Chapter 4: Cardiovascular conditions

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4.1 Prevention of ischaemic heart disease and atherosclerosis

I25.1

Major risk factors for ischaemic cardio- and cerebrovascular disease

- diabetes mellitus
- hypertension
- central obesity: waist circumference ≥ 102 cm (men) and ≥ 88 cm (women)
- smoking
- dyslipidaemia:
  - total cholesterol > 6.5 mmol/L, or
  - LDL > 4 mmol/L, or
  - HDL < 1 mmol/L in men and < 1.2 mmol/L in women
- family history of premature cardiovascular disease in male relatives less than 55 years and in female relatives less than 65 years
- age: men > 55 years, women > 65 years

General measures

Lifestyle modification

All persons with risk factors for ischaemic heart disease should be encouraged to make the following lifestyle changes as appropriate:

- maintain ideal weight, i.e. BMI < 25
- weight reduction in the overweight patient, i.e. BMI > 25
- reduce alcohol intake to no more than 2 standard drinks/day
- follow a prudent eating plan i.e. low fat, high fibre and unrefined carbohydrates, with adequate fresh fruit and vegetables
- regular moderate aerobic exercise, e.g. 30 minutes brisk walking 3–5 times/ week
- smoking cessation

Calculation of absolute risk of myocardial infarction over 10 years (in the absence of ischaemic heart disease and monogenetic dyslipidaemia)

To derive the absolute risk as percentage of subjects who will have a myocardial infarction over 10 years: Add the points for each risk category (men – section A; women – section B).

The risk associated with the total points is then derived from section C (for men and women).

Section A: Men

Age (years)	Points
30–34	–1
35–39	0
40–44	1
45–49	2
50–54	3
55–59	4
60–64	5
65–69	6
70–74	7

Total cholesterol	Points
< 4.1 mmol/L	–3
4.2–5.2	0
5.3–6.2	1
6.3–7.2	2
> 7.2	3

HDL cholesterol	Points
< 0.91 mmol/L	2
0.91–1.16	1
1.17–1.29	0
1.3–1.55	0
> 1.55	–2

Blood pressure*	Points
< 120 / < 80	0
120–129 / 80–84	0
130–139 / 85–89	1
140–159 / 90–99	2
≥ 160 / ≥ 100	3

Other	Points
Non-smoker	0
Smoker	2
Not diabetic	0
Diabetic	2

Section B: Women

Age (years)	Points
30–34	–9
35–39	–4
40–44	0
45–49	3
50–54	6
55–59	7
60–64	8
65–69	8
70–74	8

Total cholesterol	Points
< 4.1 mmol/L	–2
4.2–5.2	0
5.3–6.2	1
6.3–7.2	1
> 7.2	3

HDL cholesterol	Points
< 0.91 mmol/L	5
0.91–1.16	2
1.17–1.29	1
1.3–1.55	0
> 1.55	–3

Blood pressure*	Points
< 120 / < 80	–3
120–129 / 80–84	0
130–139 / 85–89	0
140–159 / 90–99	2
≥ 160 / ≥ 100	3

Other	Points
Non-smoker	0
Smoker	2
Not diabetic	0
Diabetic	4

* Use the highest reading of either diastolic or systolic pressure (mmHg).

Section C: Risk (% of cohort defined by the score who will have a myocardial infarction in 10 years)

Total points	–2	–1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Men (%)		2	3	3	4	5	7	8	10	13	16	**20**	**25**	**31**	**37**	**45**	**>53**			
Women (%)	1	2	2	2	3	3	4	4	5	6	7	8	10	11	13	15	18	**20**	**24**	**>27**

The score is gender dependent: for example, 6 points for men and 10 for women both have a 10% risk.

Drug treatment

Indication for Lipid Lowering Drug Therapy

» Established atherosclerotic disease:
  – ischaemic heart disease
  – peripheral vascular disease
  – atherothrombotic stroke

  Note:
  Lipid lowering drugs should be administered in this setting even if the cholesterol is normal.

» Type 2 diabetics

  Note:
  Lipid lowering drugs should be administered in this setting even if the cholesterol is normal.

» A risk of MI of greater than 20% in 10 years (see table above)

  Note:
  Lipid lowering therapy should only be commenced in this group if the dyslipidaemia is not corrected with lifestyle modification

» Such high-risk patients will benefit from lipid lowering (statin) therapy irrespective of their baseline LDL-C levels.

Note:
When lipid-lowering drugs are used, this is ALWAYS in conjunction with ongoing lifestyle modification.

HMGCoA reductase inhibitors (statins) that lower LDL by at least 25%, e.g.:

- Simvastatin, oral, 10 mg daily

Referral

» Random cholesterol >7.5 mmol/L
» Fasting triglycerides >10 mmol/L

4.2 Angina pectoris, unstable

I20.0

Description

Unstable angina is a medical emergency and if untreated can progress to myocardial infarction.

Presents as chest pain or discomfort similar to stable angina but with the following additional characteristics:

» angina at rest or minimal effort
» angina occurring for the first time, particularly at rest
» prolonged angina lasting longer than 10 minutes and is not relieved by sublingual nitrates
» the pattern of angina accelerates and gets worse

Diagnosis

» made from good history
» ECG may show ST segment depression or transient ST segment elevation
» a normal ECG does not exclude the diagnosis

Drug treatment

- Oxygen 40% via facemask

- Aspirin soluble, oral, 150 mg immediately.

plus

- Isosorbide dinitrate, sublingual, 5 mg immediately and then repeat once if necessary for pain relief

plus

- Morphine, IV, 5–10 mg
  - Dilute IV morphine to 10 mL with water for injection or sodium chloride 0.9%.

This is a high-risk condition for CVD and is an indication for a statin for patients with proven lesions.

HMGCoA reductase inhibitors, e.g.:

- Simvastatin, oral, 10 mg/day.
  This therapy requires good initial evaluation, ongoing support for patients and continuous evaluation to ensure compliance.
  Random cholesterol should be measured at baseline.
  If < 7.5 mmol/L – initiate therapy.
  If > 7.5 mmol/L – initiate therapy and refer for further assessment.

Therapy should be initiated together with appropriate lifestyle modification and adherence monitoring.

Referral

Urgent

» All patients

4.3 Angina pectoris, stable

I20

Description

Characteristic chest pain due to myocardial ischaemia usually occurring on exercise and relieved by rest.

General measures

» Life style modification.
» Intensive health education.
» Modify reversible risk factors.

Drug treatment

Long-term prophylaxis for thrombosis:

- Aspirin soluble, oral, 150 mg daily

plus

Nitrates, short acting e.g.:

- Isosorbide dinitrate, sublingual, 5 mg
  - May be repeated if required at 5-minute intervals for 3 or 4 doses.

plus

STEP 1

- Atenolol, oral, 50–100 mg daily
  - Titrate to resting heart rate of approximately 60 beats per minute.

If ß-blocker cannot be tolerated or is contraindicated, consider long acting calcium channel blocker.

STEP 2

add

Long acting calcium channel blocker e.g.:

- Amlodipine, oral, 5 mg daily
  or
  Nifedipine, oral, slow release 30 mg daily

STEP 3

add

- Isosorbide mononitrate, oral, 10–20 mg 12 hourly
  or
  Isosorbide dinitrate, oral, 20–40 mg, 12 hourly
  - At 8:00 and 14:00 hours for both drugs in order to provide a nitrate free period to prevent tolerance.

   - Modify for night shift workers.

This is a high-risk condition for CVD and is an indication for a statin for patients with proven lesions.
HMGCoA reductase inhibitors, e.g.:

- Simvastatin, oral, 10 mg/day.
  This therapy requires good initial evaluation, ongoing support for patients and continuous evaluation to ensure compliance.

Therapy should be initiated together with appropriate lifestyle modification and adherence monitoring.

Referral

» When diagnosis is in doubt
» Failed medical therapy

4.4 Cardiac arrest, cardio-pulmonary resuscitation (See Chapter 21 – Trauma and emergencies)

I46.9

4.5 Cardiac failure, congestive (CCF)

I50.0

4.5.1 Cardiac failure, congestive (CCF), adults

I50.0

Description

CCF is a clinical syndrome and has several causes. The cause and immediate precipitating factor(s) of the CCF must be identified and treated to prevent further damage to the heart.

Signs and symptoms include:

» dyspnoea (breathlessness)
» tachypnoea (breathing rate more than 18 in men and more than 20 in women)
» inspiratory basal crackles or crepitations on auscultation of the lungs
» fatigue
» ankle swelling with pitting oedema
» raised jugular venous pressure
» tachycardia
» enlarged liver, often tender

General measures

- » Monitor body weight to assess changes in fluid balance
- » Salt (sodium chloride) restriction to less than 2–3 g per day
- » Regular exercise within limits of symptoms

Drug treatment

All patients need to be assessed by a doctor for initiation or change of treatment.

Many of the drugs used can affect renal function and electrolytes. Monitor sodium, potassium and serum creatinine.

STEP 1: Diuretic plus ACE inhibitor

Mild volume overload (mild CCF) and normal renal function – thiazide diuretic

- Hydrochlorothiazide, oral, 25–50 mg daily
  - Contraindication:
    - gout
    - severely impaired liver function
    - severely impaired renal function

Significant volume overload or abnormal renal function – loop diuretic

- Furosemide, oral, daily. (Doctor initiated)
  - Initial dose: 40 mg
  - Maximum dose: 80 mg
  - Higher dosages may be needed if also renal failure
  - Once failure has improved, consider switching to hydrochlorothiazide
  - Monitor electrolytes and creatinine

Acute pulmonary oedema

- Furosemide, IV

See section 21.15: Pulmonary oedema, acute

Note:

- » Reduce diuretic dose when ACE inhibitor is introduced
- » Routine use of potassium supplements with diuretics is not recommended. They should only be used short term to correct documented low serum potassium level

All patients with CCF, unless contraindicated or poorly tolerated

ACE inhibitor, e.g.:

- Enalapril up to maximum of 10 mg twice daily
  - Titrate dosages gradually upwards until an optimal dose is achieved
  - Absolute contraindications include: (also see package insert)
    - cardiogenic shock
    - bilateral renal artery stenosis or stenosis of an artery to a single

    kidney , aortic valve stenosis and hypertrophic obstructive cardiomyopathy
  - pregnancy
  - angioedema with previous use of ACE inhibitors or angiotensin receptor blockers

STEP 2: Add spironolactone, only if serum potassium can be monitored

- Spironolactone, oral, 25 mg daily

! CAUTION ! Spironolactone can cause severe hyperkalemia and should only be used when serum potassium can be monitored. Do not use together with potassium supplements. **Do not use in kidney failure.**

STEP 3: Carvedilol (alpha 1 and non-selective beta blocker) unless contra-indicated. (See package insert for full prescribing information)

- Carvedilol, oral
  - Starting dose: 3.125 mg twice daily.
  - Increase at two-weekly intervals by doubling the daily dose until maximum of 25 mg twice daily, if tolerated.
  - If not tolerated, i.e. worsening of cardiac failure manifestations, reduce the dose to the previously tolerated dose.
  - Up-titration can take several months.
  - Absolute contraindications include: (also see package insert)
    - patients with cardiogenic shock, bradycardia, various forms of heart block
    - severe fluid overload
    - hypotension
    - asthma

Note:
Do not use atenolol for cardiac failure.

STEP 4: Refer

<u>Symptomatic CCF despite above therapy</u>
- Digoxin, oral, 0.125 mg daily
  - Patients in whom plasma levels should be monitored:
    - the elderly
    - patients with poor renal function
    - low body weight

People with CCF on diuretics may become hypokalaemic. Digoxin therapy should not be initiated if the patient is hypokalaemic.

Referral

Urgent

- Patients with prosthetic heart valve
- Suspected infective endocarditis
- Fainting spells

Referral

- Initial assessment and initiation of treatment
- Poor response to treatment and symptomatic

4.5.2 Cardiac failure, congestive (CCF), children

I50.0

Description

Congestion of the systemic or pulmonary venous systems due to cardiac dysfunction of various different causes and is often mistaken for respiratory infection.
Many conditions including congenital heart disease and acquired cardiac and lung conditions (such as cor-pulmonale due to bronchiectasis in HIV positive children) can cause cardiac failure in children.

Signs and symptoms

Infants

- rapid breathing
- chest indrawing
- crackles or crepitations in lungs
- rapid heart rate
- cardiomegaly
- active cardiac impulse
- enlarged tender liver

It often presents primarily with shortness of breath, difficulty in feeding and sweating during feeds. Oedema is usually not an obvious feature.

Children

- rapid breathing
- chest indrawing
- crackles or crepitation in lungs
- rapid heart rate
- active and displaced cardiac impulse
- enlarged tender liver
- oedema of the lower limbs or lower back

General measures

While arranging transfer:

- Oxygen, using nasal canula at 2–3 L per minute
  or
  Oxygen 40%, using face mask at 2–3 L per minute

» Semi-Fowlers position

Note:

If hypertensive, consider glomerulonephritis in children.

Drug treatment

While arranging transfer:

If CCF is strongly suspected

- Furosemide, IV, 1 mg/kg immediately. Do not put up a drip or run in any IV fluids

Weight kg	**Dose** mg	**Injection** 10 mg/mL	**Age** Months/years
≥ 3.5–5 kg	4 mg	0.4 mL	≥1–3 months
≥ 5–7 kg	6 mg	0.6 mL	≥ 3–6 months
≥ 7–9 kg	8 mg	0.8 mL	≥ 6–12 months
≥ 9– 11 kg	10 mg	1 mL	≥12–18 months
≥ 11–14 kg	12 mg	1.2 mL	≥18 months–3 years
≥ 14–17.5 kg	15 mg	1.5 mL	≥ 3–5 years
≥ 17.5–25 kg	20 mg	2 mL	≥ 5–7 years
≥ 25–35 kg	30 mg	3 mL	≥ 7–11 years
≥ 35 kg and above	40 mg	4 mL	≥ 11 years and adults

Referral

» All children with suspected congestive cardiac failure

4.6 Myocardial infarction, acute (AMI)

I21.9

Description

AMI is caused by the complete or partial occlusion of a coronary artery and requires prompt hospitalisation and intensive care management**.**

The major clinical feature is severe chest pain with the following characteristics:

» site – retrosternal or epigastric

» quality – crushing or burning pain or discomfort

» radiation – to the neck and/or down the inner part of the left arm

- » duration – at least 20 minutes and often not responding to sublingual nitrates.
- » occurs at rest

and may be associated with:

- » pallor
- » sweating
- » arrhythmias
- » pulmonary oedema
- » a drop in blood pressure

Note:
Not all features have to be present.

Emergency treatment before transfer

- » Cardio-pulmonary resuscitation if necessary (See section 21.4: Cardiac arrest – cardiopulmonary resuscitation)
- Oxygen, 40%, by facemask

- Aspirin soluble, oral, 150 mg as a single dose as soon as possible

plus

- Isosorbide dinitrate, sublingual, 5 mg, every 5–10 minutes as needed for relief of pain to a maximum of 5 tablets.

plus

- Morphine 15 mg diluted with 14 ml of water for injection or normal saline, slow IV. (Doctor initiated.)
  - Start with 2–3 mg thereafter slowly increase by 1 mg/minute up to 10–15 mg.
  - Can be repeated after 4–6 hours if necessary, for pain relief.
  - Beware of hypotension

plus

Only for confirmed ST-elevation myocardial infarction or new LBBB and if patient presents within 6 hours of onset of pain:

- Streptokinase, IV, 1.5 million IU diluted in 100 mL dextrose 5% or sodium chloride 0.9% and given over 30–60 minutes. (Doctor initiated.)
  - Start as soon as possible after diagnosis is made, preferably within the first 3 hours.
  - **Contraindications**
    - known bleeding disorder
    - stroke within last 6 months or any previous haemorrhagic stroke
    - GIT bleeding within last 3 months or peptic ulcer
    - recent major trauma, surgery or head injury.
    - streptokinase given within past 1 year or known allergy to it.

! CAUTION !

Blood pressure may decrease and pulse rate may increase after administration of streptokinase.

Do not stop streptokinase when there is a drop in blood pressure. However, discontinue streptokinase if patient shows manifestations of impending shock.

Monitor continuously and also during transfer:

» pulse
» blood pressure
» respiration depth and rate (count for a full minute)

Aftercare

This is a high-risk condition for CVD and is an indication for a statin for patients with proven lesions.
HMGCoA reductase inhibitors, e.g.:

- Simvastatin, oral, 10 mg daily.

This therapy requires good initial evaluation, ongoing support for patients and continuous evaluation to ensure compliance.
Random cholesterol should be measured at baseline.
If < 7.5 mmol/L – initiate therapy.
If > 7.5 mmol/L – initiate therapy and refer for further assessment.
Therapy should be initiated together with appropriate lifestyle modification and adherence monitoring.

Referral

Urgent

» All suspected or diagnosed cases

4.7 Hypertension

I10

4.7.1 Hypertension in adults

I10

Description

A condition characterised by a blood pressure (BP) elevated above normal measured on three separate occasions, a minimum of 2 days apart. However, when blood pressure is severely elevated (see table), a minimum of 3 blood pressure readings must betaken at the first visit to confirm hypertension. Ensure that the correct cuff size is used in obese patients.

» Systolic BP equal to or more than 140 mmHg.
and/or
» Diastolic BP equal to or more than 90 mmHg

LEVELS OF HYPERTENSION IN ADULTS

Level of hypertension	Systolic mmHg	Diastolic mmHg
mild	140 – 159	90 - 99
moderate	160 – 179	100 – 109
severe	180 or more	110 or more

» Achieve and maintain the target BP
  – In most cases the target BP should be: systolic below 140 mmHg and diastolic below 90 mmHg.
» Achieve target BP in special cases as:
  – In diabetic patients and patients with cardiac or renal impairment, target BP should be below 130/80 mmHg

General measures

All patients with hypertension require lifestyle modification:
» weight loss if overweight
» regular physical exercise
» stop smoking
» moderate or no alcohol intake
» restrict salt intake
» restrict fat intake
» adequate dietary fibre intake (fruit, vegetable and unrefined carbohydrate)

Drug treatment

Initial drug choices in patients qualifying for treatment is dependent on presence of compelling indications.

Drug treatment choices without compelling indications

Mild hypertension
When there are no risk factors and there is poor response to lifestyle modification measures after 3 months, initiate drug therapy.

Moderate hypertension
Initiate drug therapy as well as lifestyle modification after confirmation of diagnosis.

Presence of risk factors
Drug therapy as well as lifestyle modification, should be initiated after confirmation of diagnosis

Special cases

Pregnancy-induced hypertension:

- Methyldopa, oral, 250–500 mg, 6–8 hourly, only during pregnancy

Hypertension urgency

Systolic BP above 240 mmHg, diastolic BP above 140 mmHg without symptoms of target organ damage:

» initiate treatment at step 3

Stroke

Blood pressure is normally elevated in acute stroke and should only be treated if it persists for more than two days or is severely elevated.
Diastolic BP above 130 mmHg.
Reduce gradually.

Elderly

In patients without co-existing disease, initiate drug treatment only when systolic BP above 160 and diastolic above 90 mmHg.

Note:

Check adherence to medication before escalating therapy.
Monitor patients monthly and adjust therapy if necessary until the BP is stable.
After target BP is achieved, patients may be seen at 3–6 monthly intervals.

! CAUTION !
Lower BP over a few days.
A sudden drop in BP can be dangerous, especially in the elderly.

Stepwise treatment without compelling indications

STEP 1

Entry to Step 1	Treatment	Target
» Diastolic BP 90 – 99 mmHg and/or systolic BP 140 – 159 mmHg without any existing disease and » No major risk factors	» Lifestyle modification	» BP control within 3 months to systolic BP below 140 and diastolic below 90 mmHg

STEP 2

Entry to Step 2	Treatment	Target
» Diastolic BP 90 − 99 mmHg and systolic BP 140 − 159 mmHg without any existing disease **and** » No major risk factors **and** » Failure of lifestyle modification alone to reduce BP after 3 months **or** Mild hypertension with major risk factors or existing disease **or** Moderate hypertension at diagnosis	» Lifestyle modification **and** • Hydrochlorothiazide, oral, 12.5 mg daily	» BP control within 1 month to systolic BP below 140 and diastolic below 90 mmHg

STEP3

Entry to Step 3	Treatment	Target
» Failure to achieve targets in Step 2 after 1 month despite adherence to therapy **or** » Severe hypertension (See table)	» Lifestyle modification **and** • Hydrochlorothiazide, oral, 12.5 mg daily **add** • ACE-inhibitor, e.g.: enalapril, 10 mg daily **or** Long acting calcium channel blocker, e.g.: amlodipine, oral 5 mg daily	» BP control within 1 month to systolic BP below 140 and diastolic below 90 mmHg

STEP 4

Entry to Step 4	Treatment	Target
» Failure of step 3 after 1 month of compliance	» Lifestyle modification **and** • Hydrochlorothiazide, oral, 12.5 mg daily **and** • ACE-inhibitor, e.g.: enalapril, increase to 10−20 mg daily **and** • Long acting calcium channel blocker, e.g.: amlodipine, oral, 5 mg daily	» BP control within 1 month to systolic BP below 140 and diastolic below 90 mmHg with no side-effects

STEP 5

Entry to Step 5	Treatment	Target
» Failure of step 4 after 1 month of compliance	» Lifestyle modification **and** • Hydrochlorothiazide, oral, increase to 25 mg daily **and** • ACE-inhibitor, e.g. enalapril, 20 mg daily **and** • Long acting calcium channel blocker, e.g. amlodipine, oral 10 mg daily **and add:** • Atenolol, oral, 50 mg daily	

If not controlled on step 5 – Refer

Compelling indications for specific drugs	Drug class
Angina	• ß-blocker **or** Long acting calcium channel blocker
Prior myocardial infarct	• ß-blocker **and** • ACE inhibitor
Heart failure	• ACE inhibitor **and** • Carvedilol <u>For volume overload:</u> • Loop diuretic
Left ventricular hypertrophy (confirmed by ECG)	• ACE inhibitor
Stroke: secondary prevention	• Hydrochlorothiazide **and** • ACE inhibitor
Diabetes type 1 and 2 with or without evidence of microalbuminuria or proteinuria	• ACE inhibitor, usually in combination with diuretic
Chronic kidney disease	• ACE inhibitor, usually in combination with diuretic
Isolated systolic hypertension	• Hydrochlorothiazide **or** Long acting calcium channel blocker
Pregnancy	• Methyldopa

Contraindications to individual drugs

<u>Hydrochlorothiazide</u>
- » gout
- » pregnancy
- » severe liver failure
- » renal failure

<u>Beta-adrenergic blocking agent e.g. atenolol</u>

Absolute:
- » asthma
- » chronic obstructive airways disease

Relative:
- » heart failure (not carvedilol)
- » diabetes mellitus
- » peripheral vascular disease
- » bradycardia: pulse rate less than 50 per minute

ACE inhibitors
- » pregnancy
- » bilateral renal artery stenosis
- » aortic valve stenosis
- » history of angioedema

! CAUTION !
Advise all patients receiving ACEI about the symptoms of angioedema

Calcium channel blockers
- » heart failure

Referral

- » Young adults (under 30 years)
- » BP not controlled by four drugs and where there is no doctor available.
- » Pregnancy
- » Signs of target organ damage, such as oedema, dyspnoea, proteinuria, angina etc.
- » If severe side effects develop

HYPERTENSIVE EMERGENCY

Description

A marked elevated blood pressure systolic BP ≥ 180 mmHg and/or a diastolic BP above 130 mmHg **associated with** one or more of the following:
- » unstable angina/chest pain
- » neurological signs, e.g. severe headache, visual disturbances, confusion, coma or seizures
- » pulmonary oedema
- » renal failure

Drug treatment

- Amlodipine, oral, 10 mg immediately as a single dose

If pulmonary oedema:
- Furosemide, IV, 40 mg as a single dose

! CAUTION !
A hypertensive emergency needs immediate referral to hospital.

Referral

Urgent
- » All patients

4.7.2 Hypertension in children

I10

Description

In children, the diagnosis of hypertension is based on weight or height. Hypertension is defined as systolic and/or diastolic blood pressure ≥ the 95th percentile for gender, age and height percentile on at least three consecutive occasions. See table below.
The choice of appropriate cuff size is important. Too small a cuff for the arm leads to falsely high BP.The cuff bladder must encircle at least 80% of the upper arm and should cover at least 75% of the distance between the acromion and the olecranon. It is better to use a cuff that is slightly too large than one that is too small. Large cuffs, if covered with linen-like material, can be folded to the appropriate size in smaller infants as long as the bladder encompasses the arm.
Infants and preschool-aged children are almost never diagnosed with essential hypertension and are most likely to have secondary forms of hypertension.

With age, the prevalence of essential hypertension increases, and after age 10 it becomes the leading cause of elevated BP. Obesity currently is emerging as a common comorbidity of essential hypertension in paediatric patients, often manifesting during early childhood.

Diagnosis

95th Percentile of Systolic and Diastolic BP relation to age of child

Age of child	Systolic mmHg	Diastolic mmHg
6 weeks–6 years	115	80
8 years	120	82
9 years	125	84
10 years	130	86
12 years	135	88
14 years	140	90

or

95th Percentile of Systolic and Diastolic BP relation to height of child

Height cm	Systolic mmHg	Diastolic mmHg
100	114	70
110	116	72
120	118	74
130	120	74
140	125	75
150	130	75
160	135 (131)	77
170	140 (133)	80
180	145 (135)	83

(Girls 95th percentile given in brackets).

Referral

» All cases with BP above the 95th percentile

4.8 Pulmonary oedema, acute (See Chapter 21 - Trauma and emergencies)

J81

4.9 Rheumatic fever, acute

I01.9

Note: notifiable condition.

Description

A condition in which the body develops antibodies against its own tissues following a streptococcal throat infection. Effective treatment of streptococcal pharyngitis can markedly reduce the occurrence of this disease. Commonly occurs in children between 3 and 15 years of age.

Clinical signs and symptoms include:

- » arthralgia or arthritis that may shift from one joint to another
- » carditis including cardiac failure
- » heart murmurs
- » subcutaneous nodules
- » erythema marginatum
- » chorea (involuntary movements of limbs or face)
- » other complaints indicating a systemic illness e.g. fever

Drug treatment

Eradication of streptococci in throat

- Benzathine benzylpenicillin, IM, single dose
  - Children under 30 kg: 600 000 IU
  - Children over 30 kg and adults: 1.2 MU

or

Adults and children

- Phenoxymethylpenicillin, oral, 500 mg 12 hourly for 10 days

Penicillin–allergic patients**:**

- Erythromycin, oral, 6 hourly before meals for 10 days
  - Children 125 mg
  - Adults 250 mg

Prophylaxis for rheumatic fever

All patients with confirmed rheumatic fever and no rheumatic valvular disease

- Benzathine benzylpenicillin, IM, every 21–28 days (3–4 weeks) until the age of 21 years

All patients with confirmed rheumatic fever and rheumatic valvular disease

- Benzathine benzylpenicillin, IM, every 21–28 days (3–4 weeks) until the age of 35 years
  - Children under 30 kg: 600 000 IU
  - Children over 30 kg and adults: 1.2 MU

!CAUTION!
IM injections must be avoided if patients are on warfarin

or

Phenoxymethylpenicillin, oral, 12 hourly
  - Children 1–6 years 125 mg
  - Children > 6 years and adults 250 mg

Penicillin–allergic patients:

- Erythromycin, oral, 12 hourly before meals
  - Children 125 mg
  - Adults 250 mg

Referral

» All patients for diagnosis and management

4.10 Valvular heart disease and congenital structural heart disease

I09.9

Description

Damage to heart valves, chamber or vessel wall anomalies caused by rheumatic fever and by other causes, e.g. congenital heart defects and ischaemic heart disease.

It may be complicated by:

» heart failure
» infective endocarditis
» atrial fibrillation
» systemic embolism

General measures

» Advise **all** patients with a heart murmur with regard to the need for prophylaxis treatment prior to undergoing certain medical and dental procedures
» Advise patients to inform health care providers of the presence of the heart murmur when reporting for medical or dental treatment

Drug treatment

Prophylaxis antibiotic treatment for infective endocarditis

- » should be given prior to certain invasive diagnostic and therapeutic procedures e.g. tooth extraction, to prevent infective endocarditis
- » is essential for all children with congenital or rheumatic heart lesions needing dental extraction

Dental extraction if no anaesthetic is required

- Amoxicillin, oral, 50 mg/kg with a ceiling dose of 2 000 mg, 1 hour before the procedure
  - o Repeat dose 6 hours later

Age	Dose
Less than 5 years	750 mg
5 to 10 years	1 500 mg
10 years and older	2 000mg

If allergic to penicillin:

- » **Refer**

If anaesthetic is required:

- » **Refer**

Prophylaxis for rheumatic fever

See section 4.9: Rheumatic fever, acute

Referral

- » All patients with heart murmurs for assessment
- » All patients with heart murmurs not on a chronic management plan
- » Development of cardiac signs and symptoms
- » Worsening of clinical signs and symptoms of heart disease
- » Any newly developing medical condition, e.g. fever
- » All patients with valvular heart disease for advice on prophylactic antibiotic treatment prior to any invasive diagnostic or therapeutic procedure

Chapter 5: Skin Conditions

5.1 Dry skin
5.2 Itching (pruritus)
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5.7 Eczema
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5.8 Nappy rash
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- 5.15.5: Genital warts: Condylomata accuminata

5.1 Dry Skin

L85.3

Description

The skin is dry and rough, together with varying degrees of scaling.
Severe forms are mainly inherited, e.g. ichthyosis.
Milder forms (xeroderma) are common in chronic conditions, e.g. HIV disease, malignancies and atopic eczema, and are seen as dryness with only slight scaling.

Drug treatment

- Emulsifying ointment (UE), to wash or bath.
- Aqueous cream (UEA), applied to dry areas as a moisturiser and for maintenance treatment.

5.2 Itching (pruritus)

L29.9

Description

Itching may:

» be localised or generalised
» be accompanied by obvious skin lesions
» accompany many systemic diseases, e.g. hepatitis
» be caused by scabies and insect bites

General measures

» Lukewarm baths.
» Trim fingernails.

Drug treatment

- Calamine lotion, applied when needed.

or

<u>In infants:</u>

- Aqueous cream (UEA), applied when needed.

Severe or refractory pruritus

- Chlorpheniramine, oral, 0.1 mg/kg/dose 6–8 hourly

Weight kg	**Dose** mg	**Use one of the following:**		**Age** Months/years
		Syrup 2 mg/5mL	**Tablet** 4 mg	
≥ 9–11 kg	1 mg	2.5 mL	–	≥ 12–18 months
≥ 11–14 kg	1.2 mg	3 mL	–	≥ 18 months–3 years
≥ 14–17.5 kg	1.5 mg	4 mL	–	≥ 3–5 years
≥ 17.5–25 kg	2 mg	5 mL	–	≥ 5–7 years
≥ 25–35 kg	3 mg	7.5 mL	–	≥ 7–11 years
≥ 35–55 kg	4 mg	–	1 tablet	≥ 11–15 years
≥ 55 kg and above	4 mg	–	1 tablet	≥ 15 years and adults

Note:
Chlorpheniramine is sedating and in mild cases may be used only at night.

For long term use in adults and school going children, e.g. for chronic pruritus

- Cetirizine, oral, once daily at night

Weight kg	**Dose** mg	**Use one of the following:**		**Age** Months / years
		Syrup 1 mg/mL	**Tablet** 10 mg	
≥ 14–25 kg	5 mg	5 mL	–	≥ 3–7 years
≥ 25–55 kg	10 mg	10 mL	1 tablet	≥ 7–15 years
≥ 55 kg and above	10 mg	–	1 tablet	≥ 15 years and adults

! CAUTION !
Do not give an antihistamine to children under 6 months.

Referral

» No improvement after 2 weeks.

5.3 Acne vulgaris

L70.0

Description

A skin condition that is caused by hormones and sebum gland hypertrophy leading to a blocking and/or infection of the follicles with *Propionibacterium acnes*.
Occurs more commonly in adolescence but may also occur in adulthood.
It is distributed on face, chest and back.

It ranges in severity from mild, with a few blackheads, to severe with nodules and cysts.
Severe forms are common in HIV disease and itching may be a feature.

General measures

» Do not squeeze lesions.
» Avoid greasy cosmetics and hair spray.

Drug treatment

Many pustules

- Benzoyl peroxide 5%, gel, apply at night.
- Doxycycline, oral, 100 mg daily for 3 months.

!CAUTION!
As doxycycline impairs the efficacy of oral contraceptives, barrier contraception should be used in addition.

Referral

» No improvement after 3 months
» Development of severe complications e.g. deep pustules
» Severe cases of nodular acne

5.4 Bacterial infections of the skin

5.4.1 Boil, abscess

L02.9

Description

Localised bacterial skin infection of hair follicles or dermis, usually with *S. aureus*.
The surrounding skin becomes:
» swollen
» red
» hot
» tender to touch

Note:
Check blood glucose level if diabetes suspected or if the boils are recurrent.
Boils in diabetic or immunocompromised patients require careful management.

General measures

» Encourage general hygiene.

» Apply local hot compresses three times daily until the boil/abscess starts draining.
» Drainage of abscess is the treatment of choice. Perform surgical incision only after the lesion is mature.

Drug treatment

Systemic antibiotics are seldom necessary, except if there are:
» swollen lymph nodes in the area
» fever
» extensive surrounding cellulitis

• Flucloxacillin, oral, 12–25 mg/kg/dose 6 hourly for 5 days

Weight kg	**Dose** mg	**Use one of the following:**		**Age** Months / years
		Syrup 125 mg/ 5 mL	**Capsule** 250 mg	
≥ 2.5–5 kg	62.5 mg	2.5 mL	–	Birth–3 months
≥ 5–11 kg	125 mg	5 mL	–	≥ 3–18 months
≥ 11–25 kg	250 mg	10 mL	1 capsule	≥ 18 months–7 years
≥ 25 kg and above	500 mg	–	2 capsules	≥ 7 years and adults

Penicillin–allergic patients
• Erythromycin, oral, 10–15 mg/kg/dose 6 hourly

Weight kg	**Dose** mg	**Use one of the following:**		**Age** Months / years
		Syrup 125 mg/ 5 mL	**Tablets** 250 mg	
≥ 2.5–3.5 kg	35 mg	1.4 mL	–	Birth–1 month
≥ 3.5–5 kg	50 mg	2 mL	–	≥ 1–3 months
≥ 5–7 kg	75 mg	3 mL	–	≥ 3–6 months
≥ 7–9 kg	100 mg	4 mL	–	≥ 6–12 months
≥ 9–11 kg	125 mg	5 mL	–	≥ 12–18 months
≥ 11–14 kg	150 mg	6 mL	–	≥ 18 months–3 years
≥ 14–17.5	200 mg	8 mL		≥ 3–5 years
≥ 17.5–25 kg	250 mg	10 mL	1 tablet	≥ 5–7 years
≥ 25−35 kg	375 mg	15 mL	–	≥ 7–11 years
≥ 35 kg and above	500 mg	–	2 tablets	≥ 11 years and adults

Referral

» No response to treatment
» Progression of the condition

5.4.2 Impetigo

L01.0

Description

A common skin infection due to streptococci or staphylococci that occurs mainly in children.
Clinical features include:

» purulent sores with crusts or scabs
» pain
» usually starts on the face
» spreading to neck, hands, arms and legs

Note:
Check urine for blood if the sores have been present for more than a week.

General measures

» Prevent infection by keeping breaks in the skin clean.
» Avoid insect bites.
» Trim finger nails.
» Wash and soak sores in soapy water to soften and remove crusts.
» Advise on the importance of washing daily.
» Continue with general measures until the sores are completely healed.

Drug treatment

- Povidone iodine 5%, cream, apply three times daily

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

Weight kg	Dose mg	Use one of the following:			Age Months/years
		Syrup 125mg/5mL	Syrup 250mg/5mL	Capsule 250 mg	
≥ 2–2.5 kg	50 mg	2 mL	–	–	34–36 weeks
≥ 2.5–3.5 kg	62.5 mg	2.5 mL	–	–	Birth–1 month
≥ 3.5–5 kg	75 mg	3 mL	–	–	≥ 1–3 months
≥ 5–7 kg	125 mg	5 mL	2.5 mL	–	≥ 3–6 months
≥ 7–9 kg	150 mg	6 mL	3 mL	–	≥ 6–12 months
≥ 9–11 kg	187.5 mg	7.5 mL	–	–	≥ 12–18 months
≥ 11–17.5 kg	250 mg	10 mL	5 mL	1 capsule	≥ 18 months–5 years
≥ 17.5–20 kg	375 mg	15 mL	7.5 mL	–	≥ 5–7 years
≥ 20–55 kg	500 mg	–	–	2 capsules	≥ 7–15 years
> 55 kg and above	500 mg	–	–	2 capsules	Adults

If no response:

- Flucloxacillin, oral, 12–25 mg/kg/dose 6 hourly for 5 days

Weight kg	**Dose** mg	**Use one of the following:**		**Age** Months / years
		Syrup 125 mg/5 mL	**Tablets** 250 mg	
≥ 2.5–5 kg	62.5 mg	2.5 mL	–	Birth–3 months
≥ 5–11 kg	125 mg	5 mL	–	≥ 3–18 months
≥ 11–25 kg	250 mg	10 mL	–	≥ 18 months–7 years
> 25–55 kg	500 mg	–	2 capsules	≥ 7–15 years
≥ 55 kg and above	500 mg	–	2 capsules	Adults

Penicillin–allergic patients

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

Weight kg	**Dose** mg	**Use one of the following:**		**Age** Months / years
		Syrup 125 mg/5 mL	**Tablets** 250 mg	
≥ 2.5–3.5 kg	35 mg	1.4 mL	–	Birth–1 month
≥ 3.5–5 kg	50 mg	2 mL	–	≥ 1–3 months
≥ 5–7 kg	75 mg	3 mL	–	≥ 3–6 months
≥ 7–9 kg	100 mg	4 mL	–	≥ 6–12 months
≥ 9–11 kg	125 mg	5 mL	–	≥ 12–18 months
≥ 11–14 kg	150 mg	6 mL	–	≥ 18 months–3 years
≥ 14–17.5	200 mg	8 mL		≥ 3–5 years
≥ 17.5–25 kg	250 mg	10 mL	1 tablet	≥ 5–7 years
≥ 25−35 kg	375 mg	15 mL	–	≥ 7–11 years
≥ 35 kg and above	500 mg	–	2 tablets	≥ 11 years and adults

In patients with improvement but not complete cure, a further 5-day course of antibiotics should be given.

Referral

» No improvement in 10 days
» Presence of blood on urine test strip for longer than 5 – 7 days
» Clinical features of glomerulonephritis – See Section 8.3.1: Glomerular disease – Nephritic syndrome

5.4.3 Cellulitis

L03.9

Description

A skin infection that is usually caused by streptococci, but also staphylococci and occasionally other organisms.

A diffuse, spreading, acute infection within skin and soft tissues, characterised by:

» oedema
» increased local temperature
» redness
» no suppuration

Occurs commonly on the lower legs, but may occur elsewhere. May follow minor trauma. It is frequently associated with lymphangitis and regional lymph node involvement. There may be significant systemic manifestations of infection:

» fever
» chills
» tachycardia
» hypotension
» delirium/altered mental state

May present as an acute fulminant or chronic condition.

Drug treatment

- Flucloxacillin, oral, 12–25 mg/kg/dose 6 hourly for 5 days
  - 10 days for more severe infection

Weight kg	**Dose** mg	**Use one of the following:**		**Age** Months / years
		Syrup 125 mg/5 mL	**Capsules** 250 mg	
≥ 2.5–5 kg	62.5 mg	2.5 mL	–	Birth–3 months
≥ 5–11 kg	125 mg	5 mL	–	≥ 3–18 months
≥ 11–25 kg	250 mg	10 mL	–	≥ 18 months–7 years
≥ 25–55 kg	500 mg	–	2 capsules	≥ 7–15 years
≥ 55 kg and above	500 mg	–	2 capsules	Adults

<u>Penicillin–allergic patients</u>

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

Weight kg	**Dose** mg	**Use one of the following:**		**Age** Months / years
		Syrup 125 mg/5 mL	**Tablets** 250 mg	
≥ 2.5–3.5 kg	35 mg	1.4 mL	–	Birth–1 month
≥ 3.5–5 kg	50 mg	2 mL	–	≥ 1–3 months
≥ 5–7 kg	75 mg	3 mL	–	≥ 3–6 months
≥ 7–9 kg	100 mg	4 mL	–	≥ 6–12 months
≥ 9–11 kg	125 mg	5 mL	–	≥ 12–18 months
≥ 11–14 kg	150 mg	6 mL	–	≥ 18 months–3 years
≥ 14–17.5	200 mg	8 mL	–	≥ 3–5 years
≥ 17.5–25 kg	250 mg	10 mL	1 tablet	≥ 5–7 years
≥ 25−35 kg	375 mg	15 mL	–	≥ 7–11 years
≥ 35 kg and above	500 mg	–	2 tablets	≥ 11 years and adults

Severe cases

Refer for parenteral antibiotics

Referral

» Children when associated with significant pain, swelling or loss of function - refer urgently to exclude osteomyelitis
» Extensive cellulitis
» Necrosis
» Recurrent cellulitis associated with underlying conditions, e.g. lymphoedema
» Cellulitis with systemic manifestations, e.g. confusion, hypotension
» Inadequate response to initial antibiotic treatment
» Poorly controlled diabetic patients

5.5 Fungal infections of the skin

B35

5.5.1 Athlete's foot – tinea pedis

B35.3

Description

A common contagious fungal infection (tinea) of the foot characterised by itching, burning and stinging between the toes spreading to the sole.
Secondary eczema of the hands may be an associated condition.
Vesicles may occur in inflammatory cases.
Reinfection is common.

General measures

» Discourage the use of shared bathing or swimming areas until healed.
» Use own towels and toiletries.
» Keep feet dry:
  – wear open shoes or sandals
  – do not wear socks of synthetic material
  – dry between toes after washing the feet or walking in water
  – wash and dry feet twice daily before applying treatment

Drug treatment

- Imidazole cream, e.g. clotrimazole 2%, applied twice daily for 4 weeks.

Referral

» Severe infection
» Involvement of the nails
» No improvement after 4 weeks

5.5.2 Candidiasis, skin

B37.2

Vaginal candidiasis: See section 12.2: Vaginal discharge syndrome

Description

A skin infection caused by *C. albicans*.
Most common sites for infection are skin folds such as:

» under the breasts
» perineum
» axilla
» nail folds
» groin

The skin lesions or sores:

» appear moist (weeping)
» may have peripheral white pustules and scales
» have clear edges
» are red raw-looking patches

Note:
Infection often occurs in immunocompromised patients.
Suspect HIV if the infection is severe or chronic.
Exclude diabetes.

Drug treatment

- Imidazole cream, e.g. clotrimazole 2% cream, applied three times daily for 14 days

Referral

» No response to topical treatment

5.5.3 Ringworm and other tineas

B35.9

Description

A highly contagious fungal infection of the skin that can be found anywhere on the body.
Clinical features include:

» itchy ringlike patches
» raised borders
» patches slowly grow bigger

As the patch extends a clear area develops in the center which may become

hyperpigmented in dark skin.
Extensive disease is common in HIV.

General measures

- » Prevent spreading the infection to others.
- » Do not share:
  - – clothes
  - – towels
  - – toiletries, especially combs and hair brushes
- » Wash skin well and dry before applying treatment.

Drug treatment

Treat any secondary skin infection with antibiotics – See section 5.4.2: Impetigo

- Imidazole, e.g. clotrimazole 2% cream, topical, applied 3 times daily.
  - o Continue using cream for at least 2 weeks after lesions have cleared.

For scalp infections (Doctor initiated):

- Fluconazole, oral, 5–8 mg/kg for 28 days

Weight kg	**Dose** mg	**Use one of the following:**		**Age** Months/ years
		Capsule 50 mg	**Capsule** 200 mg	
≥ 7–11 kg	50 mg	1 capsule	–	≥ 6–18 months
≥ 11–25 kg	100 mg	2 capsules	–	≥ 18 months–7 years
≥ 25–55 kg	150 mg	3 capsules	–	≥ 7–15 years
≥ 55 kg and above	200 mg	–	1 capsule	≥ 15 years and adults

Note:
Do not give to women of child-bearing age unless they are using an effective contraceptive.

Tinea versicolor
Oral antifungal therapy is not indicated.

- Selenium sulphide shampoo
  - o Apply daily to body for 3 days.
  - o Leave on for 30 minutes then wash off.

Referral

- » Infection is widespread
- » No response to treatment for scalp lesions

5.6 Parasitic infections of the skin

5.6.1 Lice (pediculosis)

B85.2

Description

An infestation of the hairy parts of the body with lice.
Head lice are common in children. The eggs (nits) appear as fixed white specks on the hair.
Body lice live in the seams of clothing and only come to the skin to feed.

Clinical features include:

» itching
» bite marks
» presence of secondary eczema and secondary infection

Note:
Body lice may carry typhus fever.

General measures

Head lice

» Wash hair.
» Use a fine comb to comb out the nits after washing hair.
» Shave the head. This may not be necessary if permethrin rinse is used.
» Prevent spread by treating other contacts.
» Remove nits manually from eyelashes.

Body lice

» Do not shave the pubic area.
» Prevent spread by treating other contacts.
» Regularly wash bed linen and underclothes in hot water and expose to sunlight.

Drug treatment

! CAUTION !
Do not use commercial insect sprays as they are toxic.
Lotions used for the treatment of lice are toxic when swallowed.

Head lice

- Permethrin 1% cream rinse, applied after washing hair with shampoo.
  - o Rinse off after 10 minutes.

  Note:
  - o **Do not** apply to broken skin or sores.
  - o **Avoid** contact with eyes.

Body lice

Adults and adolescent children:

- Benzyl benzoate 25% lotion, undiluted, applied over the whole body.
  - Leave on overnight and wash off the next day.
  - Repeat once a week for up to 3 weeks.

  Note:
  - **Do not** apply to neck and face.
  - Avoid contact with eyes and broken skin or sores.
  - The lotion is toxic if swallowed.
  - Itching may continue for 2–3 weeks after treatment.
  - Do not continue if a rash or swelling develops.

Antibiotic treatment for secondary infection
See section 5.4.2: Impetigo

Referral

» Lice infestation of eyelashes in children to exclude inappropriate sexual contact (suspected sexual abuse)

5.6.2 Scabies

B86

Description

An infestation with the parasite *Sarcoptes scabei.* Most commonly occurs in the skin folds.
The infestation spreads easily and usually affects more than one person in the household.

Clinical features include:

» intense itching, which is more severe at night
» the presentation of small burrows between fingers, toes, elbow areas and skin folds where the parasite has burrowed under the skin
» secondary infection which may occur due to scratching with dirty nails

General measures

All close contacts must be treated simultaneously even if they are not itchy – see drug treatment below.

» Cut finger nails and keep them clean.
» Wash all linen and underclothes in hot water.
» Expose all bedding to direct sunlight.
» Put on clean, washed clothes after drug treatment.

Drug treatment

Adults and children over 6 years:

- Benzyl benzoate 25% lotion, applied undiluted to the whole body from the neck to the feet on two consecutive days.
  - Leave on overnight and wash off the next day.

  Note:
  - Benzyl benzoate is toxic if swallowed.
  - Itching may continue for 2–3 weeks after treatment.
  - Do not continue if rash or swelling develops
  - Avoid contact with eyes and broken skin or sores

If benzyl benzoate is unsuccessful:

- Sulphur 5% ointment, applied daily for 3 days

Children under 6 years:

- Sulphur 5% ointment, applied daily for 3 days

  Note:
  - Itching may continue for 2–3 weeks after treatment.
  - Do not continue if rash or swelling develops
  - Avoid contact with eyes and broken skin or sores

Treatment may need to be repeated after one week.

Antibiotic treatment for secondary infection
See section 5.4.2: Impetigo

5.7 Eczema

5.7.1 Eczema, atopic

L20.9/B00.0

Description

An itchy red rash or dry rough skin linked to allergy.
In babies it appears at approximately 3 months.
A family history of asthma, hay fever or atopic dermatitis is common.
Clinical features:

» occurs on the inner (flexural) surfaces of the elbows and knees, the face and creases of the neck
» can become chronic with thickened scaly skin (lichenification)
» secondary bacterial infection may occur with impetigo or pustules
» can be extensive in infants
» very itchy at night

Eczema is usually a chronic condition and requires long term care.
Sufferers of atopic eczema are particularly susceptible to herpes simplex infection

and may present with large areas of involvement with numerous vesicles and crusting surrounded by erythema (eczema herpeticum).

General measures

» Avoid wearing clothes made from wool.
» Avoid overheating by blankets at night.
» Cut nails short.
» Avoid scratching.
» Avoid perfumed soap.

Drug treatment

STEP 1

- Emulsifying ointment (UE), to wash or bath
- Aqueous cream (UEA), applied to dry areas as a moisturiser

STEP 2

If no response within seven days or more severe eczema:

- Hydrocortisone 1% cream, applied twice daily for 7 days
  - Apply sparingly to the face.
  - **Do not** apply around the eyes.

If there is a response:
Reduce the use of the hydrocortisone cream over a few days and maintain treatment with:

- Aqueous cream (UEA)
  or
  Emulsifying ointment (UE)

STEP 3

If no response within seven days or more severe eczema:

- Potent topical corticosteroids, e.g. betamethasone 0.1% ointment applied twice daily for 7 days (Doctor initiated)
  - **Do not** apply to face, neck and flexures

If there is a response:
Reduce the use of the hydrocortisone cream over a few days and maintain treatment with:

- Aqueous cream (UEA)
  or
  Emulsifying ointment (UE)

For itching not controlled with topical treatment:

- Chlorpheniramine, oral, 0.1 mg/kg/dose 6–8 hourly

Weight kg	**Dose** mg	**Use one of the following:**		**Age** Months/years
		Syrup 2 mg/5 mL	**Tablet** 4 mg	
≥ 9–11 kg	1 mg	2.5 mL	–	≥ 12–18 months
≥ 11–14 kg	1.2 mg	3 mL	–	≥ 18 months–3 years
≥ 14–17.5 kg	1.5 mg	4 mL		≥ 3–5 years
≥ 17.5–25 kg	2 mg	5 mL	–	≥ 5–7 years
≥ 25–35 kg	3 mg	7.5 mL		≥ 7–11 years
≥ 35–55 kg	4 mg	–	1 tablet	≥ 11–15 years
≥ 55 kg and above	4 mg	–	1 tablet	≥ 15 years and adults

Note:

Chlorpheniramine is sedating and in mild cases may be used only at night.

For long term use in adults and school going children:

- Cetirizine, oral, once daily at night

Weight kg	**Dose** mg	**Use one of the following:**		**Age** Months / years
		Syrup 1 mg/ L	**Tablet** 10 mg	
≥ 14–25 kg	5 mg	5 mL	–	≥ 3–7 years
≥ 25– 55 kg	10 mg	10 mL	1 tablet	≥ 7–15 years
≥ 55 kg and above	10 mg	–	1 tablet	Adults

For eczema herpeticum:

- Aciclovir, oral, 8 hourly for 10 days
  - Paediatric dose: 250 mg/m²/dose

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

Referral

» No improvement in 2 weeks
» Infants requiring more than 1% hydrocortisone

5.7.2 Eczema, acute, moist or weeping

L21.9

Description

A form of eczema with microscopic or large vesicles, associated with oozing and eventual crusting and scaling.

General measures

» Sodium chloride 0.9% dressings, applied daily or twice daily
» Avoid use of soap on affected areas

Drug treatment

Antibiotic treatment for staphylococcal secondary infection:

- Flucloxacillin, oral, 12–25 mg/kg/dose 6 hourly for 5 days

Weight kg	**Dose** mg	**Use one of the following:**		**Age** Months / years
		Syrup 125 mg/ 5mL	**Capsule** 250 mg	
≥ 2.5–5 kg	62.5 mg	2.5 mL	–	Birth–3 months
≥ 5–11 kg	125 mg	5 mL	–	≥ 3–18 months
≥ 11–25 kg	250 mg	10 mL	–	≥ 18 months–7 years
> 25–55 kg	500 mg	–	2 capsules	≥ 7–15 years
≥ 55 kg and above	500 mg	–	2 capsules	Adults

Penicillin–allergic patients

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

Weight kg	**Dose** mg	**Use one of the following:**		**Age** Months / years
		Syrup 125 mg/ 5mL	**Capsule** 250 mg	
≥ 2.5–3.5 kg	35 mg	1.4 mL	–	Birth–1 month
≥ 3.5–5 kg	50 mg	2 mL	–	≥ 1–3 months
≥ 5–7 kg	75 mg	3 mL	–	≥ 3–6 months
≥ 7–9 kg	100 mg	4 mL	–	≥ 6–12 months
≥ 9–11 kg	125 mg	5 mL	–	≥ 12–18 months
≥ 11–14 kg	150 mg	6 mL	–	≥ 18 months–3 years
≥ 14–17.5	200 mg	8 mL		≥ 3–5 years
≥ 17.5–25 kg	250 mg	10 mL	1 tablet	≥ 5–7 years
≥ 25−35 kg	375 mg	15 mL	–	≥ 7–11 years
≥ 35 kg and above	500 mg	–	2 tablets	≥ 11 years and adults

For itching:

- Chlorpheniramine, oral, 0.1 mg/kg/dose 6–8 hourly

Weight kg	Dose mg	Use one of the following:		Age Months/years
		Syrup 2 mg/5 mL	**Tablet** 4 mg	
> 9–11 kg	1 mg	2.5 mL	–	> 12–18 months
> 11–14 kg	1.2 mg	3 mL	–	> 18 months–3 years
> 14–17.5 kg	1.5 mg	4 mL	–	> 3–5 years
> 17.5–25 kg	2 mg	5 mL	–	> 5–7 years
> 25–35 kg	3 mg	7.5 mL	–	> 7–11 years
35 kg and above	4 mg	–	1 tablet	> 11 years and adults

Topical steroids should only be considered after the infection has cleared.

Referral

» No improvement after a week
» Severe acute moist or weeping eczema

5.7.3 Dermatitis, seborrhoeic

L21.9

Description

In its simplest form it is dandruff, which tends to be rather oily. Pruritus may or may not be present. The scalp, ears and skin folds are commonly affected. It may become very extensive, particularly in infants and HIV infected patients.

General measures

» Cut nails short.
» Avoid scratching.
» Avoid perfumed soap.

Drug treatment

- Hydrocortisone 1% cream, applied 2–3 times daily until improved.
  - Then apply once or twice weekly for maintenance as needed.

For severe eczema:

- Betamethasone 0.1% ointment, applied twice daily for 5–7 days. (Doctor initiated)
  - **Do not** apply to face and skin folds.

For scalp itching, scaling and dandruff:

- Selenium sulphide 2% suspension
  - Apply weekly by lathering on the scalp
  - Rinse off after 10 minutes

Note:
Consider the possibility of HIV infection in patients with diffuse seborrhoeic eczema.

5.8 Nappy rash

L22

Description

A diffuse reddish eruption usually caused by irritation from:

» persistent moisture and irregular cleaning and drying or nappy in area,
» diarrhoeal stools, and
» underlying skin conditions in some cases, or
» improper rinsing of nappies to remove soap.

General measures

» Change nappies regularly.
» Do not use waterproof pants to cover nappy.
» Expose nappy area to air if possible especially with severe nappy dermatitis.
» Educate caregiver and give advice on:
  – washing, rinsing and drying of the nappy area when soiled
  – regular nappy changes
  – proper washing and rinsing of nappies

Drug treatment

- Zinc and castor oil ointment , applied after each nappy change

If no improvement within 3 days, suspect candida:

- Clotrimazole 2% cream followed by zinc and castor oil ointment applied after each nappy change

Referral

» No improvement after 3 days of clotrimazole treatment

5.9 Sandworm

B76.0

Description

Creeping eruption (cutaneous larva migrans) caused by *Ancylostoma braziliense*, a hookworm of dog or cat.
Larvae of ova in soil penetrate skin through the feet, legs, buttocks or back and cause a winding thread-like trail of inflammation with itching, scratching dermatitis and bacterial infection.

Drug treatment

- Albendazole, oral, daily for three days
  - Children under 2 years: 200 mg
  - Children over 2 years and adults: 400 mg

- Chlorpheniramine, oral, 0.1 mg/kg/dose 6–8 hourly

Weight kg	**Dose** mg	**Use one of the following:**		**Age** Months/years
		Syrup 2 mg/5 mL	**Tablet** 4 mg	
> 9–11 kg	1 mg	2.5 mL	–	> 12–18 months
> 11–14 kg	1.2 mg	3 mL	–	> 18 months–3 years
> 14–17.5 kg	1.5 mg	4 mL	–	> 3–5 years
> 17.5–25 kg	2 mg	5 mL	–	> 5–7 years
> 25–35 kg	3 mg	7.5 mL	–	> 7–11 years
35 kg and above	4 mg	–	1 tablet	> 11 years and adults

5.10 Urticaria

L50.9

Description

Urticaria is a skin disorder characterised by itchy wheals (hives). There are many causes, including allergic, toxic or physical.
Allergic urticaria may be caused by drugs, plant pollen, insect bites or foodstuffs, e.g. fish, eggs, fruit, milk and meat.

Note:
Aspirin is a common cause and is found in many medicines.

General measures

» Take detailed history to detect trigger factors.
» Lifestyle adjustment.

Drug treatment

- Chlorpheniramine, oral, 0.1 mg/kg/dose 6–8 hourly

Weight kg	**Dose** mg	**Use one of the following:**		**Age** Months/years
		Syrup 2 mg/5 mL	**Tablet** 4 mg	
> 9–11 kg	1 mg	2.5 mL	–	> 12–18 months
> 11–14 kg	1.2 mg	3 mL	–	> 18 months–3 years
> 14–17.5 kg	1.5 mg	4 mL	–	> 3–5 years
> 17.5–25 kg	2 mg	5 mL	–	> 5–7 years
> 25–35 kg	3 mg	7.5 mL	–	> 7–11 years
35 kg and above	4 mg	–	1 tablet	> 11 years and adults

- Calamine lotion, applied on the skin

Referral

» No improvement or response after 24 hours
» Progressive illness

5.11 Pityriasis rosea

L42

Description

A common disease of unknown cause, probably due to a viral infection as it occurs in minor epidemics. It is most common in young adults but any age may be affected. The rash involves the trunk, neck and mainly proximal parts of the limbs.
Presents as pink papules, and macules which are oval and slightly scaly at the margins. The eruption is usually preceded by a few days by one larger, oval, slightly scaly area (“herald patch”), commonly found in the scapular area or abdomen. The macules on the thorax characteristically lie parallel to the long axis of the ribs (“Christmas tree” distribution). The itch is usually mild and there few or no constitutional symptoms. It is self-limiting within about 6–8 weeks.

General measures

» Explain about the benign but protracted nature of the condition.

Drug treatment

- Chlorpheniramine, oral, 0.1 mg/kg/dose 6–8 hourly

Weight kg	Dose mg	Use one of the following:		Age Months/years
		Syrup 2 mg/5 mL	Tablet 4 mg	
> 9–11 kg	1 mg	2.5 mL	–	> 12–18 months
> 11–14 kg	1.2 mg	3 mL	–	> 18 months–3 years
> 14–17.5 kg	1.5 mg	4 mL	–	> 3–5 years
> 17.5–25 kg	2 mg	5 mL	–	> 5–7 years
> 25–35 kg	3 mg	7.5 mL	–	> 7–11 years
35 kg and above	4 mg	–	1 tablet	> 11 years and adults

- Aqueous cream, applied 3 times daily.

5.12 Molluscum contagiosum

B08.1

Description

Infectious disease caused by a poxvirus.
Presents with a dome-shaped papules with a central depression (umbilication). Their number varies from occasional lesions to large crops of lesions particularly in those co-infected with HIV. Papules are commonly seen on the face in children but may be found at any dermal site except on the palms and soles. They may also occur on the genitalia as an STI.

General measures

In genital molluscum contagiosum:

» Counsel on risk reduction for transmission of STI and STI.
» Provide and promote use of condoms.
» Notify partner to be examined and treated.

In non- genital molluscum contagiosum:

» Allow to heal spontaneously if the lesions are few in number

Drug treatment

- Tincture of iodine BP, applied to the core of individual lesions using an applicator.

Referral

» Extensive lesions for cryotherapy with liquid nitrogen

5.13 Herpes simplex

B00.0

Description

Infection caused by herpes simplex virus type 1.
The primary infection usually presents as a gingivostomatitis but may occur at other sites, e.g. the face. It is characterised by grouped crusted vesicles surrounded by erythema. The secondary infection usually presents with cold sores on the lips or nose often in association with upper or lower respiratory tract infection.
Sufferers of atopic eczema are particularly susceptible to the virus and may present with large areas of involvement with numerous vesicles and crusting surrounded by erythema (eczema herpeticum).
Mucocutaneous ulceration for more than 1 month (AIDS–defining illness). Ulcers occur commonly in the mouth genital or perianal regions See Section 11.3.9: Herpes simplex ulcers, chronic

General measures

» Keep the skin lesions clean and dry

Drug treatment

Extensive herpes or eczema herpeticum:

- Aciclovir, oral, 8 hourly for 10 days
    - Paediatric dose: 250 mg/m^2/dose

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

5.14 Herpes zoster
(See Section 11.3.10)

5.15 Warts
B07

Description

A common, infectious, self-limiting condition of the skin or mucous membrane caused by papilloma virus.

5.15.1 Common Warts

Seen most often on the hands and fingers.
Raised nodular type with a rough 'warty' surface.

General measures

» May be left alone to wait for improvement

Drug treatment

- Podophyllum resin 20% and salicylic acid 25% ointment, applied under plaster nightly.
  - Protect surrounding skin with petroleum jelly.
  - Repeat until the wart falls off.

Referral

» Extensive warts

5.15.2 Plane Warts

Very small warts which are just slightly raised.
These present as smooth, flat, skin-coloured or slightly pigmented surface and occurs particularly on the face, backs of the hands and knees.

Referral

» Extensive cases involving the face

5.15.3 Plantar Warts

Appear commonly on the pressure-bearing areas of the soles and can be painful

and interfere with walking.
Because pressure forces them deep into the dermis they are flat, almost circular lesions, with a rough surface and are often thick and hard due to increased keratin formation.

Drug treatment

- Podophyllum resin 20% and salicylic acid 25% ointment, applied under plaster nightly.
  - Protect surrounding skin with petroleum jelly.
  - Repeat until the wart falls off.

Referral

» No response to treatment
» Diabetic patients

5.15.4 Filiform Warts

Pedunculated warts found on the face, neck and occasionally on mucous membrane of the mouth.
In the anogenital area they are known as condylomata accuminata.
See Section 12.11: Genital warts (GW): *condylomata accuminata*

Referral

» Extensive involvement

5.15.5 Genital Warts: Condylomata Accuminata

A63.0

See section 12.11: Genital warts (GW): *condylomata accuminata*