total drainage by aspiration or under-water tube-drainage is not needed, unless an empyema develops.
A TB pleural empyema must be drained by intercostal under-water tube-drainage.
There is no benefit of oral or intrapleural corticisteroids in the initial treatment phase.

REFERRAL

- non-resolving effusions. Suspect an incorrect diagnosis of TB pleurisy if the effusion does not clearly shows signs of regression on the chest X-ray after at least 3 months of treatment
- loculated TB empyema, not resolving after intercostal underwater tube drainage and needing assessment for surgical drainage
- persistent bronchopleural fistula

16.12 MULTIDRUG-RESISTANT (MDR) TB

U50.0

NEVER TREAT FOR MDR TB WITHOUT CULTURE AND SENSITIVITY RESULTS.
ALL CASES SHOULD BE REFERRED TO A SPECIALISED CENTRE.

TREATMENT OF MDR TB SHOULD BE SPECIALIST INITIATED.

DESCRIPTION

Multidrug resistant tuberculosis (MDR TB) is diagnosed when there is in vitro resistance of *M. tuberculosis* against, at least, rifampicin and isoniazid.

NON-DRUG TREATMENT

The cure rate of MDR TB in South Africa is only between 30–50% for first MDR treatments. With successive MDR treatments, the cure rates decrease considerably. Screen all close contacts for signs and symptoms of MDR TB and by sputum sampling to detect early disease.

DRUG TREATMENT

TO PREVENT MDR TB

Treat all new cases of sputum positive tuberculosis with a regimen containing 4 agents for the full duration of the 2-months initial intensive phase followed by 2 agents for the full duration of the 4-months consolidation phase (see above).
Never add a single agent to a TB treatment regimen that has, apparently, failed. Rather wait till sensitivity results become available before starting a MDR treatment regimen.

The effectiveness of preventive therapy in persons exposed to MDR TB bacteria is not known.

Prolonged treatment, usually for at least 18 months, is required in patients diagnosed with MDR TB.

The treatment of MDR TB should be coordinated and monitored by the dedicated provincial MDR TB treatment centres. All patients should be hospitalised in a

dedicated MDR TB hospital for at least the initial 4 months of treatment, but preferably until sputum conversion has occurred. After discharge from hospital, patients should be followed up at dedicated clinics until the end of their treatment.

Initial MDR TB treatment may occasionally have to be initiated before admission to a TB hospital, and MDR patients may be seen at health care facilities for treatment complications or for unrelated conditions.

STANDARDISED REGIMEN FOR TREATMENT OF MDR TUBERCULOSIS IN SOUTH AFRICA.
Specialist initiated.
Intensive phase: 4 monthly (daily)

Patient weight	Drug	Dosage
< 50 kg	• kanamycin • ethionamide • pyrazinamide • ofloxacin • ethambutol **OR** terizadone*	750 mg 500 mg 1 000 mg 600 mg 800 mg 750 mg
50–65 kg	• kanamycin • ethionamide • pyrazinamide • ofloxacin • ethambutol **OR** terizadone*	1 000 mg 750 mg 1 500 mg 600 mg 1 200 mg 750 mg
> 65 kg	• kanamycin • ethionamide • pyrazinamide • ofloxacin • ethambutol **OR** terizadone*	1 000 mg 750 mg 2 000 mg 800 mg 1 200 mg 750 mg

Continuation phase: 12–18 months (daily), depending on culture conversion

Patient weight	Drug	Dosage
< 50 kg	• ethionamide • ofloxacin • ethambutol **OR** terizadone*	500 mg 600 mg 800 mg 500 mg
50–65 kg	• ethionamide • ofloxacin • ethambutol **OR** terizadone*	750 mg 600 mg 1 200 mg 750 mg
> 65 kg	• ethionamide • ofloxacin • ethambutol **OR** terizadone*	750 mg 800 mg 1 200 mg 750 mg

* Use ethambutol if strain is still susceptible.
Use terizadone if strain is resistant to ethambutol. If weight ≤ 35 kg, reduce dose to 500 mg. For patients on terizadone, give pyridoxine, oral, 150 mg daily.

In exceptional cases:
Kanamycin may be substituted with amikacin.
Ofloxacin may be substituted with ciprofloxacin.

Notes

- Patients with resistance to the above drugs should all be treated exclusively in specialised centres.
- Birth control should be used in women of a child-bearing age, as the agents have teratogenicity.
  In pregnant women, treatment should, therefore, be delayed until after the first trimester of pregnancy, unless the MDR is life threatening.
  Aminoglycosides are usually not used in pregnancy, as they may cause deafness in the newborn.
- Blood glucose, renal function and serum electrolytes should be carefully monitored in diabetic patients with MDR TB.
- The doses of medication used must be amended in patients with impaired renal function.

Reference: “Standardised Management of Multidrug Resistant Tuberculosis in South Africa” policy guidelines of the National Tuberculosis Control Programme of the National Department of Health.

CHAPTER 17
EAR, NOSE AND THROAT DISORDERS

17.1 EPIGLOTTITIS

J05.1

DESCRIPTION

A special form of acute laryngitis, in which the inflammatory changes affect mainly the loosely attached mucosa of the epiglottis and the whole supraglottis.

NON-DRUG TREATMENT

Secure the airway.
Humidified oxygen.
Adequate hydration.

DRUG TREATMENT

3rd generation cephalosporin, e.g.:

- ceftriaxone, IV, 1 g daily for 5–10 days

Switch to oral therapy as soon as possible:

- amoxicillin/clavulanic acid, oral, 625 mg 8 hourly for 10 days

Severe ß-lactam allergy:

- chloramphenicol, IV, 1 g 6 hourly for 5–10 days

IN THE ACUTE STAGE

For significant swelling:

- hydrocortisone, IV, 100 mg immediately as a single dose

Follow with:

- prednisone, oral, 40 mg daily
  Can be stopped abruptly after a few days, once the swelling has subsided.

AND

- adrenaline 1:1 000, nebulised
  Dilute to 5 mL with sodium chloride 0.9% and administer 4–6 hourly.

17.2 EPISTAXIS

R04.0

NON-DRUG TREATMENT

Control bleeding by applying digital pressure over the cartilaginous part of the nose.
Tilt head forward and not backwards to avoid pooling of blood in the posterior pharynx.
Resuscitation, including blood transfusion, if necessary.

If the bleeding site can be identified, cauterise under local anaesthetic.
Anterior bleeding: insert an anterior nasal pack, using ribbon-gauze coated with BIPP (bismuth iodoform paraffin paste).