

Standard Treatment Guidelines for Seychelles

Ministry of Health, Seychelles
2003

Table of contents

Acknowledgement	7
FORWARD.....	9
CHAPTER 1 - CARDIOVASCULAR CONDITIONS	11
1.1. Acute pulmonary oedema	11
1.2. Cardiac arrest - cardio-pulmonary resuscitation.....	11
1.3. Hypertension	11
1.4. Ischaemic heart disease, angina pectoris	17
1.5. Acute myocardial infarction (AMI)	17
1.6. Acute rheumatic fever	17
1.7. Valvular heart disease	17
CHAPTER 2 - CENTRAL NERVOUS SYSTEM CONDITIONS	19
2.1. Epilepsy.....	19
2.2. Febrile convulsions	21
2.3. Meningitis	21
CHAPTER 3 - DENTAL AND ORAL CONDITIONS	23
3.1. Candidiasis, oral (thrush) + oropharyngeal	23
3.2. Dental abscess and caries	23
3.3. Herpes stomatitis/cold sore/fever blister	25
3.4. Mouth ulcers	25
3.5. Periodontitis	26
CHAPTER 4 - EAR, NOSE AND THROAT CONDITIONS	27
4.1. Allergic rhinitis (hay fever).....	27
4.2. Tonsillitis and pharyngitis.....	27
4.3. Otitis externa	28
4.4. Otitis media, acute.....	29
4.5. Otitis media, chronic suppurative.....	30
4.6. Sinusitis, acute	31
4.7. Epistaxis	32
CHAPTER 5 - ENDOCRINE SYSTEM AND METABOLIC DISORDERS	33
5.1 Diabetes mellitus.....	33
5.2 Blood lipid disorders	42
CHAPTER 6 - EYE CONDITIONS	47
6.1. Conjunctivitis	47
6.2. Conjunctivitis of the newborn (ophthalmia neonatorum) less than 28 days.....	48
6.3. Eye, chemical burn.....	49
6.4. Eye injury, foreign body	49
6.5. Glaucoma, acute.....	49
CHAPTER 7 - FAMILY PLANNING	51
7.1. Contraception	51
CHAPTER 8 - GASTRO-INTESTINAL CONDITIONS	53
8.1. Abdominal pain/dyspepsia/heartburn/indigestion	53
8.2. Amoebic dysentery.....	54
8.3. Anal conditions	54
8.4. Appendicitis	55
8.5. Bacillary dysentery (shigellosis)	55
8.6. Cholera.....	56
8.7. Constipation	56
8.8. Diarrhoea, acute	57
8.9. Giardiasis	58
8.10. Helminthic infestation - excluding tapeworm	59
8.11. Helminthic infestation (tapeworm)	60
8.12. Nausea and vomiting, non-specific	60
8.13. Typhoid fever.....	61
CHAPTER 9 - GYNAECOLOGY AND OBSTETRICS	64
9.1. Abortion	64
9.2. Anaemia in pregnancy.....	64
9.3. Antepartum haemorrhage.....	65

9.4. Cracked nipples during breastfeeding	65
9.6. Dysmenorrhoea	66
9.7. Ectopic pregnancy	66
9.8. Vaginal bleeding	66
9.9. Vaginal discharge/lower abdominal pain in women	67
9.11. Vaginal ulcers	68
CHAPTER 10 - IMMUNISATION	70
10.1. Dosage and administration	70
10.3. Immunisation schedule	71
10.4. Additional vaccines and target groups	71
10.5. Immunisation by injection	72
10.6. The cold chain	72
CHAPTER 11 – SELECTED INFECTIONS AND RELATED CONDITIONS	74
11.1. Amoebic dysentery	74
11.2. Bacillary dysentery	74
11.3. Chickenpox	74
11.4. Cholera	75
11.5. Giardiasis	75
11.6. HIV	75
11.7. Infection control: the use of antiseptics and disinfectants	76
11.8. Malaria	77
10.9. Measles	78
11.10. Meningitis	79
11.11. Mumps	79
11.12. Rubella (German measles)	80
11.13. Sexually transmitted diseases (STD)	80
11.14. Tick-bite fever	85
11.15. Typhoid fever	85
11.16. Tuberculosis	85
CHAPTER 12 - MUSCULOSKELETAL CONDITIONS	86
12.1. Arthralgia	86
12.2. Gout	86
12.3. Osteoarthritis/osteoarthritis	87
12.4. Rheumatoid arthritis	87
CHAPTER 13 - NUTRITION AND BLOOD CONDITIONS	90
13.1. Anaemia	90
13.2. Vitamin deficiencies	91
13.3. Failure to thrive (FTT)	94
CHAPTER 14 - PSYCHIATRIC ILLNESS	96
14.1. Delirium - acutely confused, aggressive patient	96
14.2. Depression	96
14.3. Psychosis, acute	97
CHAPTER 15 - RENAL AND URINARY TRACT CONDITIONS	100
15.1. Urinary tract infection, uncomplicated (acute uncomplicated cystitis)	100
15.2. Acute pyelonephritis	100
CHAPTER 16 - RESPIRATORY CONDITIONS	102
16.1. Asthma	102
16.2. Chronic bronchitis and emphysema	104
16.3. Acute bronchospasm associated with asthma and chronic obstructive bronchitis	105
16.3. Bronchitis, acute	107
16.4. Common cold and influenza	108
16.5. Cough	108
16.6. Croup (laryngotracheobronchitis)	108
16.7. Pneumonia	110
16.8. Tuberculosis	111
CHAPTER 17 - SKIN CONDITIONS	114
17.1. Acne vulgaris	114
17.2. Bacterial infections of the skin	114
17.3. Cellulitis	116
17.4. Eczema	116

17.5. Seborrhoeic eczema	117
17.6. Fungal infections of the skin	118
17.7. Parasitic infections of the skin	120
17.8. Nappy rash, non-fungal	121
17.9. Sandworm	121
17.10. Urticaria	122
CHAPTER 18 - SIGNS AND SYMPTOMS	124
18.1. Arthralgia	124
18.2. Cough	124
18.3. Febrile convulsions	125
18.4. Fever	126
CHAPTER 19 - TRAUMA AND EMERGENCIES	132
19.1. Acute myocardial infarction.....	132
19.2. Acute pulmonary oedema.....	132
19.3. Anaphylactic shock	133
19.4. Bites and stings	134
19.5. Burns	136
19.6. Cardiac arrest - cardio-pulmonary resuscitation.....	137
19.7. Delirium with acute confusion and aggression	141
19.8. Nose bleed (epistaxis)	142
19.9. Eye, chemical burn.....	142
19.10. Eye injury, foreign body	143
19.11. Exposure to poisonous substances	144
19.12. Injuries	145
19.13. Shock.....	147
19.14. Sprains and strains.....	147
19.15. Status epilepticus.....	148
19.16. Hypoglycaemia and hypoglycaemic coma.....	149

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FORWARD

This new edition of the Standard Treatment Protocols combines the experience of medical practice in Seychelles and the most relevant standards and guidelines from international sources. It is a means of ensuring that new as well as experienced practitioners have a ready source of reference and guidance that is up to date and relevant.

The health professionals working in Seychelles are of many different nationalities and trained in different places. These guidelines offer the most appropriate approaches to medical practice in Seychelles. They do not replace the judgement and skills of highly trained and motivated professional, but it is my hope that they complement judgement and skills and that they assist in providing the best care possible to our patients.

I wish to thank the many members of staff who have worked on this edition of the Standard Treatment Protocols. I wish you ail, and ail those who use it, success in your work.

Patrick Pillay
Minister of Health
March 2003

CHAPTER 1 - CARDIOVASCULAR CONDITIONS

1.1. Acute pulmonary oedema

(See chapter 19 - Trauma and Emergencies)

1.2. Cardiac arrest - cardio-pulmonary resuscitation

(See chapter 19 - Trauma and Emergencies)

1.3. Hypertension

(Update of these guidelines of hypertension: 17 Oct 2002)

Content of guidelines on hypertension

1. Rationale and principles for hypertension treatment
2. Measurement of blood pressure and assessment of hypertension
3. Classification of blood pressure/hypertension categories
4. Assessment of factors influencing prognosis in patients with hypertension
5. Quantifying the prognosis of patients with hypertension
6. Treatment goals
7. Who benefits most of treatment?
8. Management of confirmed cases of hypertension
9. Stabilization, maintenance and follow-up after initiation of drug therapy
10. Principles for selecting antihypertension medications
11. Minimal specific investigations for hypertensive patients (to be recorded in medical file)
12. Hypertension in special situations
13. Health education to hypertensive patients and adherence to treatment
14. Caution
15. Selected references
16. Main antihypertension medications available in Seychelles (Oct 2002)

1.3.1. Rationale and principles for hypertension treatment

- Hypertension is one of the most common medical conditions: it affects ~20% of the adults aged 40 and ~40% of the adults aged 65 in Seychelles.
- Antihypertension treatment reduces the risk of CVD (stroke, heart disease) and renal failure by as much as 20-50%.
- Because hypertension control will bring more absolute risk reduction in patients at high cardiovascular risk, current guidelines emphasize on the need to tailor antihypertensive treatment to both 1) the blood pressure levels of a patient and 2) the existence of concomitant cardiovascular risk factors and/or associated clinical conditions.

1.3.2. Measurement of blood pressure and assessment of hypertension

- BP varies considerably over time in the same individuals, hence the need to base decisions on repeated measurements.
- The first BP values obtained in medical settings are often artificially high due to a defense response by many patients ('white coat effect').
- In case of elevation, BP should be measured, on a same visit, at least 2 times at 1-2 min intervals, and additional reading(s) on a same visit should be taken if 2 previous BP measurements differ by >5 mmHg.
- The definite diagnosis of hypertension should be established, unless there is an emergency that requires immediate treatment (e.g. acute CVD), on BP readings obtained on at least 3 visits separated by several days or weeks.
- BP can be substantially over-estimated if it is measured with too narrow a cuff. A large cuff should be used for patients who have a mid-arm circumference ≥ 34 cm. Alternatively, BP can be measured with Tricuff, which automatically adapts cuff size to arm circumference.
- BP readings should be measured at a 2-mmHg precision (e.g. 172/84 mmHg, not 170/85).

- For patients with apparently resistant hypertension (e.g. high BP despite heavy treatment) and/or if a white coat effect is suspected, patients can be encouraged to measure and record themselves their BP at home using an automatic device.
- Hypertensive patients under treatment can be advised to self-monitor their BP at home using an automatic device.

1.3.3. Classification of blood pressure categories

Category	Systolic		Diastolic
Optimal	<120	and	<80
Normal	<130	and	<85
High-normal	130-139	or	85-89
Hypertension			
Grade 1	140-159	or	90-99
Grade 2	160-179	or	100-109
Grade 3	≥180	or	≥ 110

(1999 WHO-ISFC and JNC6 criteria)

1.3.4. Assessment of factors influencing prognosis in patients with hypertension

- When hypertension is confirmed, the next step is to assess the total risk of cardiovascular disease of the patient in order to assess the total risk reduction that will result from BP lowering.

Risk factors for CVD (RF)	Target-organ damage (TOD)	Associated clinical conditions (ACC)
<ul style="list-style-type: none"> - Levels of BP (grades 1-3) - Men >55 years - Women >65 years - Smoking - Total cholesterol (TC), >6.5 mmol/l - Low HDL-cholesterol, <0.9 mmol/l - High TC/HDL-C ratio, >6 - Family history of premature CVD - Obesity - Lack of physical exercise 	<ul style="list-style-type: none"> - Left ventricular hypertrophy (ECG, chest X-ray) - Proteinuria and/or high of plasma creatinine - Ultrasound or radiological evidence of atherosclerotic plaques on peripheral arteries (carotid, iliac and femoral, aorta) - Generalized or focal narrowing of the retinal arteries 	<ul style="list-style-type: none"> Cerebrovascular disease: stroke, cerebral hemorrhage, transient ischemic attack. Heart disease: MI, angina, coronary revascularization, CHF Renal disease: diabetic nephropathy, renal failure Vascular disease aneurysm, symptomatic arterial disease, retinopathy Diabetes

1.3.5. Quantifying the prognosis of patients with hypertension

Other risk factors & disease history	Blood pressure level (mmHg)		
	Grade 1: mild hypertension SBP 140-159 or DBP 90-99	Grade 2: moderate hypertension SBP 160-179 or DBP 100-109	Grade 3: severe hypertension SBP ≥ 180 or DBP ≥ 110
I. No other risk factors	Low risk	Medium risk	High risk
II. 2 risk factors	Medium risk	Medium risk	High risk
III. 3 or more risk factors or target organ damage	High risk	High risk	Very high risk
IV. Associated clinical conditions	Very high risk	Very high risk	Very high risk

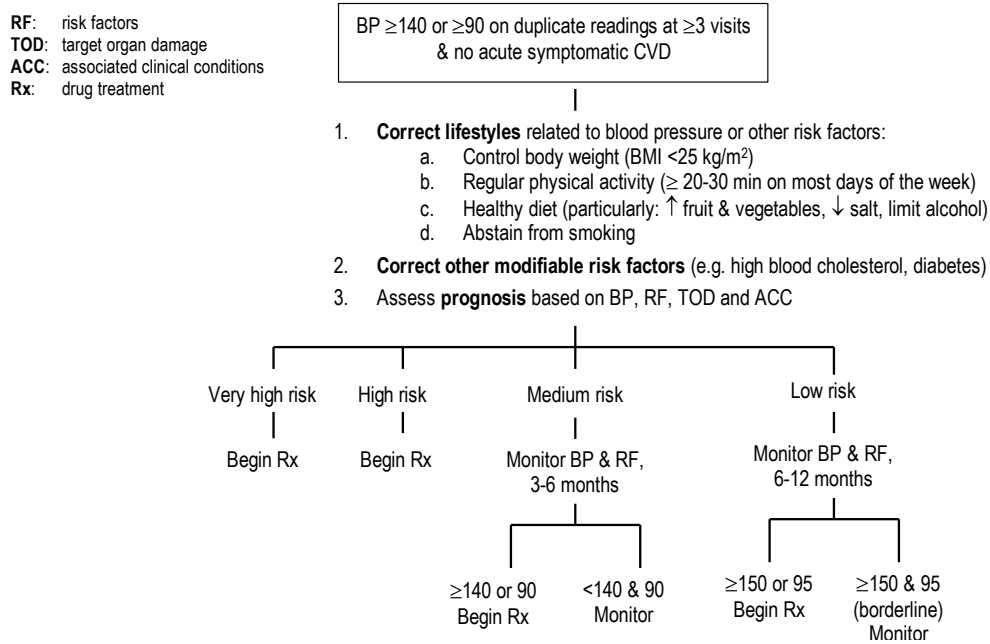
1.3.6. Treatment goals

- To achieve “optimal” or “normal” BP (< 130/85 mmHg) in young, middle-aged, or diabetic subjects.
- To achieve “high-normal” BP (< 140/90 mmHg) in elderly patients.
- To decrease the levels of concomitant risk factors (e.g. cholesterol, diabetes, smoking, obesity).
- To increase cardiovascular preventive factors (e.g. physical exercise, DASH/Mediterranean diet).
- Hypertensive patients should be appropriately informed on their disease to improve adherence to therapy.

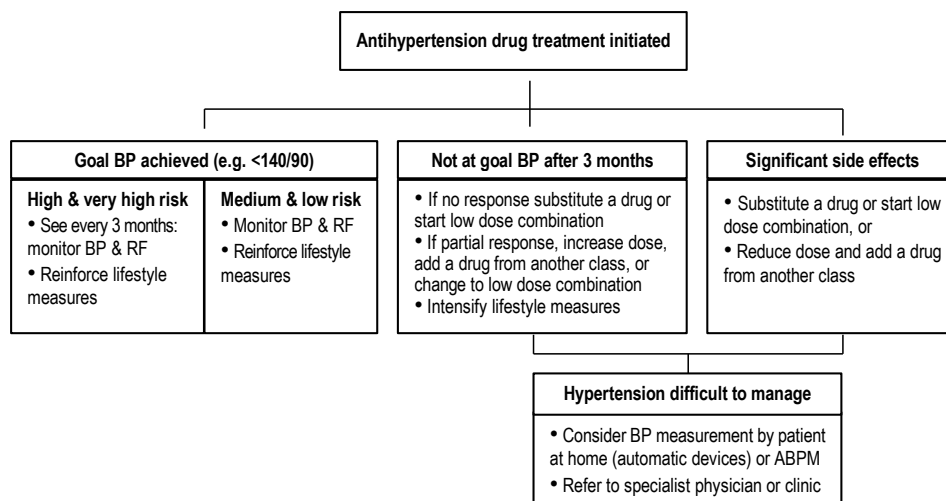
1.3.7. Who benefits most of treatment?

- Antihypertension treatment may reduce the 10-year risk of CVD from 5% to 3% in a man aged 55 years with high BP and no other risk factors (relative risk reduction: 40%; absolute risk reduction: 2%; 50 patients need to be treated for 10 years to avoid 1 CVD event). The same treatment will reduce the 10-year risk of CVD from 50 to 30% in a man of the same age, same high BP but with 2 other risk factors -e.g. high blood cholesterol and diabetes- (relative risk reduction: 40%; absolute risk reduction 20%; need to treat 5 patients for 10 years to avoid 1 CVD event).

1.3.8. Management of confirmed cases of hypertension



1.3.9. Stabilization, maintenance and follow-up after initiation of drug therapy



1.3.10. Principles for selecting antihypertension medications

Class of drug	Compelling indications	Possible indications	Compelling contraindications	Possible contraindications
Diuretics	Heart failure Elderly patients Systolic hypertension	Diabetes	Gout	Dyslipidemia Impotency
Beta-blockers (BB)	Angina After myocardial infarct. Tachyarrhythmias	Heart failure Pregnancy Diabetes	Asthma and COPD Heart bloc	Dyslipidemia Athletes Periph. vascular disease
ACE inhibitors (ACEI)	Diabetic nephropathy Heart failure L ventricular dysfunction After myocardial infarct		Pregnancy Hyperkalemia Renal arteries stenosis	
Angiotensin receptor blockers (ARB)	ACE inhibitor cough	Probably same as indications for ACEI	Pregnancy Renal arteries stenosis Hyperkalemia	
Calcium channel blockers (CCB)	Angina Elderly patients Systolic hypertension	Peripheral vascular disease	Heart block (BBB)	Congestive heart failure
Alpha-blockers	Prostatic hypertrophy	Glucose intolerance Dyslipidemia		Orthostatic hypotension

- On average, all medications decrease BP similarly in randomized trials, but the individual responses can differ.
- It is reasonable to start antihypertension treatment with a diuretics and/or a beta-blocker since the safety and the benefits of these medications have been particularly well established and in view of the much lower costs of these drugs compared to other antihypertension drugs.
- Furosemide and diazepam (or other benzodiazepines) should generally not be used for the treatment of HBP (however furosemide can be used when renal function is severely impaired).
- Start medication using low dose for a few days (e.g. half dose), especially if patient is already under other anti-hypertensive medication(s) and in older patients.
- Allow for at least 2 weeks of treatment before assessing the full effect of a medication on BP.
- Low-dose combinations can be more effective than single therapies at regular doses and often cause fewer side effects. Try combinations including a diuretic (e.g. 2.5 mg Bendrofluazide) as a first step (effective and cost effective).
- Most patient with marked hypertension will often need several different drugs to control BP (try to include a diuretic).
- Adapt drug choice/dose to concurrent conditions (e.g. impaired renal or liver function, diabetes, severe CHF, etc).
- As a minimum, check blood creatinine, glucose, potassium, cholesterol (and HDL-C if total cholesterol is high) before and 2-4 weeks after starting a medication and respond accordingly. Other blood and urine tests may also be indicated.
- Most antihypertension drugs have a safe profile but complications can occur with all medications in rare cases.

1.3.11. Minimal specific investigations for hypertensive patients (to be recorded in medical file)

Physical examination

- Assessment of BP on both arms.
- Assessment through auscultation of heart murmurs and murmurs at carotid, femoral, abdominal aortic and renal artery levels.
- Palpation of peripheral arteries.
- Symptoms and signs of heart failure.
- Neurological examination (e.g. signs of hemisindrome).

Para-clinical investigations

- At the time of diagnosis:
 - Serum: Na, K, urea, creatinine, glucose, total cholesterol.
 - Urine: microscopic examination (e.g. hematuria), dipstick (glucose, proteins).
 - ECG after age of 40 (e.g. for excluding bundle branch and assessing past MI).
- During follow-up

- Serum K, creatinine, glucose and cholesterol should be checked at least once every 1-3 years.
- Other appropriate exams should be done if there are:
 - A suspicion that hypertension is secondary to another pathology (e.g. thyroid impairment, pheochromocytoma, Cushing, hyperaldosteronism, coarctation, renal disease, etc).
 - Symptoms or signs of any cardiovascular or other complication.
 - Suspicion of side effects due to medications.
 - The patient is on multi-drug regimens.

1.3.12. Hypertension in special situations

1.3.12.1. Patients with type-2 diabetes

- The concurrent presence of diabetes largely increases the risk of CVD and accelerates some complications of diabetes (e.g. nephropathy).
- Tight control of BP in diabetic patients is critically important: it reduces both the risk of CVD and the deterioration of the kidney function.
- Diuretics, BB, ACEI and ARB have been shown to reduce CVD complications in diabetic patients.
- ACEI and ARB slow the deterioration of the renal function and should be used in diabetic patients with impaired renal function.
- The goal of antihypertension treatment in type-2 diabetics should be to achieve “optimal” or “normal” BP (i.e. < 130/85 mm Hg).

1.3.12.2. Hypertension during pregnancy

- Hypertension during pregnancy relates to:
 - 1) pre-existing chronic hypertension,
 - 2) de novo diagnosed gestational hypertension without proteinuria,
 - 3) de novo diagnosed gestational hypertension with proteinuria (also called pre-eclampsia,
 - 4) pre-eclampsia superimposed on chronic hypertension.
- The cut-off value to initiate medication can be diastolic BP ≥ 100 mmHg in pregnant women. When pre-eclampsia does not develop, pregnancy may be allowed to term.
- Monitor regularly proteinuria in women with HBP (in addition to other signs and symptoms of pre-eclampsia).
- Positive finding of proteinuria in spot urine collection (1+ or more) should be followed by a 24-h collection (≥ 300 mg/day).
- In addition to treatment for HBP and other pathologic conditions associated with pre-eclampsia, early delivery should also be considered (refer to specific guidelines from Department of Gynecology of Victoria Hospital).
- Medications for acute treatment include hydralazine, labetalol, other BB and CCB. (Labetolol is a BB that also has alpha-blocking properties, hence a possible favorable effect on peripheral circulation).
- Medications for chronic treatment include methyldopa, BB (including labetalol) and CCB.
- ACEI and ARB should be avoided (teratogenicity cannot be excluded). Diuretics may reduce plasma volume and are therefore not advisable in pregnant women.
- Some centers use labetalol (Trandate) as the first choice medication for HBP during pregnancy, including in pre-eclampsia, either orally or iv, depending on the situation. Dosage, orally, can be 3x100 mg/day to 3x400 mg/day.

1.3.12.3. Treatment of hypertensive crisis

- High-grade evidence is still lacking to guide definitive recommendations in such instances. It is clear however that lowering BP too rapidly can have disastrous consequences and result in MI, stroke or visual impairment.
- If there is an acute life-threatening situation (e.g. acute myocardial infarction, stroke, aortic dissection, malignant hypertension), consider iv treatment such as sodium nicardipine (only under close supervision, ICU), iv hydralazine (bolus 5-10 mg, then titer using infusion) or iv labetalol. BP should be reduced slowly and a reasonable short-term target can be 150-160/95-100 mmHg in several situations.
- If the condition is not immediately life-threatening, it is better to use oral medications to lower BP, such as labetalol (400-1200 mg/day), CCB (e.g. amlodipine, 5 mg) or an ACEI (e.g. Lisinopril 20 mg). Medications should be started with low-to-intermediate doses to avoid abrupt BP reduction. Short-term target BP can be 150-160/95-100 mmHg in several situations.
- Consider sedation (e.g. Diazepam 10 mg) in selected patients because acutely high BP may relate to pain, anxiety, withdrawal or other unusual circumstances.

- In case of suspicion of pheochromocytoma, labetalol is a medication of choice, possibly added with a CCB.

1.3.13. Health education to hypertensive patients and adherence to treatment

- Patients should be well informed on blood pressure and hypertension in general and on their own blood pressure status in order to improve the likelihood of good adherence to treatment.
- At a minimum, health professionals should make sure that their patients know:
 - Their own BP values,
 - The upper limit for normal BP (<140/90 mmHg; 130/80 mmHg for diabetics),
 - That hypertension is most often not associated with symptoms,
 - That hypertensive patients should take treatment for years or life in most cases,
 - The importance of health promoting factors (healthy diet, physical exercise, etc),
- Whenever possible, hypertensive patients should be encouraged to purchase a BP electronic monitor so they can self-measure their BP at home and keep a record of these values and the associated treatment. Doctor should inform the patient on when, how and how often to measure BP (e.g. 3-10 every week or every month, depending on the level of BP control treatment circumstances).
- Because of the difficulty of treating a silent medical condition over the long term and the subsequent poor adherence to treatment in many patients, the patient-health professional relationship is particularly important. Among others measures, health professionals should:
 - Show empathy and listen to the patients' problems (including those not related to hypertension).
 - Adapt medical follow-up visits to the patients' needs and schedules.
 - Give precise date and time for follow-up visits (waiting time should absolutely be avoided).
 - Hypertensive patients should be followed by the same health professionals over extended periods of time to build a confident relationship with the patients.

1.3.14. Caution

Appropriate medical treatment in an individual patient may differ from guideline recommendations in special circumstances (e.g. intolerance or allergic reaction to medication, poor compliance to treatment, concomitant morbid condition, patients with limited life expectancy) and/or must be adjusted to circumstances not addressed in these guidelines.

1.3.15. Selected references

1. The WHO-ISH guidelines for the management of hypertension. Journal of Hypertension 1999;17:151-83. (www.who.int/ncd/cvd/HT-guide.html).
2. 6th Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC VI). Arch Int Med 1997;157:2413-46. (www.cdc.gov).
3. The 2001 Canadian recommendations for the management of hypertension: assessment for diagnosis, cardiovascular risk, causes, lifestyle modification, and therapy, 2001 Can J Cardiol 2002;604-41.

(These references are available in full text at UPCCD)

1.3.16. Main antihypertension medications available in Seychelles (July 2002)

Generic name	Type of medication	Pill dosage (mg)	Usual dosage	Average dose (mg) per day	Maximal dose (mg) per day	Price per pill (SR, jun 02)	Cost per year using average dose (SR)
Bendrofluzide	Diuretic	5	OD	2.5	5	0.07	13
Propranolol	Beta blocker	40	BD,TD	160	320	0.09	131
Atenolol	Beta blocker β 1 sel.)	50	OD	50	100	0.67	245
Labetalol	Blocker beta & alpha	200	BD	400	2400	1.98	1'445
Felodipin	Calcium antagonist	5	OD	5	10	2.30	840
Amlodipin	Calcium antagonist	5	OD	5	10	2.74	1'000
Lisinopril	ACE inhibitor	20	OD	20	40	6.00	2'190
Quinapril	ACE inhibitor	20	OD	20	40	6.49	2'369
Valsartan	Angiotensin II inhibitor	80	OD	80	160	8.50	3'103
Methylidopa	Central	250	BD, TD	1000	3000	0.42	613

1.4. Ischaemic heart disease, angina pectoris

See Acute myocardial infarction (AMI), Chapter 19 - Trauma and Emergencies

1.5. Acute myocardial infarction (AMI)

See Chapter 19 - Trauma and Emergencies

1.6. Acute rheumatic fever

Description

A condition in which the body develops antibodies against its own tissues following a streptococcal throat infection.

- patients present with a combination of symptoms and signs including:
 - a) arthralgia and arthritis that may shift from one joint to another
 - b) cardiac failure
 - c) heart murmurs
 - d) rheumatic nodules
 - e) other complaints indicating a systemic illness chorea

Management objectives

- prevent rheumatic fever and infective endocarditis
- limit further damage to the heart valves

Referral

- all cases

1.7. Valvular heart disease

Description

Damage to heart valves commonly caused by rheumatic fever and occasionally by other causes (congenital heart defects, ischaemic heart disease).

- it may be complicated by:
 - a) heart failure
 - b) infective endocarditis
 - c) atrial fibrillation
 - d) systemic embolism

Management objectives

- prevent infective endocarditis and heart failure
- prevent repeated attacks of acute rheumatic fever

Non-drug treatment

- refer **all** patients with heart murmurs for assessment
- advise **all** patients with a heart murmur to inform health care providers of the presence of the heart murmur when reporting for medical or dental treatment

Drug treatment

- administer prophylactic antibiotic treatment prior to certain invasive diagnostic and therapeutic procedures, e.g. tooth extraction, gastroscopy, cystoscopy and any operation to prevent infective endocarditis.
- prophylactic antibiotic therapy for rheumatic fever
- benzathine penicillin IM, every month
 - a) children under 30 kg: 600 000 IU
 - b) children and adults over 30 kg: 1.2 MU
 or
- phenoxymethylpenicillin oral 250 mg 12 hourly until 35 years old
- or

- for penicillin-allergic patients: erythromycin oral 12 hourly
- a) children: erythromycin estolate 125 mg until able to swallow tablets
 - b) adults: erythromycin stearate 250 mg until 35 years old

Referral

- any newly diagnosed heart murmur
- development of cardiac symptoms and signs
- worsening of clinical signs of heart disease
- any other newly developing medical condition, e.g. fever
- all patients with valvular heart disease must be referred for advise on prophylactic antibiotics prior to any invasive diagnostic or therapeutic procedures to prevent infective endocarditis.

CHAPTER 2 - CENTRAL NERVOUS SYSTEM CONDITIONS

2.1. Epilepsy

Description

Epilepsy takes several forms ranging from generalised tonic clonic seizures (grand mal) to simple absence seizures that only involve a brief loss of consciousness.

Some clinical features of the different types of epilepsy:

- there may be an aura (a warning symptom) before a seizure, e.g. a stomach cramp that moves upwards
- after a seizure some patients recover quickly while others may be confused and have headaches for days.

SEIZURE TYPE	DESCRIPTION
generalised tonic clonic	<ul style="list-style-type: none"> • a brief stiff phase followed by • loss of consciousness preceded by • jerking of all of the limbs
tonic	<ul style="list-style-type: none"> • one or more limbs become stiff without any jerking
simple partial	<ul style="list-style-type: none"> • no loss of consciousness • seizure on one side of the body
myoclonic	<ul style="list-style-type: none"> • jerking of one or more muscles in any part of the body with or without loss of consciousness • jerking may start in any part of the body and spread
absence	<ul style="list-style-type: none"> • occurs in childhood • sudden cessation of activity followed by a blank stare • usually no muscle twitching • some children will smack their lips

Management objectives

- prevent all or nearly all seizures with a minimum of side-effects so that patients may lead normal lives.

Non-drug treatment

- epilepsy is associated with many legal, psychological and social problems. Extensive health education and counselling are necessary for the family and all concerned
- patients should not take alcohol because it can cause or worsen seizures
- patients should keep a note daily which records the date and if possible the times of the seizures - this will make assessment of therapy much easier
- see note on the management of chronic diseases

Drug treatment

GENERAL RULE. Whenever possible, a single drug is best

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

- has the patient been taking the medication regularly for at least 2 weeks or more before the seizure? Ask about medication dosage and frequency
- has the patient recently used some other medication?
- is there a chance that alcohol or some other drug is involved?
- if one or more of the above can be identified as a problem there is no need to adjust therapy at this time
- thiamine in alcoholic

CHILDREN

SEIZURE	DRUG TREATMENT	COMMENTS
generalised tonic clonic	<ul style="list-style-type: none"> • sodium valproate 15-20mg kg / day in two divided doses • carbamazepine oral 8mg/kg daily for 2 weeks 	<ul style="list-style-type: none"> • once phenobarbital treatment has been initiated, review behaviour profile and academic performance

SEIZURE	DRUG TREATMENT	COMMENTS
	<ul style="list-style-type: none"> then 10-15 mg/kg daily maximum dose 20 mg/kg daily divided 2-3 times daily or <ul style="list-style-type: none"> phenytoin oral 4-7 mg/kg daily 	<ul style="list-style-type: none"> then try carbamazepine use phenytoin as a last resort
absences	<ul style="list-style-type: none"> ethosuximide oral 30 mg/kg daily in two divided doses or <ul style="list-style-type: none"> Sodium Valproate (see dose below) 	<ul style="list-style-type: none"> initiate with ethosuximide
mixed and myoclonic	<ul style="list-style-type: none"> Sodium Valproate oral 34-45 mg/kg daily in two divided doses Note valproic acid = sodium valproate x 0.87	<ul style="list-style-type: none"> avoid carbamazepine as it may complicate seizures watch for weight gain

- Recommended doses - these are a rough guide and will work for most patients. Some patients may need much higher or lower doses which will be guided by therapeutic monitoring.

ADULTS

SEIZURE	DRUG TREATMENT	COMMENTS
generalised tonic clonic partial	<ul style="list-style-type: none"> phenytoin oral 4.5-5 mg/kg daily on lean body mass maximum dose 400 mg at night or <ul style="list-style-type: none"> carbamazepine oral 200 mg twice daily for first 2 weeks then 300 mg twice daily maximum dose 900 mg twice daily 	<ul style="list-style-type: none"> the choice between these two agents must be made on the acceptability of side effects and how the number of doses influences lifestyle watch for dose-related side effects with phenytoin
myoclonic	<ul style="list-style-type: none"> Sodium Valproate oral 600 mg twice daily maximum dose 2800 mg daily 	<ul style="list-style-type: none"> avoid carbamazepine watch for weight gain

*Recommended doses - these are a rough guide and will work for most patients. Some patients need much higher or lower doses which will be guided by therapeutic monitoring.

Referral

- increased number of seizures or changes in the seizure type
- patients who have been seizure free on therapy for 2 years or more (to review therapy)
- pregnancy in known epileptics
- development of neurological signs and symptoms
- patient not controlled on recommended doses

Information that should accompany each referral case:

Seizures

- number of seizures per month (or year)
- date and time of most recent seizure
- detailed description of the seizure that includes:
 - aura or warning sign
 - what happened during the seizure? (give a step-by-step account)
 - was the patient conscious during the seizure?
 - how long do the seizures last on average?
 - what does the patient experience after the seizure?
 - how long does this experience last?

Family history of seizures

- date of initial diagnosis
- drug and alcohol use

- any other medical conditions such as diabetes and medication used
- name of the antiepileptic medication used to date and dosage
- **does** the patient return on the correct date for repeat medication?

2.2. Febrile convulsions

See Chapter 18 - Signs and symptoms

2.3. Meningitis

2.3.1. Meningitis, acute

Description

The acute or recent inflammatory response of the meninges due to the following organisms:

- Haemophilus influenzae
- Neisseria meningitidis (note: meningococcal meningitis is a notifiable conditions;
- Streptococcus pnke

This is a medical emergency.

Refer all suspected cases to Victoria Hospital

Emergency measures

- maintain airway
- give oxygen
- ensure hydration

Refer all cases and notify immediately to Ministry of Health.

CHAPTER 3 - DENTAL AND ORAL CONDITIONS

3.1. Candidiasis, oral (thrush) + oropharyngeal

Description

An infection of the mouth and sometimes of the pharynx caused by a yeast-like fungus *Candida albicans*:

- common in healthy babies up to 3 months
- painful creamy white patches that can be scratched off the tongue and buccal mucosae
- *C. albicans* also exists in healthy individuals but only under certain conditions does it cause infection:
 - a) poor hygiene
 - b) baby bottles sterilised with hypochlorite
 - c) immunosuppression (severe cases are common in AIDS)
 - d) prolonged use of broad spectrum antibiotics or corticosteroids
 - e) some chronic diseases, e.g. diabetes mellitus
 - f) due to trauma, e.g. poorly fitting dentures

Management objectives

- cure the condition

Non-drug treatment

- preventive measures:
 - a) adequate rinsing of bottles after disinfecting
 - b) snugly fitting dentures
 - c) good oral hygiene

Drug treatment

- nystatin suspension oral 100 000 IU/ml
 - a) **Infants:** 0.5 ml after each feed keep nystatin in contact with affected areas for as long as possible
 - b) **Adults:** 100 000 IU (1 lozenge) or nystatin oral suspension
- in severe cases or if the above treatment fails:
 - Fluconazole 50mg daily for 7days

Referral

- no improvement
- difficult or painful swallowing
- uncertain diagnosis
- pharyngeal spread

3.2. Dental abscess and caries

3.2.1. Dental abscess

Description

Acute or chronic suppuration related to teeth due to infection:

- acute - pain (sometimes very severe) continuous and gnawing
- involved tooth is painful on tapping
- the tooth may be loose after the infection has spread to the bone
- swelling of upper or lower jaw
- chronic - may have few symptoms including pain

Management objectives

- cure abscess and eliminate pathogens
- pain relief
- improve oral hygiene
- refer all cases to dentist

Non-drug prophylaxis and treatment

- oral hygiene after each meal to remove plaque and food debris
- frequent complete brushing of teeth
- dental flossing at least once a day

Drug treatment

- start amoxicillin oral 8 hourly for 7 days + metronidazole 200mg three times daily for 7 days then refer all cases
- a) children 10-20 kg: 125 mg
- b) children over 20 kg and adults:: 250 mg

3.2.2. Acute necrotising ulcerative gingivitis

Description

A non-contagious infection associated with the fusiform bacilli and a spirochaete.

- also known as Vincent's angina and is associated with:
 - a) poor oral hygiene
 - b) stress
 - c) blood disorders
 - d) heavy smoking
 - e) nutritional deficiencies (vitamin B and C)
- characteristics:
 - a) sudden onset
 - b) acutely painful bleeding gums
 - c) greyish membrane between teeth on gums which can be removed
 - e) whole mouth or one tooth can be affected
 - f) common in young adults
 - g) halitosis
 - h) no fever

Management objectives

- reduce pain
- eliminate infection
- promote good oral hygiene

Non-drug treatment

- oral hygiene after each meal to remove plaque and food debris
- frequent complete brushing of teeth
- dental flossing at least once a day
- improve nutrition
- gentle removal of the membrane

Drug treatment

Treatment depends on the type of gingivitis:

- amoxicillin oral 8 hourly for 5 days
 - a) children 10-20 kg: 125 mg
 - b) children over 20 kg and adults: 250 mg
- or
- for penicillin-allergic patients:
 - a) children 11-15 kg: erythromycin stearate 125mg
 - b) children over 16 kg: erythromycin stearate or estolate 250 mg
 - c) adults: erythromycin stearate 250 mg
- and
- metronidazole oral for 5 days
 - a) take tablets with or after food and the suspension 1 hour before food
 - b) children 4-7 years: 100 mg 12 hourly

- c) children 7-10 years: 100 mg 8 hourly
 d) children over 10 years and adults: 200 mg 8 hourly

- paracetamol oral 4-6 hourly when needed to a maximum of four doses daily
- a) children 1-5 years: 5-10 ml (120 mg/5 ml syrup)
- b) children 5-12 years: ½ 1 tablet (500 mg tablet)
- c) children over 12 years and adults: 1-2 tablet(s)

- 0.2% chlorhexidine digluconate mouthwash 2-4 times daily for 5 days
- a) 15 ml as a mouthwash after brushing and flossing
- b) prolonged use of chlorhexidine may cause darkening of teeth

- 3% hydrogen peroxide for mouth wash

Referral

- no improvement in 7 days

3.3. Herpes stomatitis/cold sore/fever blister

Description

Inflammation of the mouth area due to infection by *Herpes simplex virus* type 1.

- may complicate infection such as pneumonia, but usually occurs spontaneously
- self-limiting and usually clears up within 10 days
- shallow painful ulcers on the lips, gums and tongue
- refusal of children to eat due to pain

Management objectives

- relieve symptoms
- prevent complications including secondary infection

Non-drug treatment

- salt mouthwash may help, e.g. ½ teaspoon of table salt in a glass of lukewarm water; gargle for one minute twice daily
- adequate diet and hydration
- fluid diet for children
- avoid acidic drinks, e.g. orange juice or soft drinks as they may cause pain

Drug treatment

- rehydration may be necessary
- antipyretics may be indicated
- paracetamol oral 4-6 hourly when needed to a maximum of four doses daily
- a) **children 3 months-1 year:** 2.5 ml (120 mg/5ml syrup)
- b) **children 1-5 years:** 5-10 ml
- c) **children 5-12 years:** ½-1 tablet (500 mg tablet)
- d) **children over 12 years and adults:** 1-2 tablet(s)
- 2% lidocaine gel may be indicated every 3-4 hours, for extensive oral herpes
- a) apply thin layer as required on the affected areas only; maximum one tube
- acyclovir gel 5gm

Referral

- if the condition is severe
- immuno-suppressed patients, e.g. AIDS
- no improvement after 1 week of treatment
- dehydrated patients

3.4. Mouth ulcers

Description

Acute painful ulcers on the lips or inside the mouth, including the tongue, or occurring singly or in groups.

Management objectives

- reduce discomfort
- accelerate the healing process

Drug treatment

- 0.2% chlorhexide digluconate mouthwash 2-4 times daily for 5 days
 - a) 15 ml as a mouthwash after brushing and flossing
 - b) prolonged use of chlorhexidine may cause darkening teeth
 - paracetamol orally 4-6 hourly when needed to a maximum of four doses daily
 - hydrocortisone succinate 5 mg
- a) children 3 months-1 year: 2.5 ml (120 mg/5 ml syrup)
- b) children 1-5 years: 5-10 ml
- c) children 5-12 years: ½-1 tablet (500 mg tablet)
- d) children over 12 years and adults: 1-2 tablets

Referral

- recurrence
- widespread ulcers

3.5. Periodontitis**Description**

Progressive gingivitis to the point where the underlying bone is eroded.

- it is a cause of tooth loss in adults
- due to the same causes as gingivitis
- also known as pyorrhoea
- teeth may be loose in their sockets

Management objectives

- improve oral hygiene
- prevent further disease and preserve teeth
- identify cases to refer to dentist

Non-drug treatment

- improve oral hygiene
- remove all deposits on teeth, e.g. plaque, etc.
- ongoing oral hygiene measures
- regular re-evaluation

Referral to dentist

- all cases

CHAPTER 4 - EAR, NOSE AND THROAT CONDITIONS

4.1. Allergic rhinitis (hay fever)

Description

Recurrent inflammation of the nasal mucosa due to hypersensitivity to allergens, e.g. pollen, house dust, grass, animal proteins and foodstuffs.

- allergic rhinitis is characterised by recurrent episode of:
 - a) blocked stuffy nose
 - b) watery nasal discharge
 - c) frequent sneezing, often accompanied by nasal itching and irritation
 - d) conjunctival itching and watering
 - e) oedematous pale grey nasal mucosa
 - f) mouth breathing
 - g) snoring at night
- try to exclude other causes, e.g. vasomotor rhinitis, overuse of decongestant drops, side-effects of antihypertensives and antidepressants.

Management objectives

- prevent recurrent attacks
- provide symptomatic relief

Non-drug treatment

- avoid allergens and irritants

Drug treatment

- chlorpheniramine oral
 - a) children 6 months-1 year: 1 mg twice daily
 - b) children 1-5 years: 1-2 mg 3 times daily
 - c) children 5-12 years: 2-4 mg twice a day
 - d) children over 12 years and adults: 4 mg 3-4 times daily

Referral

- chronic persistent attacks
- severe symptoms

4.2. Tonsillitis and pharyngitis

4.2.1 Pharyngitis, viral

Description

A painful red throat without pus.

Non-drug treatment

- salt mouthwash may help, e.g. ½ teaspoon of table salt in a glass of lukewarm water; gargle for 1 minute thrice daily
- or
- Sodium Bicarbonate mouth wash.

Drug treatment

- viral infections should not be treated with antibiotics

4.2.2. Tonsillitis, bacterial

Description

Commonly caused by the beta-haemolytic streptococci group A.

- clinical features of streptococcal tonsillitis are:
 - a) sore throat with pain while swallowing
 - b) inflamed tonsils with white patches (follicles)
 - c) tender, enlarged cervical lymph nodes
 - e) often associated with sudden onset of fever
- untreated streptococcal tonsillitis or pharyngitis is serious and can result in:
 - a) acute rheumatic fever
 - b) acute glomerulonephritis
 - c) suppurative complications (retropharyngeal and peritonsillar abscesses)
- a sandpaper-like generalised skin rash indicates scarlet fever:
 - a) red strawberry tongue, cutaneous eruption particularly on the neck, chest and /or elbows

Management objectives

- completely eradicate the infection
- prevent heart and kidney complications

Non-drug treatment (supportive)

- salt mouthwash may help, e.g. ½ teaspoon of table salt in a glass of lukewarm water; gargle for 1 minute twice daily

Drug treatment

- phenoxymethylpenicillin oral 6 hourly **for 10 days** (to prevent rheumatic fever and glomerulonephritis)
 - a) children: 40-50mg/kg per day in four divided doses
 - b) adults: 500 mg
- or
- if compliance with an oral course for 10 days is difficult, then admit
 - a) children under 30 kg: 600 000 IU
 - b) children over 30kg and adults: 1.2 MU
- or
- for penicillin-allergic patients:
 - erythromycin orally 6 hourly before meals for **10 days**
 - a) children: erythromycin estolate 12.5mg/kg
 - b) adults: erythromycin stearate 500mg
 - paracetamol orally 4-6 hourly when needed to a maximum of four doses daily
 - a) children 3 months-1 year: 2.5 ml (125 mg/5 ml syrup)
 - b) children 1-5 years: 5-10 ml
 - c) children 5-12 years: ½-1 tablet (500 mg tablet)
 - d) children over 12 years and adults: 1-2 tablets

Referral

- any suppurative complications, e.g. retropharyngeal or peritonsillar abscess
- suspected acute rheumatic fever
- suspected acute glomerulonephritis
- recurrent tonsillitis or tonsillitis accompanied by severe swallowing problems
- history of previous rheumatic fever or rheumatic heart disease
- heart murmurs not previously diagnosed

4.3. Otitis externa

Description

Inflammation of the external ear may be one of the following two types:

TYPE	DESCRIPTION
Diffuse (swimmer's ears)	infections are usually due to: <ul style="list-style-type: none"> • mixed infections • allergic dermatitis (often caused by shampoo or Soaps) • contaminated swimming pool or other water, etc.

furuncular	may be caused by one or more of the following organisms: <ul style="list-style-type: none"> • Staphylococcus • Streptococcus • Pseudomonas aeruginosa • Proteus species • Escherichia coli
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Management objectives

- symptomatic relief
- eliminate the cause

Non-drug treatment

- exclude any underlying chronic otitis media before commencing treatment
- keep the ear clean and dry, avoid swimming and diving until condition improves
- most cases recover after thorough cleansing and drying of the ear
- **do not** leave anything in the ear
- do not add anything to the ear
- avoid getting the inside of the ear wet, use Vaseline coated or baby oil soaked cotton plugs for showering.

Drug treatment

The treatment for the two types of otitis externa differs:

TYPE	DESCRIPTION
diffuse	does not usually require an antibiotic <ul style="list-style-type: none"> • 2% boric acid in alcohol, topically 6 hourly for 5 days a) make a wick where possible b) use ribbon gauze or other suitable absorbent cloth c) soak the wick in the drops and insert into the ear c) instil 3-4 drops after cleaning and d) drying the ear e) no systemic antibiotic is needed.
furuncular (Rule out diabetes)	<ul style="list-style-type: none"> • flucloxacillin orally 6 hourly for 5 days a) children: 50-60mg/kg/day in 4 divided doses b) children over 12 years and adults: 500 mg or <ul style="list-style-type: none"> • for penicillin-allergic patients: • erythromycin oral 6 hourly before meals for 5 days a) children: erythromycin 12.5mg/kg every 6hours b) children over 12years and adult: erythromycin stearate 500 mg

Referral

- no response

4.4. Otitis media, acute

Description

Inflammation of the middle ear characterised by:

- pain
- loss of the normal light reflex of the ear drum and congestion of ear drum
- bulging eardrum
- fever in about half of the cases
- mild redness of the eardrum and rubbing the ear **are not** reliable signs

Management objectives

- cure of the infection

- management of complications

Non-drug treatment

- do not instil anything in the ear
- avoid getting the inside of the ear wet

Drug treatment

- amoxicillin oral 8 hourly for 7 days
- a) children: 60-80mg/kg/day in 3 divided doses
- b) Children over 12years and adult: 500mg

or

- for penicillin-allergic patients:
 - trimethoprim/sulfamethoxazole oral 12 hourly for 5 days
 - a) children 2-5 months: 2.5 ml (40/200 mg/5ml suspension)
 - b) children 6 months-5 years: 5ml
 - c) children 5-12 years: 10 ml or 1 tablet (80/400 mg)
 - d) children over 12 years and adults: 2 tablets (80/400 mg)
-
- paracetamol orally 4-6 hourly when needed to a maximum of four doses daily
 - a) children 3 months-1 year: 2.5 ml (120 mg/5ml syrup)
 - b) children 1-5 years: 5-10 ml
 - c) children 5-12 years: ½-1 tablet (500 mg tablet)
 - d) children over 12 years and adults: 1-2 tablets

Referral

- eardrum perforation
- no response after 7 days treatment
- no pain relief
- bulging eardrum, not responding to treatment after 24 hours

4.5. Otitis media, chronic suppurative

Description

Pus discharging from the ear for more than 2 weeks.

- if the eardrum has been ruptured for 2 weeks or no longer a secondary infection with multiple organisms usually occurs
- multiple organism infection makes oral antibiotic treatment alone much less effective and patients may need to be referred
- if pain is present suspect another condition or complications

Note

- a chronically draining ear can only heal if it is dry
- drying the ear is time-consuming for both the health worker and the caregiver but it is the most important measure of effectiveness of treatment
- rule out other septic foci in the throat and nose

Management objectives

- keep the ear dry
- cure the condition
- prevent hearing loss
- prevent mastoiditis and related complications

Non-drug treatment

- dry mopping is the most important part of the treatment and it should be demonstrated to the child's caregiver or patient if old enough:
- a) roll a piece of clean absorbent cloth into a wick

- b) soak in 1% boric acid
- c) insert carefully into the child's ear
- d) leave in place for 1 minute
- e) remove and replace with a clean dry wick
- f) watch the patient or caregiver repeat this until the wick is dry when removed
- g) dry the ear by wicking at home at least four times daily until the wick stays dry
- h) if bleeding occurs, drying the ear should be stopped temporarily (refer)
 - **do not** leave anything in the ear
 - **do not** instil anything in the ear
 - **avoid** getting the inside of the ear wet
 - **avoid** swimming and diving until the condition improves

Referral

- painful swelling behind the ear (mastoiditis)
- no improvement after 4 weeks treatment

4.6. Sinusitis, acute

Description

Inflammation of one or more sinuses that most often occurs after a viral nasal infection or allergic rhinitis.

- bacterial sinusitis is characterised by:
 - a) purulent nasal discharge (persistent or intermittent)
 - b) pain and tenderness over one or more sinuses
 - c) nasal obstruction
 - d) post-nasal discharge
 - e) fever (occasional)
 - f) headaches

Non-drug treatment

- steam inhalation may be effective in liquefying and removing secretions blocking the nose, do not use boiling water especially if essential oils are added.
- avoid swimming and diving

Drug treatment

- amoxicillin oral 8 hourly for 7 days
 - a) children: 60-80mg/kg/day in three divided doses
 - b) children over 12years and adults: 500 mg
 or
 - for penicillin-allergic patients:
 - trimethoprim/sulfamethoxazole oral 12 hourly for 5 days
 - a) children 2-5 months: 2.5 ml (40/200 mg/5ml suspension)
 - b) children 6 months-5 years: 5 ml
 - c) children 5-12 years: 10 ml or 1 tablet (80/400 mg)
 - d) children over 12 years and adults: 2 tablets (80/400 mg)
- use 0.9% sodium chloride nose drops frequently and in fairly large volumes
- paracetamol orally 4-6 hourly when needed to a maximum of four doses daily
 - a) children 3 months-1 year: 2.5 ml (120 mg/5 ml syrup)
 - b) children 1-5 years: 5-10 ml
 - c) children 5-12 years: ½-1 tablet (500 mg tablet)
 - d) children over 12 years and adults: 1-2 tablets
- ephedrine nasal drops, 2 drops in each nostril 6-8 hourly **for not more** than 5 days continuously
 - a) children: 0.25% - 0.5%
 - b) adults: 1%

Referral

- dental focus of infection is present, e.g. apical tooth abscess causing maxillary sinusitis
- complications, e.g. periorbital cellulitis, periorbital swelling)
- oedema over a sinus
- fever lasting longer than 48 hours
- poor response after 5 days

4.7. Epistaxis

See Chapter 19 - Trauma and Emergencies

CHAPTER 5 - ENDOCRINE SYSTEM AND METABOLIC DISORDERS

5.1 Diabetes mellitus

(Update of these guideline on diabetes mellitus: 17 October 2002)

Diabetes is a major cause of morbidity and mortality and a main risk factor for cardiovascular disease. However, diabetes can be controlled fairly well through non-pharmacological and pharmacological therapies. Diabetes affects ~5% of persons at the age of 40 to ~10% at the age of 65 in Seychelles.

Content

1. Overview
2. Classification of diabetes
3. Risk factors for diabetes
5. Complications of diabetes
6. Diagnosis of diabetes
8. Treatment of concomitant risk factors associated with complications of diabetes
9. Screening and management of diabetes complications
10. Diabetes during pregnancy and gestational diabetes
11. Special conditions, preventive care
12. Check list of responsibilities of diabetic patients and those of health professionals
13. Checklist of selected investigations in diabetic patients (list is not exhaustive)
14. Caution
15. Selected references

5.1.1. Overview

Condition	Diagnosis of BG abnormality	Glycemic control: normal	Goal for BG control	Major change in BG control if:	Blood pressure	Blood lipids	Other
Diabetes	Impaired fasting glucose (IFG): FBG: 6.1-7.0 Impaired glucose tolerance (IGT): 2-h PG: 7.8-11.1 Diabetes: FBG \geq 7.0 or RBG \geq 11.1 or 2-h PG: \geq 11.1	Pre: <6.1 Post: <6.7 Capillary BG: Pre: <5.6 Post: <6.1 A1C (%): <6	Pre: 5.0-7.2 Post: 6.1–8.3 Capillary BG: Pre: 4.4-6.7 Post: 5.6-7.8 A1C <7	Pre: <5/>8.3 Post: <6.1/>10.0 Capillary BG: Pre: <4.4/>7.8 Post: <5.6/>8.9 A1C >8	Optimal: <130/80	Optimal: Total-C <5.0 LDL-C <3.0 TC/HDL-C <5 Treat if: TC/HDL-C >5 & CVD or several RF for CVD; TC/HDL-C >6 & few other RF for CVD	- Abstain from smoking - Lean weight - Regular physical exercise (\geq 30 min) on most days of the week - Diet rich in vegetable products and fruits (one fruit at a time) and limited in saturated fats and salt - Proper foot care - Screen for kidney and eye complications
Gestational diabetes mellitus (GDM)	FBG > 5.3 (ADA) and/or 2-h PG (75g): \geq 7.8		BG 2 h after meals <6.7	Insulin needed if average BG 2h post meals >6.7	Medication if \geq 170/110	Statins not advisable	- Abstain from smoking - Oral hypoglycemic drugs not advisable

- FBG: fasting blood glucose; RBG: random blood glucose; 2h-PG: BG 2 hours after 75 g oral glucose load; Pre: pre-prandial BG; Post: post-prandial BG (e.g. 2 hours after meals, bedtime; major decision using post BG should be based on average values, hence need for several values).
- TC: total cholesterol; HDL-C: HDL-cholesterol; LDL-C: LDL-cholesterol.
- Any new case of diabetes or GDM based on FBG or RBG must be confirmed with values on at least 2 different days.
- For GDM, confirm high FBG on other day and, if still high, follow with OGTT. Normal 2hr-PG with abnormal FBG is still GDM.
- BG: 4.4 mmol/l = 80 mg/dl; 5.0 mmol/l = 90 mg/dl; 5.3 mmol/l = 95 mg/dl; 5.6 mmol/l = 100 mg/dl; 6.1 mmol/l = 110 mg/dl; 6.7 mmol/l = 120 mg/dl; 7.0 mmol/l = 126 mg/dl; 7.2 mmol/l = 130 mg/dl; 7.8 mmol/l = 140 mg/dl; 8.3 mmol/l = 150 mg/dl; 8.9 mmol/l = 160 mg/dl; 10.0 mmol/l = 180 mg/dl; 11.1 mmol/l = 200 mg/dl. (Conversion 1 mmol/l = 18 mg/dl).

5.1.2. Classification of diabetes

a) Type 1 diabetes

- Accounts for 5-8% of all diabetes cases.
- Destruction of β -cells of pancreas leading to absolute insulin deficiency.

- More than 75% of all newly diagnosed diabetes cases occur in individuals younger than 18 years.
- Often discovered due to acute symptoms: hunger, weight loss, thirst, polyuria, tiredness, coma, ketoacidosis (ketonuria).

b) Type 2 diabetes

- Accounts for >90% of all diabetes cases.
- Results from progressive insulin secretory defect on the background of insulin resistance.
- Often starting in adulthood, but also increasingly often in adolescents (mainly secondary to obesity).
- Often discovered in asymptomatic patients through incidental screening of blood glucose (BG).
- Disease can evolve without symptoms for several years, later symptoms like in type 1 diabetes.
- Early diagnosis in asymptomatic diabetes patients is useful because early control of BG reduces long-term complications.

c) Diabetes due to other causes

- Genetic defects of insulin action or β -cell function, drug or chemical induced, etc.

d) Gestational diabetes

- Diagnosed during pregnancy.

5.1.3. Risk factors for diabetes

(mostly type 2 diabetes)

- Family history of diabetes in first-degree parents.
- Obesity (BMI ≥ 25 kg/m²).
- Sedentary habits.
- Hypertension ($\geq 140/90$ mmHg in adults).
- Low HDL-C (< 0.90 mmol/l) and/or high triglyceride (> 2.82 mmol/l).
- Some ethnic groups (e.g. Asian).
- Previous gestational diabetes or baby weighing ≥ 9 lbs.
- Conditions associated with insulin resistance (e.g. PCOS).

5.1.4. Who should be screened for diabetes?

- Adults or children with symptoms or signs of diabetes.
- Adults with no BG available and with ≥ 1 risk factor for type 2 diabetes.
- Pregnant women at a first prenatal visit and .
- Adults aged ≥ 45 yrs, at 3-yr intervals.
- Screening can be considered in adolescents who are obese and have 2 other risk factors.

5.1.5. Complications of diabetes

- Complications of uncontrolled diabetes include microvascular disease (nephropathy, retinopathy and neuropathy) and macrovascular disease (ischemic heart disease, stroke).
- Normalization of BG reduces complications of diabetes to levels close to non-diabetic persons. Inversely, poor control of BG dramatically increases a diabetic's morbidity and mortality.
- CVD is the cause of death in 80% of diabetes patients, which emphasizes the need for tight control of other modifiable risk factors of CVD in diabetic patients in addition to BG control.

5.1.6. Diagnosis of diabetes (not GDM)

Criteria for the definite diagnosis of diabetes (additional criteria apply for gestational diabetes)

	Normoglycemia	Impaired fasting glucose (IFG) or impaired glucose tolerance (IGT)	Diabetes
BG (plasma)	FBG < 6.1 mmol/l	FBG ≥ 6.1 - 6.9 mmol/l and FBG < 7.0 mmol/l (IFG)	FBG ≥ 7.0 mmol/l or RBG ≥ 11.1 mmol/l
and/or BG 2 hours after oral intake of 75 g glucose (OGTT)**	2-h BG < 7.8 mmol/l	2h-BG 7.8-11.1 mmol/l (IGT)	2h-BG ≥ 11.1 mmol/l

- FBG: fasting blood glucose (no caloric intake for at least 8 hours).
- RBG: random blood glucose (blood glucose taken at any time in the day, irrespective of meals).
- Equivalent: 6.1 mmol/l= 110 mg/dl; 7.0 mmol/l= 126 mg/dl; 7.8 mmol/l=140 mg/dl; 11.1 mmol/l=200 mg/dl.

- Abnormal FBG or RBG must be confirmed with at least 1 other measurement made on a separate day.
 - Oral glucose tolerance test must be conducted in the morning after a fast of 8-14 hours during which only water is permitted. Following collection of a fasting blood sample, 75 g of glucose should be dissolved in 250-300 ml of water and the solution should be drunk in 5 minutes. (WHO Tech Rep Ser 1985:727)
 - OGTT is not recommended for routine use. Possible use can be for patients with IFG and for women at risk of gestational diabetes.
 - After blood is collected from a patient, plasma should be separated from the cells within 60 minutes. BG decreases with time due to glycolysis, hence delayed analysis results in artificially low results. In the context of Seychelles, it may be better to ask the patient to have his/her blood collected directly at the laboratory (Victoria Hospital) when a new diagnosis of diabetes is at stake.
 - Diagnosis should not be made on capillary measurements, as capillary BG is less reliable than plasma BG. Capillary BG should be used only for monitoring purposes.
- Other tests (e.g. HbA1c) are useful for monitoring glycemia but should not be used for diagnosis

5.1.7. Treatment of diabetic patients: glycemic control

5.1.7.1. General goals of treatment

- Reduction of BG to normal or near-normal glycemia with appropriate lifestyle change, nutrition therapy and medication.
- Screening and treatment of concomitant risk factors associated with several diabetes complications (e.g. high blood pressure, lipid disorders, etc).
- Early detection and management of specific diabetes complications of (CVD, nephropathy, retinopathy, neuropathy).
- Because diabetes is a complex and life-long chronic condition, diabetic patients must be appropriately educated and trained to be able to manage their disease largely themselves.
- When the patient becomes an active participant in the management of his/her disease, adherence to effective therapy increases and diabetes-related complications decrease.
- As much as possible, diabetic patients should be trained to self-monitor their blood glucose (e.g. capillary blood analyzer or urinary stick/tape) and their BP so that they can assess themselves if their glycemic and BP targets are being achieved.

5.1.7.2 Target for glycemic control

- Blood glucose (BG) should be kept at normal or near-normal levels at all times (i.e. fasting BG <7.0 mmol/l; random BG <11.1 mmol/l).
- For purposes of monitoring (not diagnosis), glycemic control is best assessed with HbA1c because HbA1c reflects the average BG values over the 2-3 preceding months. HbA1c is < 6% in normoglycemic persons. Each 1% increase in HbA1c corresponds to a 35% increase in risk of microvascular disease and 14% increase in all cause and MI mortality.
 - Target HbA1c for diabetic patients should be < 7%.
 - HbA1c > 9% means poor glycemic control.
 - HbA1c should be checked at least once every year in well-controlled diabetic patients.
 - Because it integrates BG over 2-3 months, HbA1c should not be performed > 1 time every 3 months to assess changes in BG control.
 - HbA1c can be measured from non-fasting blood.

5.1.7.3. Medical nutrition therapy

- Generally, the principles for an appropriate diet for diabetic patients are similar to the principles of the 'balanced diet' recommended for the general public.
- The prescription of a diet must be individualized to patients to improve adherence (with a dietician).
- Patients must be taught to understand the interrelations between nutrition, physical exercise and medication so they can adhere to lifestyle/medications and be able to adapt their treatment to different situations (it is unreasonable to expect a patient to maintain a constant lifestyle, dietary and treatment plan).

Type I diabetes

- In children, provide adequate energy to ensure normal growth and development.
- Integrate insulin regimens into usual eating and physical habits.
- Patients should be trained to adapt their insulin regimen to their food intake and physical activity.

Type II diabetes

- A small weight reduction can substantially decrease insulin resistance and improve metabolic indicators. Hence, reducing total energy intake is critical for overweight diabetic patients.

- The total amount of carbohydrates, irrespective of their sources (low or high glycemic index), is the main factor influencing BG. However, fats or proteins cannot simply be substituted for carbohydrates due to adverse effects of fats or meat products (e.g. dyslipidemia, atherosclerosis, nephropathy). Carbohydrates should account for 55-60% of total caloric intake. (ADA 2002).
- Substitution of foods with a low glycemic index (e.g., rice, pasta, oats, starchy foods, certain raw fruits legumes) for those with a high glycemic index (sugar, cakes) may have some benefits on comorbid conditions (e.g. lower blood lipid levels and lower BP).
- Although they may not influence substantially glycemic control, vegetables, fish and fruits provide health promoters (e.g. n-2 fatty acids, micronutrients, flavonones, etc), which can importantly improve the CVD risk of diabetic patients.
- Water, sugar-free drinks or 'diet' drinks should be preferred to carbonated drinks.
- Fat intake should be limited to <30% of total caloric intake. Limiting fat intake helps control weight (fatty foods have the highest caloric content) and limiting saturated fats helps control blood lipids.
- Protein intake should be 10-20% of total energy intake. There is no evidence that low protein intake protects against the onset of renal disease. However, protein intake should be lowered (to 10-15%) after the onset of microalbuminuria/nephropathy as proteins accelerate the glomerular deterioration.
- The effect of alcohol on BG is often unpredictable (e.g. hypoglycemia, hyperglycemia) and alcohol use should be limited.

5.1.7.4. Physical activity and diabetes

Type 1 diabetes

- The BG response to exercise (whether increasing or decreasing glycemia) depends on various factors. physical conditioning of patient, prior physical activity, type and timing of food intake, integrity of autonomic nervous system, timing and type of previous insulin injections.
- Each patient must be assessed individually. Often 15 g or 30 g of carbohydrate should be added before, during or after a light or strenuous exercise.

Type 2 diabetes

- Physical exercise reduces insulin resistance and improves BG (independently of weight reduction). Diabetic patients should be advised to take at least 30 min of exercise on most days of the week.
- Because of diabetic autonomic neuropathy, the pulse rate or ischemic pain may be altered and the intensity of exercise may be better assessed on symptoms such as fatigue or discomfort.

5.1.7.5. Medications for glycemic control

- The goal of treatment is to achieve good BG control at all times (targets mentioned above).
- It is important to measure BG at various times of the day and the night to assess the effect of drug(s) in relationship to activities such as meals, exercise and stress and medication type and timing (particularly if Hb1Ac is high despite low fasting BG).
- Patients should be able to self-monitor their BG so they can adapt their lifestyle and treatment accordingly (e.g. doses of insulin) and be able to self-detect early glycemic deviations in special circumstances (e.g. excessive/restricted food intake, concomitant infection/disease, etc).
- Hypoglycemic treatment (particularly insulin) can be initiated more conveniently during a short stay at the hospital but final adjustments must be carried out on an outpatient basis when the patient has resumed his/her usual life and activities.

Type 1 diabetes

a) Insulin

- Insulin increases peripheral glucose intake, decreases insulin secretion and decreases hepatic glucose production.
- Regular insulin (Novorapid) has duration of action of 3-6 hours. Its effect starts immediately upon administration and maximal effect occurs after 1-3 hours.
- Long-acting biphasic insulin (Actraphane) or has duration of action of 18-24 hours, maximal effect after 7-15 hours.
- Insulin should typically be given several times per day for improved BG control (e.g. injections of short acting insulin before each meal in addition to 1 or 2 daily injection(s) of a long-acting insulin).
- Patients should be instructed on the symptoms of hypoglycemia, the utility of self-checking BG and the need to take 5-10 g of sugar in case of hypoglycemia.

b) Metformin

- Can be used in addition to insulin treatment and insulin dosage should be decreased accordingly.

Type 2 diabetes**a) Metformin (class of biguanides)**

- Can reduce HbA1c by 1-2%.
- Evidence that this drug reduces diabetes-related complications and CVD by 30-40% compared to diet therapy alone.
- Decreases hepatic glucose production at liver level and increases glucose uptake by muscles.
- Because it does not increase insulin secretion, metformin use is not associated with weight gain and causes much less often hypoglycemia than sulfonylureas.
- Metformin (or any biguanide) is often the drug of choice in type 2 diabetes because of the lower risk of hypoglycemia and the favorable effect on weight, as compared to sulfonylureas.
- Can be used as monotherapy or in combination with other classes of oral agents and/or insulin.
- A severe but extremely rare side effect is lactic acidosis (1 in 30,000 patient-years). Hence, avoid metformin in severe CHF, renal failure, liver failure, dye procedures (radiology), sepsis, and alcoholism. Use carefully after age of 80.
- Excreted unmetabolized by the kidney, hence avoid metformin if serum creatinine >132 mmol/l in men and > 124 mmol/l in women.
- Dosage: 500 mg tablets . Half-life 1-2 hours, action lasts 5-6 hours. Typically 1-2 tablets (immediate acting) 2-3 times per day with meals (1500-2500 mg per day) or 1g SR (max 2 tablets/daily)
- Take the tablet at the middle or the end of meals to reduce gastro-intestinal discomfort.
- Metformin can be used in combination with sulfonylureas and/or insulin (type 2 diabetes).

b) Glicazide (class of sulfonylureas, SU)

- Can reduce HbA1c by 1-2%.
- Trial (UPKDS) shows that SU reduces diabetes-related complications by 10-25% compared to diet therapy alone.
- SU stimulates insulin secretion by pancreas (if pancreas can still produce insulin, hence in early stages of type 2 diabetes).
- Side effects: exhausts insulin production over time, weight gain (typically 2-5 kg), hypoglycemia (particularly in elderly and those with impaired renal function).
- Most useful in thin patients with type 2 diabetes (not effective in type 1 diabetes).
- Metabolized in the liver and cleared by kidney, hence reduce dose proportionately to liver and renal failure.
- Dosage: 40mg tablet. Half-life: ~10 hours. Start medication progressively (risk of hypoglycemia), e.g. by steps of 2.5 mg every 14 days. In many patients, maximum glucose lowering effect is achieved with 10 mg (2 tablets before breakfast). Maximum dose 3-4 tablets per day (2 pills before breakfast, 1-2 tablet before evening meal).
- Take glibenclamide before meals with 1/2 – 1 glass of water.
- SU can be used in combination with biguanides and/or insulin in type 2 diabetes.

c) Insulin

- Insulin should be added to hypoglycemic medications (particularly metformin) or substituted for oral medications if BG cannot be controlled with diet, weight control and hypoglycemic medications.

5.1.8. Treatment of concomitant risk factors associated with complications of diabetes**5.1.8.1. Management of hypertension**

- Clinical trials have shown that control of BP reduces macrovascular complications (e.g. stroke, MI, CHF) and microvascular complications (e.g. renal failure, retinopathy) by as much as 30-50%.
- BP goal of <130/80 mmHg is reasonable if it can be safely achieved.
- Diuretics, beta-blockers (BB), calcium channel blockers (CCB), ACE inhibitors (ACEI) and angiotensin receptor blockers (ARB) can be used to lower BP in diabetic patients.
- ACEI (e.g. lisinopril, generally 20 mg OD) or ARB (e.g. Losartan, generally 50 mg OD) decrease the rate of progression of nephropathy and reduce CVD events in diabetic patients.
- In patients with microalbuminuria or clinical albuminuria/nephropathy, an ACEI or ARB should be strongly considered. If ACEI is not tolerated, ARB should be substituted, and inversely.

- If a combination needs to be used, consider including a diuretic (e.g. 2.5 mg bendrofluazide) due to demonstrated benefits and synergy with several medications, particularly ACEI/ARB.
- Monitor K and renal function, especially if an ACEI or ARB is used.
- Patients not achieving the target BP on 3 drugs and patients with severe renal disease should be referred to a specialist experienced in the care of hypertension.

5.1.8.2. Management of blood lipid disorders

- Control of abnormal blood lipid levels, particularly blood cholesterol, reduces coronary and cerebrovascular events by as much as ~20-30% in diabetic patients.
- Improved glycemetic control can affect favorably the blood lipid levels.
- A lipid-lowering drug should be considered if the ratio of total cholesterol / HDL cholesterol is >6 (or >5 if there is concomitant ischemic CVD) despite lifestyle intervention.
- Statins are effective and safe for controlling blood lipids in diabetic patients.

5.1.8.3. Smoking

- Smoking is associated with a 2-fold increase in all cause mortality and cardiovascular morbidity in diabetic patients.
- Diabetic smokers should be strongly encouraged to quit smoking in order to reduce their cardiovascular risk.
- Nicotine replacement therapy can be given safely to diabetic smokers who wish to quit.

5.1.9. Screening and management of diabetes complications

5.1.9.1. Cardiovascular disease

- The risk of CVD is double in diabetic patients compared to patients without diabetes and 80% of diabetic patients die from CVD.
- A tight control of BG, BP, blood lipid disorders and other risk factors (smoking) is of paramount importance to help prevent CVD in diabetic patients.
- Health professionals and patients should be aware that, because of diabetic neuropathy, ischemic chest pain may be attenuated and unrecognized in diabetic patients, which emphasizes the need for other tests to ascertain ischemic heart disease (e.g. enzymes, ECG).
- Low dose aspirin (75-250 mg/d) should be prescribed to diabetic patients with macrovascular disease and in diabetic patients aged ≥ 50 years and ≥ 1 other cardiovascular risk factor.

5.1.9.2. Diabetic nephropathy

- Nephropathy occurs in 20-40% of diabetic patients and it can be the single leading cause of end-stage renal disease.
- Diabetic nephropathy is much less likely to develop if BG and BP are tightly controlled (BP <130/80 mmHg, BS <7 mmol/l).
- Patients with diabetes should have plasma creatinine and albuminuria measured at least once per year.
- The simplest method to screen for microalbuminuria is to calculate the albumin-to-creatinine ratio in a random spot urine collection. The same approach can be used with a timed urine collection (e.g. 4-h, overnight).
- Microalbuminuria is defined for a proteinuria of 30-299 mg/24 h; macroalbuminuria (clinical albuminuria) for a proteinuria of ≥ 300 mg/d.
- The dosage of medications that are excreted by the kidney should be adjusted to the renal function.
- In all patients with microalbuminuria or more advanced renal function failure, particular efforts should be done to control BS (<7 mmol/l) and BP (<130/80 mmHg) in order to slower the deterioration of the renal function. An ACEI or ARB should be part of any treatment (with or without hypertension).
- In cases of clinical albuminuria, protein intake should be restricted to 0.8 g/kg of weight and per day (~10% of daily calories) in order to reduce further renal function deterioration.
- When the renal function is severely impaired (e.g. plasma creatinine >150 mmol/l), a nephrologist should follow the patient to anticipate the need for future health care (hemodialysis, possibility of kidney transplant, etc).

5.1.9.3. Diabetic retinopathy

- Diabetic nephropathy occurs in 20-40% of patients with diabetes and is the main cause of blindness in non-tropical countries.
- Retinopathy is unlikely to develop if BG and BP are tightly controlled (BP <130/85 mmHg, BS <7 mmol/l, HbA1c <7%).

- Laser therapy for the treatment of retinopathy is more successful when applied at an early stage.
- Fundoscopy should be made within 5 years of diabetes diagnosis and every 1-3 years thereafter.

5.1.9.4. Neuropathy and foot care

- Neuropathy can develop in people who have had >10 years diabetes, especially if BG is poorly controlled.
- Diabetic patients should be made well aware of the possible symptoms and signs of the diabetic neuropathy, including attenuated symptoms of hypo/hyper glycemia, decreased sensibility at peripheral level and foot wounds, intestinal dysfunction, attenuated ischemic chest pain, etc.
- Diabetic patients should be well informed on practical measures to prevent foot wounds, including the need to wear appropriate protective shoes or to be cautious with nail cutting, etc.
- Diabetic patients should be trained to manage foot wounds appropriately (both self-care behavior and ability to seek medical care).

5.1.10. Diabetes during pregnancy and gestational diabetes

Diabetes in pregnant women

- Diabetes during pregnancy is a major cause of morbidity and mortality for the fetus, inclusive miscarriage, stillbirth, neonates with heavy birth weight, small for dates, lethal or morbid malformations.
- The risk of malformations occurs mostly in the 6-8 first weeks of pregnancy and is proportionate to the glycemic levels, hence, the need for tight BG control in women with known diabetes who contemplate pregnancy.
- Gestational diabetes can also lead to macrosomia of the fetus and related obstetrical difficulties, hence the need for tight control of diabetes during pregnancy.
- Pregnancy can cause abnormal glucose tolerance in pregnant women who were not diabetic before pregnancy (gestational diabetes mellitus), hence the need to screen for BG in pregnant women.

Preconception care in women known to have type 1 diabetes or type 2 diabetes

- Fasting BG (FBG) should be below 5.3 mmol/l (95 mg/dl) and BG 2 hours after meals below 7.8 mmol/l (140 mg/dl) before conception is attempted (Indian Medical Guidelines). The same targets apply during pregnancy.
- Women contemplating pregnancy should participate in family planning.
- Oral antidiabetic agents should be discontinued before pregnancy and replaced with insulin.

Gestational diabetes (GDM)

- GDM is defined when criteria for diabetes or glucose intolerance are met.
- **Screening** for GDM should be done, at least, in all pregnant women at the first prenatal visit, between 24-28 weeks, and in case of excess weight and/or ultrasound signs of fetal macrosomia.
- During pregnancy, **diagnosis** of GDM is made if fasting plasma blood glucose (FBG) >5.3 mmol/l (>95 mg/dl) (ADA criteria) and/or BG 2 hours after 75 g glucose (OGTT) >7.8 mmol/l (>140 mg/dl) (WHO criteria).
- OGTT (75 mg glucose, WHO criteria) should be done in all pregnant women with fasting BG >5.3 mmol/l (>95 mg/dl) and in all women at high risk of diabetes: family history of diabetes, obesity (BMI >25 kg/m²), bad obstetric history (e.g. large for gestational age infant [>4 kg], fetal malformation, pre-eclampsia, polyhydramnios, etc), particularly if the woman is > 25 years old.
- HbA1c is not suitable for diagnosis of GDM
- HbA1c can be used for monitoring overall GDM control but not for day-to-day management.
- During pregnancy, the renal threshold for glucose is often lowered and glucosuria is therefore not a good indicator of GDM diagnosis or control.
- For the **management** (not diagnosis) of GDM, better control is achieved by concentrating on post-prandial BG values. It is practical to monitor BG 2 hours after breakfast and/or 2 hours after lunch. Values 2 hours after meals should be < 6.7 mmol/l (120 mg/dl).
- BG > 6.7 mmol/l (>120 mg/dl) 2 hours after meals require insulin for control.
- Oral hypoglycemic drugs are not advisable during pregnancy.
- Monitoring of BG (particularly 2 hours after meals) should be frequent after the initiation of insulin (e.g. twice a week), because some patients have severe insulin resistance and may require fairly high doses of insulin to achieve control.
- Once control is established, monitoring can be done every 2 weeks during the second trimester and weekly during the third trimester.
- Single injection of intermediate insulin given in the morning may be sufficient. If the requirement goes up, multiple short acting injections will be required. Split mixed doses can also be used.

- Insulin should be stopped on the day of delivery or cesarean section due to risk of hypoglycemia.
- GDM alone is not an indication for cesarean section unless there is macrosomia with probable cephalopelvic disproportion.
- After delivery all infants should be checked for hypoglycemia and hypocalcemia and if necessary given glucose intravenously.
- GDM patients should undergo a standard 2 hours OGTT with 75 g of glucose 6 weeks and then 6 months after delivery and thereafter every year (40% risk of developing type 2 diabetes within 15 years)..

5.1.11. Special conditions, preventive care

Immunization

- Diabetic patients aged 6 months or older should receive annual influenza vaccine.
- All diabetic patients should receive at least one lifetime pneumococcal vaccine and one-time revaccination after age of 64 if vaccine was given >5 years ago.

Older adults with diabetes

- It is reasonable to set higher glycemic target goals for patients with life-limiting comorbid illnesses or cognitive or functional impairment.
- Such patients are less likely to benefit from reducing microvascular complications and more likely to suffer serious adverse effects from hypoglycemia.
- Reasonable treatment targets, not based on evidence, can be 8 mmol/l for fasting BG and 12 mmol/l for postprandial BG.

5.1.12. Check list of responsibilities of diabetic patients and those of health professionals

Patient responsibilities	Physician-nurse-dietician responsibilities
<ul style="list-style-type: none"> • Monitoring of blood glucose • Knowledge of personal BG and its meaning • Exercise program • Adherence to dietary guidelines • Blood pressure monitoring • Smoking cessation • Consistent use of aspirin • Overcoming psychological and other barriers • Foot and eye care • Understanding targets for control of BG and BP • Communication with physician and diabetes care team • Keeping appointments • Record keeping • Adherence to medication regimen • Evaluation of physician and diabetes care team • Treating and modifying 'targets' in collaboration with physician 	<ul style="list-style-type: none"> • Adherence to the system of intensive self-management of diabetes • Measurement of outcomes • Determination of patient satisfaction • Maintenance of communication with team • Development of evaluation program: include safety in taking medication and identification of patient misconceptions • Listening to patient concerns • Establishing and maintaining follow-up schedule • Documentation of patient care • Supervision of the patient's diabetes education • Encouragement of patient in use of preventive measures and risk reduction • Supervision of proper foot care procedures

5.1.13. Checklist of selected investigations in diabetic patients (list is not exhaustive)

	Every visit	Quarterly or biannually	Once per year	Once every 2-3 years
Glycemic control	BG if glycemia is uncontrolled and if any therapy is being changed	(if available): HbA1c; BG (both fasting and random)		
Blood pressure	Yes if BP \geq 130/85 on previous visit	Yes if BP <130/85 on previous visit		
Blood lipids and metabolic control		Serum TC, HDLC, TG if treatment is initiated or changed	Serum TC, HDLC, TG if blood lipids well controlled	
Renal function and electrolytes		Serum creatinine & urea if renal function is impaired; Serum potassium	Serum creatinine and urea if renal function is preserved; Albuminuria (micro) on spot urine collection	Refer to nephrologist when renal function declines, e.g. creatinine \geq 150 mmol/l)
Eyes (dilated eye examination by		If retinopathy is progressing (as assessed		1 st exam: when diagnosis is made for type 2

	Every visit	Quarterly or biannually	Once per year	Once every 2-3 years
ophthalmologist)		by specialist)		diabetes and 5 years after onset for type 1 diabetes; then every 1-2 years.
Examination of feet	Visual examination if diabetes lasts for >5 years or is poorly controlled	Visual examination if diabetes well controlled, otherwise more often	Detailed examination (skin, pulses, etc)	
Immunization			Immunization for influenza yearly.	Immunization for pneumococcus once in life; repeat >65 yrs

5.1.14. Caution

Appropriate medical treatment in an individual patient may differ from guideline recommendations in special circumstances (e.g. intolerance or allergic reaction to medication, poor compliance to treatment, concomitant morbid condition, patients with limited life expectancy) and/or must be adjusted to circumstances not addressed in these guidelines.

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(These references are available in full text at UPCCD)

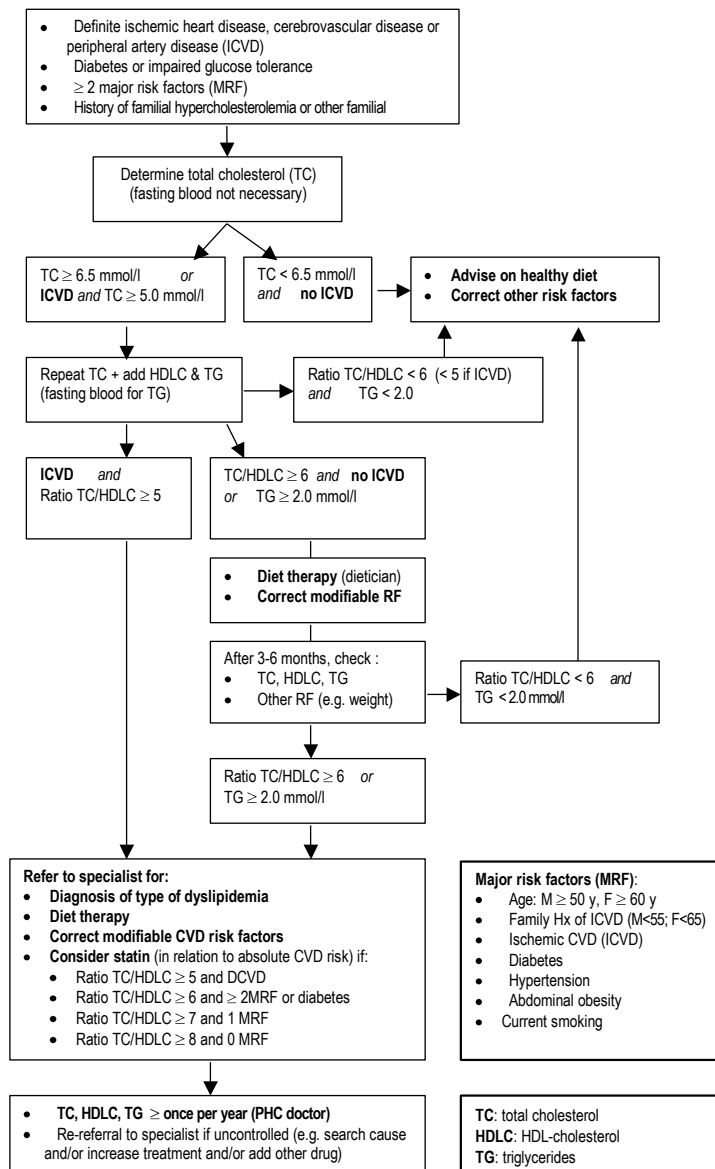
5.2 Blood lipid disorders

High blood cholesterol is a major modifiable cause of cardiovascular morbidity and mortality, particularly for ischemic heart disease. Blood lipid disorders affect a large proportion of the population, e.g. ~20% of all adults in Seychelles. Dietary advice and pharmacological treatment are effective in controlling blood lipid disorders and reduce cardiovascular risk.

Content

1. Flowchart for the screening, diagnosis, treatment and follow-up of patients with blood lipid disorders
2. Dietary and lifestyle interventions for blood lipid disorders
3. Pharmacological treatment with statins
4. Adapting pharmacological treatment to patients' absolute CVD risk
5. Relationship between blood lipoproteins and blood cholesterol
6. Normal blood lipid levels
7. TC/HDL ratio to guide the management of blood lipid disorders
8. Caution
9. Selected references

5.2.1. Flowchart for the screening, diagnosis, treatment and follow-up of patients with blood lipid disorders



5.2.2. Dietary and lifestyle interventions for blood lipid disorders

- Blood lipid disorders divide in several primary disorders, which may be characterized by high blood cholesterol, high blood triglycerides or both.
- Dietary therapy can reduce blood TC by 5-10% and may have a large effect on hypertriglyceridemia.
- The objective of the dietary therapy is not only to reduce blood cholesterol (e.g. by reducing the intake of saturated fats and increasing the intake of foods rich in n-3 fatty acids, etc) but also to increase the intake of nutrients that protect against atherosclerosis through mechanisms independent of blood lipid levels (e.g. some minerals and vitamins, flavonoids, etc). This should be explained to all patients to promote compliance.

Main dietary measures for the control of lipid disorders can be summarized as follows:

- Regular practice of physical exercise (e.g. ≥ 20 -30 min on most days of the week), refraining from smoking and a lean body weight (body mass index $< 25 \text{ kg/m}^2$) favorably influence blood lipid levels by increasing HDL cholesterol (the 'good' cholesterol) and reducing LDL-cholesterol (the 'bad' cholesterol).
- Physical exercise and a health diet also decrease the risk of CVD through mechanisms not related to blood lipids (e.g. through lowering BP and decreasing blood glucose intolerance), hence an added benefit.

Hypertriglyceridemia ←	Combined hyperlipidemia	→Hypercholesterolemia
↓ alcohol (≤ 2 units per day)		
↓ weight excess		
↓ simple carbohydrates (e.g. sugar, carbonated drinks, sweets, cakes)		
↑ complex carbohydrates (e.g. grains, starchy foods, vegetables)		
	↓ saturated fats (e.g. fried foods, snacks, fatty cuts of meat, bacon, butter, full fat milk and milk products, coconut oil, palm -turkey- oil)	
	↑ mono-/poly-unsaturated fats (e.g. sunflower/maize/olive oils, fish, avocado)	
	↑ soluble fibers (e.g. oat, vegetables, roots (gro manze), pulses, peas, fruit)	
	↓ cholesterol (e.g. eggs, chicken skin, seafood)	

5.2.3. Pharmacological treatment with statins

- Dietary and lifestyle measures should be implemented and evaluated for 3-6 months before a lipid-lowering medication is initiated.
- However, medication can be started earlier (or immediately) in patients with particular high CVD risk, e.g. persons with established IHD.
- Statins improve blood levels of all 3 main lipids. Statins (e.g. 10-20 mg atorvastatin) typically reduce TC by 30-40%, reduce TG by 10-30% and increase HDLC by 5-10%. Hence statins can reduce CVD risk by 50-70%.
- Recent research suggests that statins also reduce the CVD risk through mechanisms independent of lipid level modification, hence an added benefit of statins for decreasing the risk of CVD.
- Most hypercholesterolemic patients respond well to 10 mg atorvastatin per day. The dose can be increased up to 40 mg/day (to obtain the expected maximum 30-40% reduction in TC).
- **One 10-mg pill of atorvastatin costs SR1.5 (Oct 2002), a cost of SR540.00 per year!**
- Hence pharmacological treatment should first target patients at highest CVD risk, e.g. patients with established ischemic CVD, diabetes or multiple CVD risk factors.
- Statins are effective to control abnormal cholesterol but they do not cure such disorders. Therefore therapy should be taken for years or for life in most patients.
- Statins are safe and well tolerated. The incidence of side effects was similar in the groups allocated to statin or placebo in intervention trials. Side effects included mainly gastrointestinal upset and, exceptionally, muscle aches and hepatitis.
- GOT, GPT and CK should be checked before treatment to exclude an underlying liver or muscle disorder.
- Treatment with a statin should be interrupted in patients who develop symptomatic hepatitis or myositis.
- Target blood lipid levels for patients under treatment are displayed in the flowchart.

5.2.4. Pharmacological treatment should be adapted to a patient's absolute risk of CVD

- Lowering TC will bring the same *relative* risk reduction to all hypercholesterolemic patients but it will bring more *absolute* benefit to patients at high risk of CVD than in patients at low CVD risk.
- This emphasizes the need to prescribe a treatment first in patients with a high CVD risk.
- As an indication for targeting appropriate patients for treatment, consider the following example:

	Risk of CVD over next 10 years if not treated	Risk of CVD over next 10 years if treated (e.g. statin)	Relative risk reduction	Absolute risk reduction	Number of patients needed to treat (NNT) for 10 years to 'avoid' CVD in 1 patient
A) Man 55 with high TC and no other risk factors	5%	3%	40%	2%	50
B) Man 55, with high TC and high BP and diabetes	50%	30%	40%	20%	5
Comments	Largely different baseline risk in the 2 patients		Same relative reduction of risk in both patients	Much larger absolute risk reduction in patient at high risk	Treatment is more cost effective in patients at high risk

Similarly to other chronic conditions, blood lipid disorders must generally be treated for years or life-long.

5.2.5. Relationship between blood lipoproteins and blood cholesterol

- Cholesterol is transported in the blood within several types of large lipoproteins particles. The most significant lipoproteins are low-density lipoproteins (LDL) and high-density lipoproteins (HDL). These lipoproteins are made of various lipids (cholesterol, triglycerides, phospholipids, etc). They also include large proteins ('apoproteins', e.g. ApoA in HDL, ApoB in LDL, etc) that make lipoproteins soluble in the blood.
- Blood cholesterol is measured as total cholesterol (TC) -which quantifies the cholesterol contained in all lipoproteins-, HDL-cholesterol (HDLC) -which quantifies the cholesterol contained in the HDL particles- and LDL-cholesterol (LDLC) -which quantifies the cholesterol contained in the LDL particles-.
- The measurement of LDLC requires complex laboratory techniques (e.g. ultracentrifugation). However, LDLC can also be calculated as $LDLC = TC - HDLC - TG/3$ (mmol/l), if TG is not elevated.
- Because >60% of cholesterol from all lipoproteins (TC) is found in the LDL particles, TC is a fairly good indirect estimate of the blood concentration of LDLC.
- In conclusion, it is more practical to manage blood lipid disorders based on TC (as an indicator of LDLC, the 'bad' cholesterol) and HDLC (the 'good' cholesterol) than based on LDLC and HDLC.

5.2.6. Normal blood lipid levels

- There is a strong direct relationship between total cholesterol (TC) or low-density lipoproteins (LDLC) and CVD. A 10% decrease in TC reduces the risk of ischemic CVD by 20-30%. Hence, the lower the level of TC the best it is for a patient.
- Plasma concentration of TC <5.0 mmol/l is considered as 'favorable', TC ≥ 5.0 and <6.5 mmol/l as 'elevated', and TC mmol/l ≥ 6.5 as 'high'.
- Plasma concentration of HDLC is a powerful *preventive factor* of CVD. Hence, the higher the level of HDLC, the best it is for a patient.
- HDLC <0.9 mmol/l is considered to be 'detrimental', HDLC 0.9-1.4 mmol/l 'normal', and HDLC >1.4 mmol/l 'favorable'.
- The role of TG on CVD is less well established. TG is often high when HDLC is low. In addition, plasma concentration of TG must be known to be able to calculate LDLC concentration.

5.2.7. The TC/HDLC ratio is helpful for guiding the management of blood lipid disorders

- Because of the inverse effects of LDLC [or TC] (the 'bad' cholesterol) and HDLC (the 'good' cholesterol) on CVD, management of lipid disorders should be based on the ratio TC/HDLC.
- Using this ratio, the lower the ratio TC/HDLC the best it is and the higher this ratio the worst it is.
- A TC/HDLC ratio <5 is favorable. A TC/HDLC ratio ≥ 6 is unfavorable. A ratio of 7 or 8 is associated with a largely increased CVD risk.
- For example, a cholesterol-lowering medication should not be prescribed in a patient with TC = 6.5 mmol/l and HDLC = 1.8 mmol/l (since the TC/HDLC ratio is still favorable at 3.6).

5.2.8. Caution

- Appropriate medical treatment in an individual patient may differ from guideline recommendations in special circumstances (e.g. intolerance or allergic reaction to medication, poor compliance to treatment, concomitant morbid condition, patients with limited life expectancy) and/or must be adjusted to circumstances not addressed in these guidelines.

5.2.9. Selected references

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(These references are available in full text at UPCCD)

CHAPTER 6 - EYE CONDITIONS

6.1. Conjunctivitis

Description

A broad term used for inflammatory conditions of the conjunctiva:

- it may be infectious, caused by bacteria or viruses
- or have other causes such as allergy, foreign bodies, irritation (chemical)
- consider a foreign body, acute glaucoma, when there is conjunctivitis in one eye only

6.1.1. Conjunctivitis, allergic

Description

Inflammatory conditions of the conjunctiva caused by allergy to pollen, grasses, animals, etc.

- there is usually a history of allergies, including hay fever, personal or family history of asthma
- itchy, runny eyes
- recurrent and seasonal

Management objectives

- relieve symptoms

Non-drug treatment

- remove contact with susceptible allergens e.g. kapok pillow.

Drug treatment: conservative treatment only

- Sodium cromoglycate 2%, 1 to 2 drops 4 times daily (in adults and children)
 - chlorpheniramine oral only for severe cases
- a) children 6 months - 1 year: 1 mg twice daily
 b) children 1-5 years: 1-2 mg three times daily
 c) children 5- 12 years: 2-4 mg 3-4 times daily
 d) children over 12 years and adults: 4 mg 3-4 times daily

Referral

- person using contact lenses
- non-response to conservative treatment

6.1.2. Conjunctivitis, bacterial

Description

An inflammatory purulent condition of the conjunctiva caused by bacteria.

Management objectives

- relieve symptoms
- remove the cause
- identify conditions for referral

Non-drug treatment

- personal hygiene is important in prevention and treatment
- advise the patient to use his/her own towels
- to wash the face and cleanse the eyes frequently
- to wash hands thoroughly before applying ophthalmic ointment
- treat conjunctivitis in one eye with special care to avoid spread of infection to the other eye
- teach patient or caregiver how to apply eye ointment

Drug treatment

- 1% chloramphenicol ophthalmic ointment applied every 6-8 hours for 7 days. If allergic to chloramphenicol give gentamycin eye drops

Referral

- No response after 7 days

6.1.3. Conjunctivitis, viral and epidemic viral**Description**

Inflammatory conditions caused by a virus. Many upper respiratory tract viral infections are accompanied by conjunctivitis. These conditions are highly contagious and often spread through whole communities. Both eyes are affected.

Management objectives

- relieve symptoms
- remove the cause
- identify conditions for referral

Non-drug treatment

- personal hygiene
- encourage use of own towels
- wash the face and cleanse the eyes frequently
- discourage the use of home remedies, like milk, urine, saliva, etc. as this will cause secondary infection
- **avoid** spread of infection to the other eye and persons
- teach patients or caregivers how to instil eye medication (ointment/drops)

Drug treatment: None but if secondary bacterial treat as bacterial**Note**

Patients must not share the same eye drops.

!CAUTION! Exclude the following: herpes keratitis, trauma

Referral

- unilateral disease
- corneal ulceration
- corneal opacification (clouding)
- pupil irregularity
- diminished vision
- severe pain
- No response after 7 days

6.2. Conjunctivitis of the newborn (ophthalmia neonatorum) less than 28 days**Description**

Inflammation of the conjunctiva in the neonatal period.

- the most common cause is infection acquired during delivery
- it is hard to differentiate between the various infectious causes
- the condition is preventable and no baby should get it

Management objectives

- prevent the condition from developing and spreading
- cure it when it does occur

Drug treatment**Prophylaxis**

- routine administration of 1% silver nitrate ophthalmic drops at birth to all babies
- apply to both eyes

Referral

- **any** purulent conjunctivitis in the newborn

6.3. Eye, chemical burn

See Chapter 19 - Trauma and Emergencies

6.4. Eye injury, foreign body

See chapter 19- Trauma and Emergencies

6.5. Glaucoma, acute

Description

Raised intraocular pressure usually in one eye only.

- **clinical features:**

- a) severe pain in eye (acute)
- b) redness
- c) affected eyeball may feel firmer
- d) haloes or bright rings around light
- e) one pupil dilated
- f) headache - unilateral, temporal
- g) nausea and vomiting if severe

Management objectives

- identify all cases of acute glaucoma
- initiate treatment
- relieve the increased pressure within 2-3 hours
- refer all cases

Drug treatment

- initiate treatment and then refer within 12 hours
- acetazolamide oral, 500 mg immediately, followed by 250 mg 6 hourly
- 1% pilocarpine eye drops instilled into the affected eye every 15-30 minutes for 4 doses

! CAUTION!

- chronic glaucoma may cause blindness due to continuous high ocular pressure
- all patients above 40 years should be referred at least once a year for screening
- any patient with relatives with history of glaucoma should be referred

CHAPTER 7 - FAMILY PLANNING

7.1. Contraception

7.1. Contraception, barrier methods

- condoms of varying makes, e.g. rubber latex, lubricated smooth surface with teat closes end

7.1.2. Contraception, vaginal

- spermicidal jelly 0.1 g active ingredient/5 g in tube with applicator

7.1.3. Contraception, intrauterine contraceptive device (IUCD)

- 250 - short type for a uterus with sound length of 6 cm
- 375 - standard type for a uterus with sound length of over 7 cm

7.1.4. Injectable contraceptives

- medroxyprogesterone acetate 150 mg long-acting (2 types)
- norethisterone enanthate 200 mg

7.1.5. Oral contraceptives

monophasic preparation progestogen only tablets

- levonorgestrel 0.03 mg

monophasic preparations - combination formula containing in each tablet

- formula 1: levonorgestrel (as progestogen) 0.15 mg and ethinyl oestradiol (as oestrogen) 0.03 mg
- formula 2: norgestrel (as progestogen) 0.5 mg and ethinyl oestradiol (as oestrogen) 0.05 mg

biphasic preparations - combination formula

- levonorgestrel (as progestogen) and ethinyl oestradiol (as oestrogen)
 - a) 11 tablets levonorgestrel 0.05 mg and ethinyl oestradiol 0.05 mg
 - b) 10 tablets levonorgestrel 0.125 mg and ethinyl oestradiol 0.05 mg

triphasic preparations - combination formula

- levonorgestrel (as progestogen) and ethinyl oestradiol (as oestrogen)
 - a) 6 tablets levonorgestrel 0.05 mg and ethinyl oestradiol 0.03 mg
 - b) 5 tablets levonorgestrel 0.075 mg and ethinyl oestradiol 0.04 mg
 - c) 10 tablets levonorgestrel 0.125 mg and ethinyl oestradiol 0.03 mg

7.1.6. Post-coital contraception

!CAUTION! Must be used within 72 hours of unprotected intercourse

Use monophasic preparations formula 2 (see section 7.04.2).

- norgestrel (as progestogen) 0.5 mg and ethinyl oestradiol (as oestrogen) 0.05 mg
 - a) take 2 tablets after unprotected intercourse and 2 tablets 12 hours later

CHAPTER 8 - GASTRO-INTESTINAL CONDITIONS

8.1. Abdominal pain/dyspepsia/heartburn/indigestion

Description

Abdominal pain/dyspepsia/heartburn/indigestion are common conditions which often present with non-specific abdominal discomfort. The pain is not associated with the following:

- meals
 - weight loss
 - minimal change in bowel habits
 - blood in stools
 - stress or psychogenic conditions
-
- any abdominal pain or discomfort must be assessed for the following features:
 - a) duration
 - b) severity
 - c) location
 - d) type
 - e) accompanying clinical features, e.g. nausea, vomiting, constipation, diarrhoea, tenderness, fever, tachycardia, distension
 - f) activity level of patients with severe pain, e.g. restlessness or inability to lie still
 - ongoing heartburn or indigestion are difficult diagnostic problems because they are often non-specific:
 - a) obtain clear description of the specific symptoms
 - b) perform a thorough physical examination to see if referral is needed
 - c) the differential diagnosis includes:
 - d) peptic ulcer disease
 - e) reflux oesophagitis
 - f) gastric cancer
 - g) pancreatitis
 - h) pancreatic carcinoma
 - i) gallbladder disease
 - j) worm infestation
 - k) abuse of purgatives
 - intermittent indigestion/heartburn/dyspepsia may be associated with:
 - a) spicy food
 - b) alcohol
 - c) carbonated drinks
 - d) excessive smoking
 - e) use of NSAIDs, e.g. ibuprofen, aspirin

!CAUTION! Always consider the possibility of a differential diagnosis

Management objectives

- remove the cause
- relieve the pain
- modify lifestyle
- identify cases that need referral for further investigation

Non-drug treatment

- stop smoking
- limit alcohol intake
- eat small frequent meals
- check haemoglobin
- check for a drug cause likely to be associated with dyspeptic symptoms
- educate patients on normal bowel functions and frequency

Drug treatment

- initiate drug therapy only after full assessment
- aluminium hydroxide 250 mg/magnesium trisilicate 500 mg chewed or sucked: 2-4 tablets when necessary (maximum - 16 tablets daily or continuous treatment for 7 days)
- Ranitidine 150mg tablet twice daily

Referral

- abdominal pain at specific sites:
 - a) right iliac fossa
 - b) lower abdomen
 - c) epigastric
- failure of treatment
- uncertain diagnosis
- abdominal mass
- signs of peritonitis

8.2. Amoebic dysentery

Description

A condition characterised by loose stools or diarrhoea that is caused by the parasite *Entamoeba histolytica*.

- loose stools or diarrhoea (rarely) with:
 - a) blood
 - b) mucus
 - c) unpleasant odour
 - d) may alternate with constipation
 - e) usually there is no fever
 - f) colicky pain

Management objectives

- Rehydrate the patient in the acute phase. If the general condition of the patient is good can be treated at PHC level.

Drug treatment

- in case of dehydration see rehydration in acute diarrhoea
- in cases confirmed by identification of organisms on wet stools:
- metronidazole oral for 5 days. Take tablets with or after food and the suspension 1 hour before food

Children: 10mg/kg Tds

Adults: 500mg Tds

8.3. Anal conditions

8.3.1. Anal fissures

Description

Painful small cracks just inside the anal margin:

- often seen together with a sentinel pile or external haemorrhoids
- may cause spasm of the anal sphincter

Management objectives

- treat symptomatically
- refer severe cases

Non-drug treatment

- dietary advice to promote soft stools

Drug treatment

- bismuth subgallate compound ointment applied twice daily

- 1% Lignocain gel applied after each bowel action
 - liquid paraffin oral at bedtime may be indicated in some patients for short-term use (3-5days):
- a) **children:** 5 ml
b) **adults:** 15-25 ml

Referral

- severe pain
- recurrent episodes
- poor response to symptomatic treatment

8.3.2. Haemorrhoids

Description

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

- in older patients consider a diagnosis of underlying carcinoma

Management objectives

- symptomatic treatment
- dietary advice
- refer for surgical intervention if necessary

Non-drug treatment

- high-fibre diet
- counsel against chronic use of laxatives
- straining at stool

Drug treatment

- symptomatic treatment includes:
- a) bismuth subgallate compoud ointment/suppositories applied 2-4 times daily
b) 1% lignocaine cream applied after each bowel action

Referral

- surgical referral if the following haemorrhoid features are present:
- a) cannot be reduced
b) thrombosed

8.4. Appendicitis

All patients with suspected appendicitis should be referred.

8.5. Bacillary dysentery (shigellosis)

Description

Acute infection of the bowel usually caused by Shigella micro-organisms.

- there is sudden onset diarrhoea with:
- a) bloody stools
b) mucus in the stools
c) fever

Management objectives

- prevent dehydration
- prevent the spread to other people
- refer serious cases

Non-drug treatment

- prevent spread of micro-organism by:
- a) preventing contamination of food and water through good sanitation

- b) thorough hand washing before handling food
- c) washing of soiled garments and bed clothes

Drug treatment

- first confirm diagnosis of blood and mucus in watery stools
- treat vigorously as follows
 - a) oral rehydration solution sachet
 - IV fluids
 - a) children: ringer lactate/dextrose saline
 - b) adults: 5% dextrose in 0.9% sodium chloride
 - Ciprofloxacin 500mg oral 12 hourly for 5 days
 - a) infants 0-6 months: 62.5 mg??
 - b) children 6 months - 10 years: 125 mg??

Referral

- malnutrition
- severe illness
- dehydration
- no improvement after 3 days treatment

8.6. Cholera

Note: a notifiable condition

Description

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

- clinical features include:
 - a) rice water appearance of stools
 - b) no blood in stools
 - c) no pus in stools
 - d) no foecal odour
 - e) possible vomiting
 - f) rapid severe dehydration

Management objectives

- prevent dehydration
- prevent the spread to other people
- refer serious cases
- notify the condition

If suspected immediately refer

8.7. Constipation

Description

A condition of decreased frequency of bowel action for the individual.

- there is a wide variation of “normal” and this must be assessed in each patient
- characterised by a change in usual bowel habits and dry, hard stools
- constipation may have many causes, some of which are serious:
 - a) incorrect diet (fiber and fluid)
 - b) lack of exercise
 - c) pregnancy
 - d) old age
 - e) certain drugs

- f) metabolic
- g) endocrine
- h) neurogenic
- i) lower bowel abnormalities
- j) psychogenic disorders
- k) chronic use of enemas and laxatives
- l) cancer of the bowel
- m) ignoring nature's call

!CAUTION! Be suspicious of a sudden change in bowel habits as there is a possibility of cancer of the large bowel

Management objectives

- identify cases for referral
- symptomatic relief
- advise on diet and lifestyle

Non-drug treatment

- encourage exercise
- encourage food rich in fibre, e.g. vegetables, oatmeal, fruits and bran
- encourage a regular time for bowel motion even if there is no urge
- discourage continuous use of laxatives

Drug treatment

- ispaghula husk 1-2 teaspoonful
- a) 2 tablets at night
- b) may be increased to 4 tablets in resistant cases

!CAUTION! Prolonged severe constipation may present with overflow "diarrhoea"

Referral

- recent change in bowel habits, especially with blood in stool.
- faecal impaction
- poor response to non-drug treatment
- where the cause of constipation is uncertain

8.8. Diarrhoea, acute

!CAUTION! There is no place for antidiarrhoeal preparations in the treatment of acute diarrhoea

8.8.1. Diarrhoea in children

Description

Sudden onset diarrhoea with or without vomiting in children.

- the microbiological cause of these conditions cannot be diagnosed at a primary care level without laboratory investigation
- it is commonly caused by a virus but may be caused by a bacterial or parasitic disease that may have diarrhoea as one of the main symptoms, e.g.
 - a) Cholera
 - b) Shigellosis (bacillary dysentery)
 - c) Giardiasis
 - d) worm infestation
- consider that it may be an epidemic if many patients are infected at the same time

ASSESSMENT OF HYDRATION

DEHYDRATION	CLINICAL FEATURES
moderate*	<ul style="list-style-type: none"> • irritable • sunken eyes • thirst • skin turgor - skin pinch on the abdominal wall goes back in less than 2 seconds
severe*	<ul style="list-style-type: none"> • apathetic/unconscious • sunken eyes • skin turgor - skin pinch on the abdominal wall goes back in more than 2 seconds • delayed capillary refilling

* two of the signs in each category should be present to classify the severity of the dehydration

Management objectives

- maintain adequate hydration
- prevent epidemics

Drug treatment

- moderate dehydration - administer oral rehydration solution
 - a) 75 ml/kg administered over 4 hours
- severe dehydration - administer IV fluids
 - b) start with dextrose saline, then admit

!CAUTION! There is no place for antidiarrhoeal preparations in the treatment of acute diarrhoea

Referral

- dehydration together with other complications

8.8.2 Acute diarrhoea without blood in adults**Description**

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

Management objectives

- maintain adequate hydration

Drug treatment

- treat vigorously as acute diarrhoea
 - a) oral rehydration solution

Referral

- diarrhoea with complications

!CAUTION! There is no place for antidiarrhoeal preparations in the treatment of acute diarrhoea

8.8.3. Chronic diarrhoea in adults**Description**

Diarrhoea lasting more than 2 weeks.

- serious underlying causes like cancer of the bowel or AIDS may be present
- some causes may be easily treatable

Referral

- all cases

8.9. Giardiasis**Description**

Acute or chronic diarrhoea that is unresponsive to conservative management.

- the stools are characterised by:
 - a) bulky
 - b) greasy
 - c) frothy
 - d) smells offensive

Drug treatment

- treat vigorously as acute diarrhoea
- oral rehydration solution
- **IV fluids:** 5% dextrose in 0.18% sodium chloride
- metronidazole oral for 5 days. Take tablets with or after food and the suspension 1 hour before food
 - a) children 1-3 years: 50 mg 8 hourly
 - b) children 4-7 years: 100 mg 12 hourly
 - c) children 8-10 years: 100 mg 8 hourly
 - d) children over 10 years and adults: 200 mg 8 hourly

Referral

- all cases not responding to oral treatment

8.10. Helminthic infestation - excluding tapeworm

Description

Types of worm infestation and the characteristics as shown in the table below.

- check for anaemia

TYPE OF WORMS	DESCRIPTION	OTHER SIGNS
Roundworms Ascaris lumbricoides	<ul style="list-style-type: none"> • long pink/white worms • often seen in the stools 	<ul style="list-style-type: none"> • cough • if there is vomiting consider intestinal obstruction
Threadworms Enterobius vermicularis	<ul style="list-style-type: none"> • white and thread-like • often seen in the stools 	<ul style="list-style-type: none"> • anal itching - worse at night • self-infection common
Whipworms Trichuriasis	<ul style="list-style-type: none"> • worms and eggs in the stools 	<ul style="list-style-type: none"> • no symptoms light infestations • abdominal pain • diarrhoea • possible anaemia and rectal prolapse • abdominal discomfort • weight loss

Non-drug treatment

- patient counselling
- wash hands with soap and water:
 - a) after passing a stool
 - b) before working with food
- keep fingernails short
- wash fruit and vegetables well or cook
- keep toilet seats clean
- teach children to use toilets and to wash hands
- do not pollute the soil with sewage or sludge
- dispose of faeces properly

Drug treatment

- mebendazole 100mg twice daily oral for 3 days

children 1-2 years: levamisole 40mg/5ml 5ml stat

a) adults and children over 2 years:

- 100 mg twice daily for 3 days or 500 mg as a single dose
- repeat after 4 weeks if needed

!CAUTION! Anthelmintic drugs including mebendazole are **not safe in pregnancy** as they may cause congenital defects. Delay treatment until after delivery. Treat underlying anaemia if present

Referral

- abdomen tenderness
- pain and vomiting
- pregnancy

8.11. Helminthic infestation (tapeworm)

Description

Infestation with one of the types of tapeworm listed below occurs after eating infected, undercooked or raw meat like beef or pork.

- beef tapeworm *Taenia saginata*
- pork tapeworm *Taenia solium*
- the infestation may present with:
 - a) vague abdominal pain
 - b) diarrhoea
 - c) weight loss
 - d) flat white worm segments seen in the stool

Management objectives

- prevent spread
- eliminate the tapeworm

Non-drug treatment

- health education on adequate preparation of potentially infected meat

Drug treatment

- if the patient has diarrhoea, wait for it to settle
- sodium sulphate oral 250 mg/kg dissolved in 250 ml water as a single dose purgative
 - a) if the patient is constipated, administer it the evening before treatment
 - b) administer it to all patients 2 hours after the dose of niclosamide
- niclosamide oral 500 mg as a single dose after a light breakfast
 - a) **children under 2 years:** 1 tablet
 - b) **children 2-6 years:** 2 tablets, grind tablets finely and mix with a little water
 - c) **children over 6 years and adults:** 4 tablets, chew tablets and wash down with water

!CAUTION! treat pregnant women as there is a danger of neurocysticercosis

Referral

- abdominal tenderness or pain
- abdominal masses
- vomiting
- suspect cysts in the brain if there are:
 - a) seizures
 - b) severe headaches
 - c) nausea
 - d) vomiting
 - e) progressive loss of visual acuity

8.12. Nausea and vomiting, non-specific

Description

There are many possible causes of nausea and vomiting:

- it is called non-specific even when organic causes are known, e.g.:
 - a) early pregnancy
 - b) depression
 - c) gastro-intestinal disease
 - d) liver disease
 - e) renal failure

- assess the vomiting because there are many possible serious causes
- establish if the vomiting is associated with:
 - a) nausea
 - b) abdominal pain
 - c) diarrhoea
 - d) food intake
 - e) drugs, e.g. iron preparations, digitals
 - f) the sequence of the illness, e.g. migraine

- vomiting alone may be a symptom of many conditions, e.g. motion sickness (vertigo and vomiting under specific circumstances)
- exclude alcohol abuse as a cause

Management objectives

- symptomatic relief
- prevent dehydration
- identify cases for referral

Non-drug treatment

- withhold food for a period or give frequent small meals (do this with caution in children)
- clear fluids
- maintain adequate hydration

Drug treatment

- oral rehydration solution sachet
- IV fluid rehydration for 3 days only (see acute diarrhoea 8.07.1)

Referral

- immediately if patients are:
 - a) dehydrated
 - b) shocked
 - c) septicaemic
 - d) digested or fresh blood present
 - e) infants with projective vomiting

- later referral if:
 - a) symptoms are prolonged longer than one week
 - b) obvious causes
 - c) complex combination of symptoms/signs

8.13. Typhoid fever

Note: a notifiable condition

Description

A septicaemic illness with fever caused by the micro-organism *Salmonella typhi*.

- the cause of the fever is usually not obvious at first and may be difficult to diagnose except in an epidemic
- it may present with:
 - a) acute abdomen
 - b) prolonged or high fever in previously healthy person

- c) fever with a slower pulse than expected
- d) headache and possible convulsions
- e) diarrhoea may occur late in the illness and may be accompanied by frank bleeding
- f) confirmation is only by stool culture or blood tests

Drug treatment

- during epidemics initiate fluid therapy if necessary
 - treat as diarrhoea with oral rehydration solution
- and**
- IV fluids if necessary

CHAPTER 9 - GYNAECOLOGY AND OBSTETRICS

9.1. Abortion

9.1.1. Abortion, incomplete/spontaneous

Description

Spontaneous termination of pregnancy before 22 weeks of gestation after the last normal menstrual period.

Management objectives

- control bleeding
- prevent bleeding
- prevent Rh iso-immunisation
- give psychological support

Non-drug treatment

- monitor vital parameters, e.g. haemoglobin, pulse, blood pressure
- treat for shock if indicated
- give counselling and support to patients

Drug treatment

- oxytocin IV 20-40 IU diluted in 1000 ml 5% dextrose in water administered at 5-20 drops per minute, depending on the frequency of contractions (contraction frequency should not exceed 3 in 10 minutes) however, frequency of contraction is not a criteria for 1st and 2nd trimester.
- If the bleeding continues, refer patient with oxytocin infusion running; patient may need a curettage.
- for Rh-negative mothers administer anti-D immunoglobulin IM 100 micrograms within 24 hours of abortion.

Referral

- all patients

! CAUTION ! Avoid using other myometrial hypertonic agents together with oxytocin

9.2. Anaemia in pregnancy

Description

Anaemia is pallor plus a haemoglobin (Hb) of less than 11 g/dl

- most commonly it is due to either iron deficiency, folic acid deficiency or a combination of both

Prevention

- **all** antenatal patients are given routine iron and folic acid supplementation as follows:
 - a) ferrous sulphate oral 200 mg daily with food **and** folic acid oral 5 mg daily(200mg/0.4mcg??)
- twin or multiple pregnancy
 - a. ferrous sulphate oral, 200 mg twice daily with food **and** folic acid oral 5 mg daily

Referral

- Hb less than 8 g/dl at any stage
- Hb less than 10 g/dl in patients over 34 weeks of gestation
- non-responding Hb
 - a) a rise in the Hb of less than 1.5 g/dl over 2 weeks

or

 - b) less than 2 g/dl over 3 weeks in early pregnancy
- any low Hb with an obstetric complication
- symptoms or signs of acute or chronic blood loss
- pallor (anaemia) plus signs of chronic disease, e.g. suspicion of TB, or the presence of hepatosplenomegaly
- evidence of cardiac failure
- anaemia thought to be of sudden onset

Drug treatment of established anaemia

- Hb less than 11 g/dl
- assess peripheral blood smear
- ferrous sulphate oral 200 mg twice daily with food for 1 month, thereafter as for prevention (see above)

9.3. Antepartum haemorrhage**Description**

Vaginal bleeding in pregnancy after 22 weeks of gestation to the end of the second stage of labour.

Refer: all patients. Do not perform vaginal examination.

9.4. Cracked nipples during breastfeeding**Description**

The areola and nipple are protected by the secretion of a lubricant from Montgomery's glands. Excessive buffing (by e.g. a towel), elaborate nipple exercise and removing the baby from the breast before suction is broken are causes of cracked nipples.

- may lead to infection and mastitis

Management objectives

- prevent cracked nipples:
 - a) avoid initial excessive suckling
 - b) break suction before removing baby from the breast
 - c) check position of lips of newborn (the lower lip may be drawn in, causing irritation, and ease out the indrawn lip)
 - d) avoid plastic feeding brassiere linings - use breast pads

Drug treatment

- clean with mild soap and water
- use an emollient, e.g. emulsifying ointment between feedings and remove by washing before feeding
- in more severe cases a nipple shield may be used
- if too painful, the milk should be expressed and the baby nursed on the other breast until improvement
- watch for infection
- allow milk to dry on the nipples between feeds, using a hair-dryer on low temperature for 15 minutes

Drug treatment

PROBLEM	DRUG AND DOSAGE	INDICATIONS AND PRECAUTIONS
MOTHER analgesia	<ul style="list-style-type: none"> • pethidine IM 70-75 mg immediately • 1% lidocaine 	<ul style="list-style-type: none"> • < 4cm cervical dilatation first stage • local anaesthetic for episiotomy second stage • do not exceed 20 ml
inadequate or inco-ordinate uterine contractions	<ul style="list-style-type: none"> • oxytocin IV 5 IU in 1000 ml in 5% dextrose in water • initiate with 0.1-0.2 ml/minute, increase by 0.1-0.2 ml/minute at 40-minute intervals until the desired response is achieved 	<ul style="list-style-type: none"> • titrate to individual needs • contraction frequency should never exceed 3 in 10 minutes • only use if inadequate or inco-ordinate uterine contractions
post-partum haemorrhage	<ul style="list-style-type: none"> • oxytocin IM 5-10 IV 	<ul style="list-style-type: none"> • at the delivery of the anterior shoulder • patients at high risk for bleeding
RH incompatibility	<ul style="list-style-type: none"> • anti-D immunoglobulin IM • nitrate eye drop 	<ul style="list-style-type: none"> • must be given whenever required for Rh-negative mother

BABY neonatal conjunctivitis prophylaxis	<ul style="list-style-type: none"> • 1% chloramphenicol ophthalmic ointment 	<ul style="list-style-type: none"> • administer routinely to baby • in each eye after birth
bleeding prophylaxis	<ul style="list-style-type: none"> • vitamin K 2 mg immediately after birth 	<ul style="list-style-type: none"> • administer routinely to baby • prevent hypoprothrombinaemia

- patients must be closely observed for **1-2 hours** before transfer to the postnatal ward

Referral

- prolonged labour
- post-partum haemorrhage
- incomplete delivery of the placenta
- other complications of mother or baby

9.6. Dysmenorrhoea

Description

Pain associated with menstrual cycles:

- primary: no known cause
- secondary: an organic cause exists

Management objectives

- determine cause and treat accordingly
- symptomatic relief

Non-drug treatment

- advise and reassure women with primary dysmenorrhoea about the nature of the condition
- encourage patient to carry on with normal everyday activities

Drug treatment

- primary dysmenorrhoea: ibuprofen oral 200-400 mg three times daily after food when needed for 2-3 days
- secondary dysmenorrhoea: treat pelvic infection when present

Referral

- poor response to treatment
- if an organic cause is suspected

9.7. Ectopic pregnancy

Description

Pregnancy outside the uterus presenting with missed menstruation, sudden lower abdominal pain, shock, anaemia, fainting attacks, irregular vaginal bleeding

Refer

- all cases if ectopic pregnancy is suspected
- initiate treatment for shock if indicated

9.8. Vaginal bleeding

9.8.1 Abnormal vaginal bleeding during fertile years

Description

Increased menstrual flow either in volume, duration and/or frequency, including menorrhagia or dysfunctional uterine bleeding & intermenstrual bleeding.

Non-drug treatment

- assess current contraceptives used

Drug treatment

- ibuprofen oral 200-400 mg three times daily after food when needed for 2-3 days
- a) ibuprofen may reduce blood loss in menorrhagia associated with:
- intrauterine contraceptive device (IUCD)
 - chronic salpingitis (see STD syndrome treatment guidelines)
 - menstruation following puberty when no ova are produced (anovulatory cycles)
- if blood loss has been severe or there are signs of anaemia
- b) give ferrous sulphate oral 200 mg three times daily after food for 1 month

Referral

- no improvement
- all girls under 12 years with vaginal bleeding before the development of their secondary sexual characteristics
- to investigate for other causes such as sexual abuse, foreign bodies, tumours of the genital tract
- severe anaemia

9.8.2. Post-menopausal bleeding**Description**

Bleeding after menstruation has ceased for 1 year. Bleeding occurring after menopause can be reasonably presumed to have occurred or has been proved by a raised FSH level.

Referral

- all cases to exclude underlying malignancy and other pathology

9.9. Vaginal discharge/lower abdominal pain in women**Description**

One or more of the following symptoms:

- excessive vaginal secretion
- staining of underwear
- change in vaginal secretion odour
- change in vaginal secretion colour
- itching or redness of the vulva
- burning or pain on passing urine
- lower abdominal pain

One or more of the following may be present on examination:

- vaginal discharge
- lower abdominal tenderness
- pain on moving the cervix

In pregnant women, lower abdominal pain related to pelvic infection is rare.

- if lower abdominal pain is present these patients are usually seriously ill and require referral
- Always look for another STD (if present use appropriate protocol).

Non-drug treatment

- counsel on compliance and risk reduction for transmission of STD and HIV
- provide and promote use of condoms
- notify partners/contacts

Drug treatment

- choose one of the options below
- notify the partner and treat, take blood for RPR/VDRL
- ask the patient to return after 1 week

Treatment will depend upon the clinical diagnosis, physical appearance of the discharge, odour etc. and the result of HVS.

Option 1: non-pregnant woman with a vaginal discharge and no pain on moving the cervix

- Ceftriaxone 250mg IM immediately for suspected gonorrhoea
- and
- doxycycline oral 100 mg 12 hourly for 7 days
- and
- metronidazole oral: 2 g immediately **or** 400 mg 8 hourly for 7 days

Option 2: pregnant woman with a vaginal discharge and no pain on moving the cervix

- spectinomycin IM 2 g immediately for suspected gonorrhoea
- and
- erythromycin stearate oral, 500 mg 6 hourly for 7 days
- metronidazole oral: 2 g immediately **or** 400 mg 12 hourly for 7 days

!CAUTION! Metronidazole is contraindicated in the first trimester of pregnancy

Option 3: clinical evidence of vaginal candidiasis

If there is clinical evidence of vaginal candidiasis then **add** to the treatment used in option 1 or 3:

- clotrimazole pessary inserted in the vagina, 100 mg at night for 6 days

Option 4: non-pregnant woman with pain on moving the cervix

- Ceftriaxone 250mg IM immediately
- and
- doxycycline oral 100mg 12 hourly for 7 days
- and
- metronidazole oral 400 mg 8 hourly for 7 days

Option 5: pregnant woman with pain on moving the cervix

- refer, as lower abdominal pain in pregnancy is uncommonly related to pelvic infection

Referral

- history of a missed or overdue period (consider ectopic pregnancy)
- recent abortion or delivery
- abnormal vaginal bleeding
- temperature above 39C
- abdominal rebound tenderness and/or guarding or other gastrointestinal symptoms
- pregnant women with lower abdominal pain related to pelvic infection

9.11. Vaginal ulcers

See Chapter 11 - Infections

CHAPTER 10 - IMMUNISATION

10.1. Dosage and administration

NOTE: Immunisation is the most important and cost-effective care that can be given to a baby and child

Description

Immunisation:

- helps the child's body to produce antibodies against specific micro-organisms
- prevents the specific organism from causing serious illness or complications
- saves millions of children from death and disability every year

10.1 Vaccines for routine administration

AGE	DISEASE	VACCINE	ROUTE	FACILITY
Birth	Tuberculosis	TB	Intradermal	Maternity Ward / Health Centre
3 months	Diphtheria, Pertusis Tetanus Poliomyelitis Hepatitis B	Triple Antigen (DPT) Sabin Vaccine HBV1	Intra-muscular Oral Intra-muscular	Health Centre
4 months	Diphtheria, Pertusis Tetanus Poliomyelitis Hepatitis B	Triple Antigen (2 nd DPT) Sabin Vaccine HBV2	Intra-muscular Oral Intra-muscular	Health Centre
5 months	Diphtheria, Pertusis Tetanus Poliomyelitis	Triple Antigen (3 rd DPT) Sabin Vaccine	Intra-muscular Oral	Health Centre
9 months	Hepatitis B	HBV3	Intramuscular	Health Centre
1 year	Yellow Fever	Yellow Fever	Subcutaneous	Health Centre
15 months	Mumps / Measles / Rubella	MMR	Subcutaneous	Health Centre
18 months	Diphtheria, Pertusis Tetanus Poliomyelitis	Triple Antigen (DPT Booster) Sabin Vaccine	Intra-muscular Oral	Health Centre
6 years	Tuberculosis Diphtheria, Pertusis Tetanus Poliomyelitis Mumps / Measles / Rubella	BCG DPT Sabin Vaccine MMR	Intradermal Intra-muscular Oral Subcutaneous	Schools
15 years	Tetanus Poliomyelitis	Tetanus Toxoid (ATT) Sabin Vaccine	Intra-muscular Oral	Schools
Pregnant women 25 years	Tetanus	Tetanus Toxoid (ATT)	Intra-muscular	Antenatal Clinic

- All pregnant women should receive a Booster of Tetanus Toxoid from the age of 25 years repeating the Booster every 10 years
- It is recommended that Hepatitis Vaccines are administered intra-muscular in the upper deltoid area. Subcutaneous administration is only indicated in patients with severe bleeding tendencies such as hemophilia.

10.3. Immunisation schedule

Vaccination are given in a specific sequence at certain ages. This is known as the immunisation schedule.

Remember the following important points about the schedule:

- **never** miss a chance to immunise
- the schedule is not rigid - give a dose if a child is brought a few days earlier or later than expected.
- **give** doses **no** closer than 4 weeks - make follow-up dates 4 weeks from the previous dose
- special immunisation clinic days are often convenient for mother and health worker, but never turn a child away if an immunisation is needed even if it is not an immunisation clinic day
- **open** multidose vial for just one child if it is necessary
- **giving** appropriate vaccines to the children brought to the clinic for other reasons is a very important way to reach the children who have missed immunisations
- **always** check the RTH card for missing doses **and then** give them immediately
- **catching up** on missed immunisations will ensure full immunological protection
- **give** an extra dose if in doubt whether a child has had a certain dose already, as extra doses are not harmful
- **all** vaccines listed in the table can be given safely at the same time but not mixed in the same syringe
- when the child is **hospitalised**:
 - a) **give** a dose of measles vaccine on admission
 - b) give all other outstanding immunisations on discharge

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

Note

- discard opened vials of measles and BCG at the end of an immunisation session
- opened vials of other vaccines can be kept for up to 1 month if they have been kept between 0-8°C **and** are contaminated. This applies to fixed clinics only

!CAUTION! Past reaction to a vaccine indicates hypersensitivity and repetition of the vaccine should be avoided children with AIDS should not receive BCG vaccine

Give every baby the required immunisation as soon as according to the schedule 10.1. The vaccines listed are very safe and cause no or minimal side-effects.

BCG	Vaccine against tuberculosis
OPV	Oral polio vaccine
DPT	diphtheria, pertussis (whooping cough) and tetanus vaccine
HepB	hepatitis B vaccine
Hib	vaccine against Hib disease
DT	diphtheria and tetanus vaccine
TT	tetanus vaccine

An **effective dose** is one given on time with unspoiled vaccine.

10.4. Additional vaccines and target groups

Vaccines listed below are not part of the EPI programme or are not routinely available for adults.

People who are able, are encouraged to buy these vaccines and protect themselves or their children against the following diseases:

- combination measles, mumps, and rubella vaccine (MMR) – given as part of EPI at 15 months
- **hepatitis B** vaccine for adults in occupations at high risk, e.g:
 - health workers/cleaners/incinerator staff
 - paramedics
 - traffic officers
- give three doses of adult hepB vaccine administered according to manufacturer's instructions
 - a) a booster dose may be necessary every 10 years to ensure continued protection

b) the cost of this vaccination should be borne by the employing agency

10.5. Immunisation by injection

Use aseptic technique. Use one sterile needle and one sterile syringe for each person. An injection abscess destroys the trust people have in health workers, and might cause them to refuse further immunisations, leaving their children unprotected.

Dispose of syringes, needles and other sharps in the following way to ensure that no needlestick injuries occur:

- in an approved sharps container
- never recap needles
- dispose of the container properly, e.g. incineration or deep burial, not open pit burning

10.6. The cold chain

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

- **never** exposing vaccines to heat, especially during transportation from one clinic to another
- **always** using a cold box to keep the vaccines cold during transport and immunisation

Correct packing of the cold box

- ice packs are placed on the bottom, at the sides and on top
- if there are not enough ice packs **then** place available ice packs at the sides and on top of the vaccines
- DPT, DT, TT, HepB and Hib vaccines must not be allowed to freeze - wrap them in paper to protect them
- keep measles and polio vaccines very cold - place on bottom of the cold box, next to the ice packs
- BCG can be placed anywhere in the box
- keep the lid firmly closed and the box out of the sun
- keep a thermometer in the cold box with the vaccines and the temperature 0-8°C
- live vaccines (BCG, OPV, measles contain weakened organisms and are very sensitive to heat, sunlight and skin antiseptics)

How to pack your fridge correctly

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

!CAUTION! Do not use vaccines that have expired or missed the cold chain keep the fridge temperature at 0-8°C

Have your DPT, Hep B, or TT vaccines frozen?

- Never allow diphtheria, pertussis, tetanus or Hepatitis B vaccines to freeze - they become useless.

Vaccine shake test

If you think that the vaccine has frozen, shake the vial and place it in a cool place where there is enough light to see, but not in direct sunlight. Wait 15 minutes. If the solution is still smooth and cloudy, you may use it.

If the solution at the top is clear, and there is a sediment at the bottom, you cannot use it. It has lost its strength, and is now ineffective.

This vaccine is still potent. You may use it !		This vaccine is useless Do not use it !
The temperature of this vaccine was always kept between 2°C and 8°C	DPT, Hep B, DT or TT after shaking	The temperature of this vaccine has fallen below 0°C and has now lost its strength
The liquid in the container is smooth and cloudy	Now	The liquid in the container contains little particles
The liquid is still and cloudy	After 15 minutes	The liquid is clear at the top. There is a sediment at the bottom of the container
The liquid begins to clear at the top, but there is no sediment	After 30 minutes	The liquid is clear at the top. There is a thick sediment at the bottom of the container

CHAPTER 11 – SELECTED INFECTIONS AND RELATED CONDITIONS

11.1. Amoebic dysentery

See Chapter 8 - Gastrointestinal condition

11.2. Bacillary dysentery

See Chapter 8 - Gastrointestinal conditions

11.3 Chickenpox

Description

A mild viral infection which presents 2-3 weeks after exposure, with:

- small, red, itchy spots that turn into blisters and burst to form scabs. These lesions may all be present at the same time
- lesions begin on the trunk and face, later spreading to the arms and legs
- fever is usually mild and precedes the rash
- infective for 6 days after the lesions have appeared or until all the lesions have crusted
- infection is self-limiting with a duration of about 1 week

Complications of encephalitis and pneumonia occur rarely, more likely in adults.

Management objectives

- provide symptomatic treatment
- manage complications

Non-drug treatment

- isolate from immunocompromised people and pregnant women until all lesions have crusted
- ensure adequate hydration
- cut fingernails very short and discourage scratching

Drug treatment

- avoid the use of aspirin in children because of risk of Reye's syndrome
- calamine lotion topically for itch
- paracetamol orally 4-6 hourly when needed to a maximum of four doses daily
 - a) children 3 months-1 year: 2.5 ml (120 mg/5 ml syrup)
 - b) children 1-5 years: 5-10 ml
 - c) children 5-12 years: ½-1 tablet (500 mg tablet)
 - d) children over 12 years and adults: 1-2 tablets
- chlorpheniramine oral / syrup
 - a) not recommended under 1 year
 - b) children 1-5 years: 1-2 mg three times daily
 - c) children 5-12 years: 2-4 mg 3-4 times daily
 - d) children over 12 years and adults 4 mg 3-4 times daily
- if skin infection is present due to scratching, treat as for bacterial skin infection

Referral

- complications such as:
 - a) meningitis
 - b) encephalitis
 - c) pneumonia
- severely ill adults
- babies under 6 months
- pregnant women

11.4. Cholera

See Chapter 8 - Gastrointestinal conditions

11.5. Giardiasis

See Chapter 8 - Gastrointestinal conditions

11.6. HIV

Description

Infection with the human immunodeficiency virus (HIV).

- initial clinical features:
 - a) fever
 - b) rash
 - c) shingles
 - d) arthralgia

- later clinical features:
 - a) generalised swollen glands
 - b) weight loss
 - c) intermittent fever
 - d) malaise
 - e) fatigue
 - f) chronic diarrhoea
 - g) anaemia
 - h) recurrent infections

- later clinical features - such as opportunistic infections:
 - a) oral candidiasis - slow to respond to treatment
 - b) TB
 - c) Pneumocystis carinii pneumonia
 - d) Kaposi's sarcoma
 - e) non-Hodgkin's lymphoma

- diagnosis:
 - a) remember that there is a "window period" which is the time period between becoming infected and the appearance of antibodies which are detectable by blood tests
 - b) ensure that the diagnosis is recorded in such a manner that the patient's confidentiality is not breached
 - c) HIV in adults must be confirmed by laboratory testing. All persons and especially high-risk behaviour patients should be counselled on preventive methods to reduce the spread of the disease

- in **infants** recurrent infectious diseases, like pneumonia, must arouse suspicion of HIV infection, which should be strengthened if the patient develops any of the following:
 - a) generalised lymphadenopathy
 - b) failure to thrive
 - c) skin rashes
 - d) recurrent diarrhoea
 - e) pneumonia
 - f) otitis media
 - g) sinusitis
 - h) oral candidiasis
 - i) chronic or recurrent fever for longer than a month

Prevention of disease transmission

- use condoms (male or female) during sexual intercourse
- persons with STD infections are more likely to be infected with HIV (see STD management, section 11.14)

- avoid contact with blood and blood products, used needles and syringes

Transmission from HIV-positive mother to baby

- may occur:
 - a) during pregnancy
 - b) at birth
 - c) in the post-natal period through breast milk

During pregnancy

- HIV screening should be strongly recommended and HIV positive pregnant women should be offered treatment for materno-foetal transmission
- if testing is done before 12 weeks of gestation and found to be positive, termination of the pregnancy can be an option.
- Refer all pregnant HIV positive women to CDCU

During birth

- cleanse the birth canal with 10% polyvidone iodine solution as this has been shown to decrease disease transmission
- **avoid** traumatic procedures such as:
 - a) artificial rupture of membranes early in labour
 - b) instrumental delivery of babies

Breastfeeding

- breastfeeding is a recognised transmission route of HIV
- mothers with HIV positive AIDS should be advised not to breastfeed, and assisted with formula if necessary.

Management objectives

- symptomatic relief
- prevention and treatment of complications

Non-drug treatment

- patients should be supported and encouraged to stay employed as long as possible
- patients and their families must be supported and encouraged to join support/peer groups

Drug treatment

- there is no curative treatment for this disease
- patient can be informed that combination anti-retro viral drugs can prolong life and improve well being

Referral

- all HIV positive patients should be referred to CDCU
- needle stick injuries - immediate

Prevention of opportunistic infections

- patient with negative serology for toxoplasmosis, cytomegalovirus, hepatitis B and C should be counselled on how to avoid contact with these agents.
- Chemoprophylaxis or immunization can be offered for certain infectious conditions. e.g. P. carini, pneumonia, toxoplasmosis, TB, hepatitis B

11.7. Infection control: the use of antiseptics and disinfectants

Description

Disinfectants are used to kill micro-organisms on working surfaces and instruments, but cannot be relied on to destroy all micro-organisms.

Antiseptics are used for sterilising skin and mucous membranes.

- **do not** mix products

Disinfecting surfaces

- **guidelines for the use of disinfectants**

- a) never use a chemical if other more reliable methods are available
- b) cleansing is the first and most important step in chemical disinfection
- c) the disinfection fluid must entirely cover the object and penetrate all crevices
- d) use the recommended strengths for specific purposes
- e) disinfectants cannot sterilise surgical instruments
- f) no chemical agent acts immediately - note the recommended exposure time
- g) equipment has to be rinsed after immersion in a chemical
- h) recontamination is very easy at this stage
- i) make sure that the rinsing water and all other apparatus are sterile
 - equipment must not be stored in chemical disinfectants
 - the best disinfectant for killing HIV and other pathogens is a chlorinated solution such as bleach or hypochlorite:
- j) solutions must be prepared freshly
- k) and discarded after 24 hours to disinfect properly
- l) do not use on the skin

Intact skin

- alcohol swabs may be used to swab before injections
- antiseptics like polyvidone iodine or chlorhexidine are used for surgical scrubbing, but soap and water can be just as good

Wounds and mucous membranes

- correctly diluted aqueous dilute solutions of chlorhexidine digluconate can be used to clean dirty wounds
- saline and sterile water are also used on clean wounds

DISINFECTANT	INDICATIONS	DIRECTIONS FOR APPLICATION
chlorhexidine solution <ul style="list-style-type: none"> • 0.05% aqueous solution • 0.5% in 70% alcohol 	<ul style="list-style-type: none"> • skin disinfection before surgery • cleaning dirty wounds 	<ul style="list-style-type: none"> • remove all dirt, pus and blood before use • clean dirty wounds with 0.05% aqueous solution • disinfection of instruments with 0.5% in 70% alcohol solution • expensive, do not use for normal cleaning • use the correct concentration for a specific purpose
polyvidone iodine <ul style="list-style-type: none"> • solution 10% 	<ul style="list-style-type: none"> • skin and wound infections 	<ul style="list-style-type: none"> • use ointment for skin infection • use solution for cleaning skin and wounds • avoid using on large wounds because of danger of iodine absorption • expensive, do not use for normal cleaning • contraindication: iodine allergy

Articles and instruments

- adhere to the appropriate cleansing and disinfection policy

11.8. Malaria

Description

The most important element in the diagnosis of malaria is a high index of suspicion in both endemic and non-endemic areas. Test any person resident in or returning from a malaria area and who presents with fever and flu-like symptoms.

- clinical features include, often in combination:
 - a) severe headache
 - b) fever above 38°C
 - c) muscular and joint pains
 - d) sweat
 - e) shivering attacks
 - f) nausea

- in more severe cases there may also be:

- a) severe diarrhoea
- b) fatigue
- c) difficulty in breathing and cyanosis, blue discolouration around the mouth

These symptoms may progress to severe or complicated malaria when sleepiness, unconsciousness or coma, convulsions or shock may occur.

Diagnosis

- microscopic examination of thick and thin blood smears where possible:
 - a) thick films are more sensitive than thin films in the detection of malaria parasites
- where rapid diagnostic tests, e.g. a plasma reagent dipstick are available, these can be used to diagnose malaria within 10-15 minutes. If neither microscopy nor rapid tests are available diagnosis should be made on the basis of clinical symptoms. A blood smear should be made and sent for microscopic examination. One negative malaria test does not exclude the diagnosis of malaria

Non-drug treatment

- monitor for complications

Malaria prophylaxis

Refer: All travellers to endemic areas for malaria. Should be referred to CDCU for counselling and chemoprophylaxis

10.9. Measles

Note: A notifiable condition.

Description

A viral infection that is especially dangerous in malnourished children or in children who have other diseases such as TB or AIDS.

- initial clinical features occur 10 days after contact with an infected individual:
 - a) signs of a cold
 - b) patient may deteriorate with fever
 - c) diarrhoea may occur
 - d) conjunctivitis with discharge
 - e) cough, bronchitis and otitis media

Usually these features develop in the following order:

- after 2 or 3 days a few tiny white spots like salt grains appear in the mouth
- the skin rash appears 1-2 days later and lasts about 5 days
 - a) location, first behind the ears and on the neck
 - b) then on the face and body
 - c) lastly on the arms and legs
 - d) secondary bacterial infection (bronchitis, bronchopneumonia, otitis media) may occur, especially in children with poor nutrition or concomitant conditions

Management objectives

- to provide symptomatic treatment and prevent complications
- prevention and catch-up through EPI
- notify the disease

Non-drug treatment

- continued good nutrition
- isolate the patient to prevent spread

Drug treatment

- treat at home if:
 - a) over 6 months old
 - b) well nourished
 - c) uncomplicated (pneumonia or otitis media)

- fever above 39°C, pain, or a history of febrile convulsions
- paracetamol orally 4-6 hourly when needed to a maximum of four doses daily
 - a) children 3 months-1 year: 2.5 ml (120 mg/5 ml syrup)
 - b) children 1-5 years: 5-10 ml
 - c) children 5-12 years: ½ - 1 tablet (500 mg tablet)
 - d) children over 12 years and adults: 1-2 tablets
- **diarrhoea**
 - a) rehydrate for 24 hours
- **bronchitis or otitis media**
 - amoxicillin oral for 5 days
 - a) Children: 60-80mg/kg/day in three divided doses
 - b) Children over 12 years and adults 500mg 8 hourly
- penicillin-allergic patients:
 - erythromycin oral 6 hourly before meals for 5 days
 - a) children 5-10 kg: erythromycin stearate 62.5 mg
 - b) children 10-15 kg: erythromycin stearate 125 mg
 - c) children over 15 kg: erythromycin stearate 250 mg
 - d) children over 12 years and adults: 500mg
- **purulent conjunctivitis**
 - 1% chloramphenicol ophthalmic ointment

Referral

- children under 6 months
- croup (which may need adrenaline inhalations)
- severe or unresponsive bronchitis or pneumonia
- malnutrition
- dehydration
- neurological signs or symptoms like confusion
- immunocompromised and associated illness like AIDS, TB
- asthma
- severely ill adults

11.10. Meningitis

See Chapter 2 - Central Nervous System

11.11. Mumps

Description

A viral infection involving the salivary glands

- symptoms of mumps appear 2-3 weeks after exposure:
 - a) fever
 - b) pain on opening the mouth or eating
 - c) about two days later a tender swelling appears below the ears at the angle of the jaw
 - d) often first on one side and later on the other
 - e) the swelling disappears in about 10 days

Management objectives

- provide symptomatic treatment

Non-drug treatment

- bed rest during febrile period
- isolate until swelling subsides

- advise on oral hygiene
- recommend plenty of fluids and soft food during acute stage
- patient is infectious from 3 days before parotid swelling to 7 days after it started
- children may return to school 1 week after initial swelling

Drug treatment

- paracetamol oral 4-6 hourly when needed to a maximum of four doses daily
- a) children 3 months - 1 year: 2.5 ml (120 mg / 5 ml syrup)
 - b) children 1-5 years: 5-10 ml
 - c) children 5-12 years: ½ - 1 tablet (500 mg tablet)
 - d) children over 12 years and adults: 1-2 tablets

Referral

- high fever
- severe headache
- abdominal pain
- painful testes or orchitis
- suspected encephalitis
- pancreatitis

11.12. Rubella (German measles)

Description

A viral illness with skin lesions

- less severe than measles
- lasting only 3-4 days
- a rash starting in the face spreading to the trunk, arms and legs. It usually fades as it moves on
- seldom complicated by bacterial infections
- infection during the first or second trimester of pregnancy may lead to severe permanent deformities in the baby
- clinical features:
 - a) include a scanty rash
 - b) swollen and tender lymph nodes behind the ears (suboccipital)

Management objectives

- symptomatic treatment
- management of complications

Non-drug treatment

- bed rest if needed
- isolate from pregnant women or women of child-bearing age

Drug treatment

- paracetamol oral 4-6 hourly when needed to a maximum of four doses daily
- a) children 3 months - 1 year: 2.5 ml (120 mg/5 ml syrup)
 - b) children 1-5 years: 5-10 ml
 - c) children 5-12 years: ½ - 1 tablet (500 mg tablet)
 - d) children over 12 years and adults: 1-2 tablets

Referral

- pregnancy

11.13. Sexually transmitted diseases (STD)

Description

The syndromic approach to STD diagnosis and management is to treat the signs or symptoms (syndrome) of a group of diseases rather than treating a specific disease. This allows for the treatment of one or more conditions that often occur at the same time.

It is important to provide the patient with information and counselling on:

- compliance with treatment
- prevention of the complications of STDs
- risk reduction for acquiring STDs
- promotion and provision of condoms and demonstration of their use
- tracing and management of sexual contacts

Protocol 1: Urethral discharge/burning micturition in men

Description

- clinical features:
 - a) small or large amounts of mucus or pus at the end of the penis (Penile discharge)
 - b) staining of the underwear
 - c) burning/pain on passing urine
 - d) always look for another STD (if present use appropriate protocol)

Non-drug treatment

- counsel on compliance and risk reduction
- provide and promote the use of condoms
- take blood for RPR/VDRL
- notify partner to be treated
- ask to return in one week

Drug treatment

- Ceftriaxone 250mg IM immediately
- then**
- doxycycline 100 mg twice daily for 7 days
 - treat partner with same drugs

Protocol 2 and 4: Vaginal discharge in women/lower abdominal pain in women

See Chapter 9 - Gynaecology and Obstetrics

Protocol 3: Genital ulceration in men and women

Description

One or more ulcers on or around the genitalia.

Non-drug treatment

- counsel on compliance and risk reduction
- provide and promote the use of condoms
- take blood for RPR/VDRL
- notify partner to be examined and treated

Drug treatment

- benzathin benzylpenicillin IM 2.4 MU immediately
- then**
- erythromycin oral, 500 mg 6 hourly for 5 days
- or**
- penicillin-allergic patients:
 - erythromycin oral 500 mg 6 hourly for 14 days
 - look for another STD (if present use appropriate protocol)
 - ask to return after 1 week

Referral

- no response after 7 days
- history of recent blisters, refer for management of suspected herpes

Protocol 5: Inguinal swelling/bubo - no ulcer present in men and women

Description

An inguinal bubo is a flitting/recurrent enlargement of the lymph glands in the groin.

- clinical features:
 - a) swelling in one or both sides of the groin
 - b) swelling may be painful and tender
- if an ulcer is present use protocol 3

Non-drug treatment

- counsel on compliance and risk reduction
- provide and promote the use of condoms, notify partner and treat, take blood for RPR/VDRL

Drug treatment

Look for another STD (if present use appropriate protocol).

Provide treatment:

- benzathine benzylpenicillin IM 2.4 MU immediately
- then**
- doxycycline oral 100 mg twice daily for 14 days
- or**
- penicillin-allergic patients:
 - erythromycin oral 500 mg 6 hourly for 14 days
 - ask to return after 1 week

Protocol 6: Balanitis/balanoposthitis in men

Description

Patients complain of itching of tip of the penis and/or foreskin.

Clinical features:

- thin white film on the glands and/or foreskin
- refer to the appropriate protocol if there is an ulcer or urethral discharge
- in the absence of other findings, the likely diagnosis is moniliasis (candidiasis); this can be confirmed by microscopy of a wet smear

Also consider diabetes mellitus.

Non-drug treatment

- personal hygiene, wash with water (avoid regular use of soap on mucous membranes)
- counsel on compliance and risk reduction
- provide and promote use of condoms (male and female)
- investigate blood for RPR/VDRL

Drug treatment

- apply nystatin ointment 100 000 IU/g twice daily for 5 days
- ask to return after 1 week
- notify partner and treat

Protocol 7: Painful scrotal swelling in men

Description

Patients usually complain of a swollen and painful testis.

- urethral discharge may be present in most STD cases
- exclude other causes of this condition, e.g. mumps, TB
- exclude sudden onset of testicular pain which may be caused by torsion of a testis
 - a. this may lead to gangrene in 6-12 hours, so immediate surgery is needed

Non-drug treatment

- counsel on compliance and risk reduction
- provide and promote use of condoms (male, female)
- take blood for RPR/VDRL

Drug treatment

- Ceftriaxone 250mg IM immediately
- then**
- doxycycline oral 100 mg twice daily for 7 days
 - notify partner and treat
 - ask to return after 1 week

Referral

- immediate referral:
 - a. suspected torsion of the testis (see above)
- normal referral:
 - a) person who is not sexually active
 - b) sudden onset of pain
 - c) history of trauma
 - d) history of other serious non-STD disease

Protocol 8: Interpretation of syphilis serology - RPR/VDRL

A. RPR/VDRL negative result

- record the result on patient's record
- ask the patient to return for a repeat test in 3 months
- **when the patient returns in 3 months**
- if the result is **negative** after 3 months:
 - a) counsel and send home
- if the result is **positive** after 3 months
 - b) treat for early syphilis
 - c) record titre on patient's record

B. RPR/VDR positive result

- check if titre recorded in last 2 years
 - if current titre is **lower** than or the same as the previous titre
- then**
- a) counsel and send the patient home
 - b) record titre on patient's record
- if current titre is **higher** than the previous titre
- then**
- a) treat for early syphilis
 - b) record titre on patient's record
- and**
- a) repeat RPR/VDRL in 3 months
- if no previous titre was recorded
- then**
- a) treat for late syphilis
 - b) record titre on patient's record
- and**
- a) repeat RPR/VDRL in 3 months

In 3 months

- if current titre is lower than or the same as the previous titre
- then**
- a) patient was successfully treated, send home **and** record titre on patient's record
- if current titre is **higher** than previous titre
- a) treat for early syphilis
 - b) record titre on patient's record **and** repeat RPR/VDRL in 3 months

Early syphilis treatment

- check if treated at initial visit
- benzathine benzylpenicillin IM 2.4 MU immediately
- in penicillin-allergic patients;
- doxycycline oral 100 mg twice daily for 15 days

or

- if penicillin-allergic and pregnant
- erythromycin oral 500 mg four times a day for 14 days

Late syphilis treatment

- check if treatment was commenced at initial visit
- benzathine benzylpenicillin IM 2.4 MU, **once** weekly for 3 weeks
- in penicillin-allergic patients
- doxycycline oral 100 mg twice daily for 1 month

or

- if penicillin-allergic and pregnant
- erythromycin oral 500 mg four times a day for 1 month

Protocol 9: Return visit after 1 week

This protocol refers to the return visit and applies to all STDs.

If cured

- check and record RPR/VDRL result and follow RPR/VDRL protocol 8
- complete treatment
- counsel on risk reduction
- provide and promote the use of condoms

If not cured

- assess treatment compliance and possibility of re-infection
- a) if there is poor compliance or re-infection then:
 - repeat treatment
 - ask to return after 1 week
- b) if good compliance and no chance of re-infection refer
 - check RPR/VDRL result and follow RPR/VDRL protocol 8

11.13.2. Genital warts**Referral**

Refer all patients with genital warts.

11.13.3. Pubic lice

See lice (pediculosis).

Drug treatment

- 5% permethrin cream- Apply over whole body, allow to dry naturally and wash after 12hours or after leaving overnight. Repeat application in 7 days.

11.13.4. Genital scabies

See scabies.

Drug treatment

- Permetrin 5% cream - Apply over whole body, allow to dry naturally and wash after 8-12hours. Repeat application in 7 days

11.13.5. Molluscum contagiosum

Drug treatment

- apply tincture of iodine BP to the core of individual lesions using an applicator

11.13.6. Gonorrhoea neonatorum

See ophthalmia neonatorum.

11.14. Tick-bite fever**Description**

Rickettsial disease, spread by infected ticks. After an incubation time of 7-10 days, there is fever, malaise, severe headache, a skin rash. The bite area develops into skin necrosis (eschar), there often is regional lymphadenopathy. Patients are often severely ill. Diagnosis is clinical, confirmed by serological tests.

Management objectives

- elimination of the pathogen
- prevention of complications

Non-drug treatment

- symptomatic

Drug treatment

- doxycycline oral (**adults**)
- 200 mg immediately, then 100 mg twice daily for 7 days
- paracetamol oral 4-6 hourly when needed to a maximum of four doses daily

Referral

- children
- severely ill patients
- pregnant women
- diagnosis uncertain

11.15. Typhoid fever

See Chapter 8 - Gastrointestinal conditions

11.16. Tuberculosis

See Chapter 16-Respiratory conditions

CHAPTER 12 - MUSCULOSKELETAL CONDITIONS

12.1. Arthralgia

See Chapter 18 - Signs and symptoms

12.2. Gout

12.2.1. Gout, acute

Description

A condition in which uric acid crystal deposition occurs in joints and other tissues:

- features:
 - a) recurrent attacks of a characteristic acute arthritis - one joint, extreme pain, redness and very hot
 - b) uric acid deposits in and around the joints and cartilages of the extremities (tophi)
 - c) occasional deformity due to uric acid deposits
 - d) interstitial renal disease - poor kidney function
 - e) uric acid kidney stones (nephrolithiasis)
 - f) increased serum uric acid concentration (above 0.5 mmol/L) –
 - g) acute gout is a clinical diagnosis – during the attack uric acid can be normal.

Management objectives

- treat acute attacks
- prevent recurrences of acute attacks

Non-drug treatment

- bed rest
- increased fluid intake
- **avoid** alcohol
- **avoid** aspirin

Drug treatment

Initiate adult therapy with:

- non-steroidal anti-inflammatory drug (NSAID)
- indocid 25 mg –50 mg tds
- ibuprofen oral: 800 mg immediately, **then** 200-400 mg 6-8 hourly (max dose 2400 mg per day) for 2-3 days

thereafter

- 200-400 mg 8 hourly until pain has subsided
- or**, if the patient does not respond to ibuprofen,
- colchicine oral 0.5-1 mg immediately
 - initiate treatment as early as possible in an acute attack as it becomes less effective the longer the attack continues

then

- 0.5 mg 2-3 hourly until pain is relieved or gastrointestinal distress develops
- Maximum treatment dose 6 mg
- do not repeat a course within 3 days

Prophylaxis

- allopurinol 300 mg nocte If hyperuricaemia present, do not give allopurinol during the acute attack. Start 2-3 weeks later.
- colchicine oral 0.5 mg once or twice daily until uric acid lowering agents can be administered

Note

Colchicine is effective and specific for acute gout but it is not easy to use optimally due to the development of gastrointestinal adverse effects.

No need to admit all patients with acute gout to medical ward

Referral

- failure to respond
- uncertain diagnosis
- chronic gout suspected

No need to admit all gout patients to Medical ward.

12.2.2. Gout, chronic**Description**

Gout with one or more of the following:

- a) tophi
- b) bony destruction
- c) many acute attacks (more than four per year)
- d) kidney stones
- e) poor renal function

Management objectives

- lower the serum uric acid level below 0.5 mmol/L
- prevent the complications resulting from uric acid crystal deposition
- prevention of uric acid kidney stones

Non-drug treatment

- check to see if a thiazide diuretic (e.g. hydrochlorothiazide) is prescribed and consider an alternative diuretic
- encourage controlled weight loss
- advise avoidance of substances that may trigger acute gout:
 - a. alcohol, aspirin and certain foods, e.g. red meat, fish

Referral

- refer all patients with chronic gout

12.3. Osteoarthritis/osteoarthrosis**Description**

A degenerative disorder typically affecting weight-bearing joints. Patients complain of pain, limited movement and joint swelling.

Referral

- all cases for confirmation of diagnosis
- follow-up in health centres

12.4. Rheumatoid arthritis**Description**

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

- swelling
- pain
- limitation of movement
- destruction often occurs

Referral

- all patients with suspected rheumatoid arthritis

12. 5. Septic arthritis**Description**

A condition involving infection of one or more of the large joints. Infection is usually blood borne, but may follow trauma to the joint. The course may be acute or protracted. A wide spectrum of organisms is involved, including staphylococci and *Neisseria gonorrhoea*.

Note

Haemophiliacs may present with an acute arthritis similar to septic arthritis that is not infected.

Referral

- all patients with suspected septic arthritis should be referred immediately to confirm the diagnosis, initiate appropriate treatment and prevent complications

CHAPTER 13 - NUTRITION AND BLOOD CONDITIONS

13.1. Anaemia

Description

A condition characterised by pallor. Anaemia occurs when the total volume of red blood cells and/or the amount of haemoglobin (Hb) is reduced below normal values.

- it is commonly caused by one or more of the following:
 - a) defective red cell production (nutritional)
 - b) increased red cell destruction (haemolysis)
 - c) blood loss (parasites, ulcers, tumours, excessive menstruation)
- other causes include infiltration/replacement of the bone marrow, abnormal haemoglobin or red cells, chronic systemic diseases
- clinical examination and assessment of a peripheral blood smear (if available) to indicate the type of anaemia (normochromic, hypochromic, macrocytic or microcytic) after which further investigations to identify the cause of the anaemia are required

Treatment

As for each specific treatable condition.

Referral

- anaemia plus:
 - a) undiagnosed cause and type of anaemia
 - b) symptoms of anaemia - syncope, palpitations, shortness of breath
 - c) evidence of cardiac failure
 - d) signs of chronic disease, e.g TB hepato/splenomegaly
 - e) symptoms or signs of acute blood loss
 - f) blood in stool or melaena
 - g) pregnant women over 34 weeks of gestation
 - h) children with Hb under 8 g/dl
 - i) adults with Hb under 7 g/dl
 - j) no improvement after treatment with iron and/or folate such as
 - k) Hb increase under 1.5 g/dl over a 2 week period or under 2 g/dl over a 3 week period

13.1.1. Anaemia, iron deficiency

Description

- iron deficiency is the most common cause of anaemia
- most common in younger children and women of child-bearing age
- in pregnancy and during the post-partum period: folate deficiency and/or combined iron/folate deficiency are common in certain areas
- diagnosis to be confirmed as:
 - a) women and children 1-5 years: Hb less than 11 g/dl
 - b) males: Hb less than 12 g/dl

Non-drug treatment

- cause to be identified and removed if possible, e.g. in children hookworm is a common cause
- lifestyle adjustment
- patient counselling

Drug treatment

- elemental iron in three divided doses per day
 - a) children: 4-6 mg/kg
- ferrous sulphate oral three times daily with food
 - b) adults: 200 mg

Prevention

- elemental iron oral, daily
 - a) children

3 months-1 year: 1 mg/kg

- ferrous sulphate oral, daily

b) adults: 200 mg BD or TDS

- follow up at monthly intervals
- expected response is a rise in Hb of 2 g/dl or more in 3 weeks
- continue for 3-4 months after Hb is normal to replenish body iron stores

!CAUTION! Iron is extremely toxic in overdose, particularly in children. Intramuscular iron does not act faster - and is rarely indicated as there is a significant risk of anaphylactic reactions

13.1.2. Megaloblastic/Macrocytic anaemia

Description

Anaemia with large red blood cells, commonly due to folate deficiency or vitamin B12 deficiency. Folate deficiency is common in pregnant women, and in elderly. Vitamin B12 deficiency occurs specially in adult age groups. Special investigations are required to confirm the diagnosis.

Referral

- all patients with suspected macrocytic anaemia except in pregnancy should be referred for diagnosis and treatment, especially:
 - a) people with a history suggestive of vitamin B12 deficiency
 - b) TB
 - c) bowel malabsorption
 - d) diarrhoea
 - e) weight loss
 - f) elderly patients
 - g) vegetarian diet
 - h) liver disease
 - i) hypothyroidism
 - j) any neurological signs/symptoms

13.1.3. Folate deficiency

See chapter on pregnancy (section 9.02)

13.2. Vitamin deficiencies

13.2.1. Vitamin A deficiency

Description

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

- most common in children 1-5 years
- it is the commonest cause of blindness in children in Africa if not identified and treated early
- clinical features include:
 - a) night blindness
 - b) dry eyes (xerophthalmia) with eventual ulceration and perforation of the cornea (keratomalacia)
 - c) small greyish triangular deposits near the cornea (Bitot's spots)

Management objectives

- prevent and treat vitamin A deficiency by ensuring vitamin A sources in the diet supplementing by vitamin A in areas where the diet is insufficient (see below)

Drug treatment

- children with eye complications secondary to vitamin A deficiency
- children with kwashiorkor and/or marasmus but no associated eye complications secondary to vitamin A deficiency
- children with measles at present or during the past 3 months
- retinol (vitamin A) oral
 - a) **under 12 months:** 100 000 IU immediately and repeat 24 hours later and after 6 weeks

- b) **over 12 months:** 200 000 IU immediately and repeat 24 hours later and after 6 weeks

Prophylaxis

- children in communities where vitamin A deficiency is common
 - retinol (vitamin A) oral
- a) under 12 months: 100 000 IU every 6 months
b) over 12 months: 200 000 IU every 6 months

Referral

All complicated cases.

13.2.2. Pyridoxine (Vitamin B6) deficiency

Description

Pyridoxine deficiency is related to:

- malnutrition
- alcoholism
- malignancy

Common manifestations include:

- symptoms and signs of anaemia
- signs of peripheral neuritis such as:
 - a) tingling sensation of the legs
 - b) leg pains
 - c) calf muscle cramps
 - d) muscle weakness

Note: Signs of peripheral neuritis may occur during TB treatment (isoniazid).

Management objectives

- correct pyridoxine deficiency
- lifestyle modification
- treatment of the cause

Drug treatment

Pyridoxine oral in the morning for 3 weeks:

- **deficiency**
 - a) children: 25 mg
 - b) adults: 25 mg
- **drug-induced neuropathy**
 - a) children: 50-200 mg
 - b) adults: 50-200 mg
 - c) followed by prophylactic doses of 25-50 mg oral, in the morning

Referral

- convulsions
- hallucinations
- anaemia
- seborrhoeic dermatitis around the eyes, nose and mouth accompanied by stomatitis and glossitis

13.2.3. Pellagra (nicotinamide deficiency)

Description

Pellagra is a condition associated with nicotinamide deficiency, usually accompanied by other vitamin deficiencies.

- clinical features:
 - a) diarrhoea
 - b) dementia
 - c) dermatitis with darkening of sun-exposed skin

Management objectives

- correction of nicotinamide deficiency

Non-drug treatment

- lifestyle adjustment
- patient counselling
- discourage alcohol abuse

Drug treatment

- nicotinamide oral, daily
- a) children: 300 mg in three divided doses
- b) adults with less severe pellagra: 100 mg
- c) adults with severe pellagra: 300-500 mg in divided doses

Referral

- confusion
- depression
- memory loss
- psychosis
- dementia
- hallucinations
- delusions

Relevant for Seychelles ???!

13.2.4. Thiamine deficiency (Wernicke's encephalopathy and beriberi)**Description**

Clinical features are:

- confusion
- paralysis of one or more of the ocular muscles (ophthalmoplegia)
- nystagmus
- ataxia
- peripheral neuropathy
- congestive heart failure

Note:

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

Treatment objectives

- correction of thiamine deficiency
- treatment of beriberi

Non-drug treatment

- lifestyle adjustment
- patient counselling
- discourage alcohol abuse

Drug treatment

- thiamine oral daily for 6 weeks
- mild peripheral neuropathy 50 mg
- severe peripheral neuropathy 50-100 mg

Referral

- Wernicke's encephalopathy
- congestive heart failure
- severe peripheral neuropathy

13.2.5. Vitamin B deficiency

Description

A condition in which multiple vitamin B deficiencies occur, such as:

- malnutrition
- pellagra associated with multiple vitamin B deficiency
- physical and neurological complications of alcoholism

Management objectives

Correction of vitamin B deficiencies.

Non-drug treatment

- lifestyle adjustment
- patient counselling
- discourage alcohol abuse

Drug treatment

- vitamin B complex oral
- a) **children:** 5 ml syrup daily
- b) **adults:** 2 tablets three times daily for 1 week, then one tablet daily for 3 months

Referral

- Wernicke's encephalopathy
- confusion
- depression
- memory loss
- psychosis
- dementia
- hallucinations
- delusions

Do we keep if Vitamin B complex is to be deleted from Formulary ??

13.3. Failure to thrive (FTT)

Description

Children and infants showing less than normal growth according to their own record on the growth monitoring card.

FTT is due to:

- insufficient food intake
- insufficient uptake of nutrients (e.g. malabsorption)
- insufficient use of nutrients for growth due to chronic disease

Non-drug treatment

- identify the cause
- dietary management, see below (PEM)
- nutrition education

Review every 2 weeks until weight gain is normal.

Drug treatment

- anthelmintics, where indicated (see section 8.09)
- iron, where Hb is less than 10 gm/dl (see section 13.01.1)
- vitamin A (see section 13.02.1)

Referral

- treatment failure
- all children other than those with insufficient food intake

CHAPTER 14 - PSYCHIATRIC ILLNESS

Note:

Psychological disorder management at primary health care level can be initiated by general practitioner.

14.1. Delirium - acutely confused, aggressive patient

See Chapter 19 - Trauma and emergencies

14.2. Depression

Description

Depression is often defined as a morbid sadness. That is quantitatively and qualitatively distinct from depression that normally accompanies bereavement or loss.

- Diagnostic criteria: Symptoms-

Psychological:

- Depression of mood (Lowering of mood)
- Forgetfulness
- Pessimistic views of the future
- Ideas of guilt and unworthiness
- Suicidal ideas

Social: Loss of interest or pleasure in usual activities
Neglecting home, spouse, children & work

Biological:

- Sleep disturbance; EMW (early morning wakening)
- Appetite (Excessive or low)
- Weight (Gain or loss)
- Fatigability (Excessive)
- Diminished sex
- Agitation or retardation / anxious

Duration of illness at least for 2 weeks.

Presence of dementia or mental retardation does not rule out the Dx of a treatable depressive episode

Note:

Telephonic consultation with a community psychiatrist on call is recommended to verify diagnosis.

Management objectives

- provide regular care, support and counselling
- provide the correct medication

Non-drug treatment

- treatment of the mentally ill requires more than medication
- psychosocial interventions include:
 - a) supportive psychotherapy
 - b) counselling
 - c) rehabilitative therapies (including occupational therapy, finding accommodation and employment)
- Sociological intervention including finance, housing & employment

Drug treatment

- amitriptyline is indicated for:
 - a) major depressive episodes where sedation is required

- b) moderate to severe adjustment disorders with depressed mood
- c) imipramine is more indicated in retarded depression (given during day time and avoid evening dosage)

- amitriptyline oral, at bedtime

a) **adults:** initial dose of 75 mg increase by 25 mg per day at 7-10 day intervals to a maximum of 150 mg. Consult if more than 150mg is needed??

b) **elderly:** initial daily dose 25 mg per day increasing by 25 mg per day at 7-10 day intervals to a maximum of 100 mg

c. For Imipramine: dosage remains the same but avoid evening dose

- duration of treatment

a) at least 6 months after symptoms have ceased in cases of first major depressive episodes

b) longer treatment is indicated after relapse, old age or complicated cases

Note:

Do not increase the dose too quickly:

- it takes up to 14 days before therapeutic effect occurs and often up to 8 weeks at optimal doses
- a single bedtime dose is optimal for most patients
- doses should be increased slowly at intervals of 7-10 days in 25 mg dose increments until the desired response

!CAUTION! Do not issue more than 1 week's supply of amitriptyline:

- as it may not be effective
- to patients with suicidal ideation
- because if overdosed it has a fatal toxic effect on the heart

!CAUTION!

Do not give amitriptyline to a patient with bipolar disorder without consultation:

- dysthymic disorders do not always respond but dosages are similar to those in major depression.
- the elderly are more sensitive to side-effects and need lower doses

Avoid amitriptyline in patients with:

- contraindicated in arrhythmias, heart block, recent myocardial infection & liver diseases
- urinary retention
- glaucoma
- epilepsy
- already on another antidepressant

Referral

- concurrent psychiatric illness without suicidal tendencies
- bipolar disorders
- suicidal tendency
- failure to respond to available antidepressants
- patients with concomitant medical illness, e.g. heart disease, epilepsy, symptoms of urinary tract obstruction in elderly males, glaucoma
- poor social support systems
- pregnancy
- children

14.3. Psychosis, acute

Psychotic disorders include severe mental disorders, which are characterized by extreme impairment of a person's ability to think clearly, respond emotionally, communicate effectively, understand reality, and behave appropriately.

In its most florid form, psychosis is the archetype of the layman's madness.

The three key features help in diagnosing that a psychotic illness is present are: Hallucinations, Delusions and Thought disorder.

If one of these features is present, the diagnosis is limited to:

1. Schizophrenia

2. A disorder of affect (mania or depression)
3. Paranoid state.
4. Organic illness (substance abuse, medication, dementia)

Schizophrenia is one of the major psychiatric disorder.

Description

Schizophrenia is the most common psychosis:

- it is characterized by abnormalities of perception, mood, thinking, behaviour and contact with reality
- it is one of the major psychiatric disorders

Clinical features include:

- a) delusions - fixed, unshakeable false beliefs
 - b) hallucinations - perceptions without adequate stimuli, e.g. hearing voices
 - c) disorganised thinking or speech - incoherence and thought disorder
 - d) odd or peculiar behaviour
 - e) negative symptoms - apathy or blunted emotional state
 - f) social or occupational dysfunction
- only make the diagnosis if:
 - a) symptoms and signs are present for at least 6 months
 and
 - b) two or more of the main symptoms present almost continuously for at least 1 month

Management objectives

- management of acute episodes
- ongoing support by using medication and psychosocial interventions

Non-drug treatment

- treatment of the mentally ill requires more than medication
- psychosocial interventions include:
 - a) supportive psychotherapy
 - b) counselling
 - c) rehabilitative therapies including occupational therapy, finding accommodation and employment.

Note

Consultation with a psychiatrist on call is recommended to verify diagnosis and treatment.

- once stabilised on maintenance medication it is usually not necessary for specialist evaluation every 6 months and general practitioner review is recommended

Drug treatment

- chlorpromazine oral, initiate with 25 mg three times a day:
 - a) gradually increase until symptoms are controlled
 - b) once stabilised, administer as a single bedtime dose
 - c) usual maintenance dose 75-300 mg at night

Only for health workers with advanced psychiatric training

- other neuroleptics such as haloperidol
- the management of acute psychosis includes the use of neuroleptics in order to:
 - a) tranquillise
 - b) sedate
 - c) have a positive effect on hallucinations, delusions and thought disorders

!CAUTION!

Always consult with a doctor, preferably a psychiatrist, where possible when prescribing neuroleptic drugs to:

- children
- the elderly
- during pregnancy and lactation

Acute management of psychotic patients (including mania)

- 10mg and haloperidol IM immediately + diazepam 10mg

Then refer to psychiatric department

Long-term therapy

- haloperidol oral 2-20 mg per day divided into 2-3 doses
- fluphenazine decanoate IM 25 mg monthly

Note

Long-term therapy should be in consultation with a doctor, where possible a psychiatrist. Patients on long-term therapy should be assessed by a Psychiatrist every 6 months.

Extra pyramidal side-effects

- if extrapyramidal side-effects occur with neuroleptics:
 - a) review choice of neuroleptic
 - b) reduce dose if abnormal movements occur, e.g. rolling of the eyes, tongue protrusions, ataxia
 - c) an anticholinergic agent such as benzhexol can be co-prescribed
- benzhexol 2-5 mg 1-2 times daily according to individual response. Use with caution in the elderly

Referral

- first psychotic episode
- failure to respond
- poor social support
- intolerance to medication
- where suicide risk is high
- concurrent medical or other psychiatric illness
- children
- the elderly
- pregnancy

CHAPTER 15 - RENAL AND URINARY TRACT CONDITIONS

15.1. Urinary tract infection, uncomplicated (acute uncomplicated cystitis)

Description

An acute condition caused by *Escherichia coli* in most cases. Other micro-organisms may occur, especially in patients previously managed in hospitals. It occurs predominantly in women, especially sexually active women. Urine is turbid and/or bloodstained and tests positive for nitrites.

Symptoms include:

- burning or pain on passing urine (dysuria)
- frequent passing of small amounts of urine
- in more severe cases there is lower abdominal pain and tenderness

Note

Pelvic inflammatory disease must be excluded.

Management objectives

- elimination of harmful micro-organisms
- prevention of complications

Non-drug treatment

- encourage liberal fluid intake
- reduce the stasis of urine in the bladder
- lifestyle adjustment

Drug treatment (do MSU before starting the treatment)

- Please do MSU before starting the treatment.

Adults

- trimethoprim/sulfamethoxazole oral 160/800 mg 12 hourly for 7 days (one tablet is 80/400 mg). or
- Cephalexin oral 500 mg 8 hourly for 7 days
- or as per sensitivity

Referral

- all male children
- recurrent infections
- persons who have recently had urinary tract instrumentation
- urinary tract infection not responsive to therapy (i.e. symptoms do not subside)

15.2. Acute pyelonephritis

Description

Infection of the kidney parenchyma. Patients are often very ill with severe symptoms, fever, rigors, toxæmia, backache and tenderness. May be complicated by shock and septicaemia. Urine is turbid and/or bloodstained and tests positive for nitrites.

Referral

- all patients

CHAPTER 16 - RESPIRATORY CONDITIONS

16.1. Asthma

16.1.1. Asthma, chronic

Description

A chronic condition of the airways with reversible airways obstruction due to inflammatory oedema and bronchospasm. It is characterised by wheezing, shortness of breath (dyspnoea), cough (usually non-productive) and tends to vary in intensity. Acute attacks may be caused by exposure to allergens (substances to which a patient is allergic), viral diseases and non-specific irritating substances.

Management objectives

- symptomatic relief
- restore normal or best possible long-term function of the airways
- reduce the risk of a severe attack
- prevent relapse

Note

A comprehensive therapeutic approach is required to meet the above objectives, including the following:

- early diagnosis and assessment of severity
- optimal use of medication to limit side-effects and cost
- peak expiratory flow rate (PEFR) determinations at home and in the clinic are the basis for optimising therapy
- patient education including:
 - a) stressing the diagnosis and explaining the nature of the condition
 - b) teaching and monitoring the technique for use of inhalers
 - c) reassuring parents and patients of the safety of continuous regular therapy
 - control of the environment to exclude cigarette smoke and reduce exposure to triggers such as viral infection and allergens
 - follow-up and regular regular re-evaluation

Non-drug treatment

- stop smoking
- avoid exposure to known allergens
- educate on early recognition and management of acute attacks and respiratory infections

Note

- inhaled therapy is preferable
- spacer devices should be used for all inhaled corticosteroids in all age groups, especially in children
- inhalation spacer devices enable parents to administer aerosol therapy even to small children

Patient education on inhaler techniques

- **without a spacer**
 - a) remove the cap from the mouthpiece and shake the inhaler well
 - b) while standing or sitting upright, breathe out as much air as you can
 - c) place the mouth piece of the inhaler between the lips and gently close the lips around it
 - d) when you begin to inhale, depress the vial of the metered dose inhaler
 - e) once against the mouthpiece while breathing in as deeply as you can
 - f) hold your breath for as long as you can (5-10 seconds)
 - g) breathe out slowly and rest for a few breaths (30-60 seconds)
 - h) repeat steps b-f for the second puff

Note

- **the patient** should demonstrate steps 2-4 more than once to ensure the correct technique
 - education requires time and patience, but correct inhaler technique is vital to the successful use of the inhaler
- Many patients have difficulty with co-ordination of the inhaler and inhalation, and a spacer with or without a mask should be used.

- **with a spacer**
 - a) remove the caps from both the inhaler and the spacer
 - b) shake the inhaler well
 - c) insert the mouthpiece of the metered dose inhaler into the back of the spacer
 - d) insert the mouthpiece of the spacer into the mouth and close the lips around the mouthpiece. Avoid covering any small exhalation holes
 - e) press down on the vial of the metered dose inhaler to spray the drug into the spacer
 - f) immediately take a slow deep breath for 5-10 seconds. Do not breathe in too hard
 - g) repeat steps 4-6 for each puff prescribed, waiting at least 30 seconds between puffs

- **for children**
 - a) allow to breathe slowly in and out of the spacer continuously for 30 seconds
 - b) while still breathing, spray the drug from the inhaler into the spacer
 - c) continue breathing for 3-4 breaths
 - d) if breathing is through the nose, pinch the nose gently while breathing from the spacer

- **with a spacer and mask for infants and small children**
 - a) remove the caps from both the inhaler and the spacer
 - b) shake the inhaler well
 - c) infants may be placed on the caregiver's lap or laid on a bed while administering the medication
 - d) apply the mask to the face, ensuring that the mouth and nose are well covered
 - e) with the mask held firmly on the face, press down on the vial of the metered dose inhaler to spray the drug into the spacer
 - f) keep the mask in place for at least six breaths, then remove
 - g) repeat steps 4-6 for each puff prescribed, waiting at least 30 seconds between puffs

Note

- **the patient or caregiver** should demonstrate steps 2-6 of the relevant method above more than once to ensure the correct technique
- education requires time and patience, but correct inhaler technique is vital to successful inhaler technique

Mild asthma

Indications for intermittent inhaler therapy with beta2 agonists, e.g. salbutamol:

- not more than one episode of cough and/or wheeze per week
- no night-time cough and/or wheeze
- no recent admission to hospital for asthma
- PEFr more than 80% predicted

Moderate to severe asthma

Indications for inhaled corticosteroid therapy, e.g. beclomethasone therapy, supplemented by intermittent inhaled salbutamol:

- more than one episode of cough and/or wheeze per week
- severe attacks even if infrequent, especially if hospitalisation was needed
- night-time cough and/or wheeze, especially if more than once per week
- the use of beta2 agonist more than three times a week
- PEFr less than 80% predicted

Drug treatment

- inhaled salbutamol (short-acting inhaled beta2 agonist) as required 4-6 hourly until relief is obtained, and not continuously
 - a) Children: 100-200 micrograms (1-2 puffs) depending on age
 - b) Adults: 200 micrograms (2 puffs)
- **indications for inhaled corticosteroid therapy, e.g. beclomethasone:**
 - a) sleep is disturbed by asthma
 - b) symptoms are getting progressively worse
 - c) frequent use of salbutamol, i.e. more than twice a day (patients should keep a diary)
 - d) PEFr falls below 60% at the patient's best effort
 - e) emergency nebuliser or intravenous bronchodilators are needed
- inhaled corticosteroid therapy, e.g. beclomethasone 250mcg

- a) initiate treatment with double the maintenance dose for 1-2 weeks until control is achieved
- b) once symptoms and PEFr have improved, the dose is reduced to the minimum that maintains control
- c) children: maximum dose 200 micrograms per day in PHC clinics where PEFr can be monitored, otherwise 100 microgram per day
- d) adults: maximum dose 500 micrograms per day in PHC clinics where PEFr can be monitored, otherwise 250 micrograms per day

If salbutamol and the inhaled corticosteroids fail, the following may be added if initiated by a doctor:

- short course prednisone oral, once daily for up to 10 days, without tapering the dose
- a) children: 1-2 mg/kg/day
- b) adults: 30 mg – 60 mg
- c) may be needed at any time and at any stage to control exacerbations of asthma

!CAUTION!

- all metered dose inhaled medication in children to be administered via a spacer device
- no inhaled corticosteroids for COAD

Stepping down

- 3-monthly review of therapy is required
- stop regular corticosteroid therapy, e.g. beclomethasone after 6 to 12 months with few or no symptoms if symptoms are seasonal
- slow release theophylline for acute exacerbations and in patients having COPD, who are unable to use inhaled bronchodilators (initiation by doctors only)
- a) **adults-general:** 6-14 mg/kg (usually 10-12 mg/kg) or 400 mg per day, whichever is the lowest dose, divided into 8-12 hourly doses
- b) **adult smokers:** 16 mg/kg maximum per day
- c) **adult non-smokers:** 13 mg/kg maximum per day
- d) **elderly:** 8 mg/kg maximum per day

Referral

- failure to achieve goals of management
- diagnosis in doubt
- unstable asthma
- when oral prednisone is required regularly
- after a life-threatening episode
- pregnant women with worsening asthma
- when higher doses of theophylline appear to be required (control with serum levels)

16.2. Chronic bronchitis and emphysema

Also referred to as chronic obstructive airways disease (COAD)

Description

Chronic bronchitis and emphysema are conditions manifested by chronic cough with or without sputum production on most days and shortness of breath (dyspnoea). The onset is very gradual with progressively worse symptoms. Due to the large reserve capacity of the lungs, patients often present when there is considerable permanent damage to the lungs. The airways obstruction is not fully reversible.

The main causes of chronic bronchitis and emphysema are chronic irritation of the airways caused by smoking and air pollution, although there are many other causes. It is not primarily an infection, but a degenerative condition. Patients usually present with some of the following:

- wheezing
- shortness of breath
- cough with or without sputum
- manifestations of right-sided heart failure
- acute bronchitis after a cold/flu with the above symptoms

Note

The airways obstruction of chronic bronchitis and emphysema is not completely reversible as in asthma:

- inhaled corticosteroids have no effect and should not be used
- oral corticosteroids may be required, but these have severe long-term complications and should only be used if benefit can be proved by lung function testing

Management objectives

- obtain maximum relief and prevent deterioration of airways obstruction
- prevent exacerbations

Non-drug treatment

- stop smoking

Drug treatment

- acute airways obstruction is treated similarly to that of asthma (see below)
- the principles of chronic obstruction management are as for asthma, except that inhaled corticosteroids are not recommended
- oral theophylline and oral prednisone are doctor initiated

16.3. Acute bronchospasm associated with asthma and chronic obstructive bronchitis

Description

A sudden reversible or partially reversible narrowing of the airways.

- this is an emergency situation

Management objectives

- reverse the obstruction and relieve hypoxia as soon as possible

Recognition and assessment of severity of attacks in adults:

	MODERATE	SEVERE
Talks in	phrases	words
Alertness	usually agitated	drowsy/confused
Respiratory rate	18-30 minute	often more than 30/minute
Wheeze	loud	loud or absent
Pulse rate	100-120 minute	above 120 minute
PEFR after initial nebulisation	approx. 50-75%	below 50%

PEFRs are expressed as a percentage of the predicted normal value for the individual or of the patient's best value obtained previously when on optimal treatment.

Recognition and assessment of severity of attacks in children:

	MODERATE	SEVERE
Respiratory rate	40-50 minute	above 50 minute
Retractions or recession	present	present
PEFR	50-70% of predicted	below 50% of predicted
Speech	normal/difficulty with speech	unable to speak
Feeding	difficulty with feeding	unable to feed
Wheeze	present	absent
Heart rate	below 140/min	above 140/min
consciousness	normal	impaired

Initiation of treatment

- oxygen, high concentration
 - a) children: administer via nasal cannula (4 l per minute)
 - b) adults: use higher concentration mask (40% or higher) **except in chronic obstructive bronchitis** initiate treatment with 24-28% oxygen because carbon dioxide may otherwise suppress respiration

- 0.5% salbutamol solution nebulised over 3 minutes
 - a) children: 0.1 mg/kg in 2-3 ml 0.9% sodium chloride
 - b) adults: 4 mg in 3 ml of 0.9% sodium chloride
- repeated every 20 minutes in the first hour if no relief
- may be repeated 4 hourly thereafter
- if no nebuliser available, give 4-8 puffs from a salbutamol metered dose inhaler, using a spacer device

- 0.025% ipratropium bromide solution nebulised over 3 minutes
 - a) children: 0.5 ml
 - b) adults: 2 ml
 - c) mixed with salbutamol nebulising solution
 - d) may be repeated 8 hourly

- prednisone oral once daily
 - a) children: 1-2 mg/kg
 - b) adults: 30-60 mg
- administer initial dose early in a severe attack

Severe attack

- only commence IV therapy if patient is dehydrated
- use 5% dextrose in water
- aim to maintain a state of normal hydration
- encourage oral fluid intake

Hydrocortisone sodium succinate IV

- immediate dose given via IV line if oral prednisone cannot be taken
- children up to 1 year: 25 mg
- 1-5 years: 50 mg
- 6-12 years: 100 mg
- adults: 100-200 mg

Followed by prednisone oral

- avoid sedation of any kind
- aminophylline IV 5-6 mg/kg IV infusion in 1000 ml of 5% dextrose at a flow rate not exceeding 0.6 mg/kg/hour (35 drops/min). Treatment should be initiated by a doctor:
 - a) preferably used as a second line agent in patients who have not responded to initial management
 - b) recommended for use in adults only
 - c) no loading dose to be given
 - d) reduce flow-rate in patients with congestive cardiac failure, the elderly and patients with liver disease
 - e) avoid in patients already on long-term theophylline therapy
- assess response during first 2 hours

Good response

- in asthma and chronic bronchitis
 - a) continue with prednisone oral daily for 7 days
- in asthma only
 - a) check patient's inhaler technique; then commence or continue
 - b) regular inhaled corticosteroid therapy, e.g. beclomethasone
 - **children:** 50-100 micrograms twice daily
 - adults: 100-200 micrograms twice daily inhaled salbutamol (short-acting inhaled beta2 agonist) regularly 4-6 hourly until the acute attack has subsided
 - children: 100 micrograms (1-2 puffs) depending on age
 - adults: 200 micrograms (1 puff)
- in chronic bronchitis only
 - a) stop oral prednisone
 - b) check for acute infective bronchitis
 - c) refer for assessment of chronic oral corticosteroids use if still short of breath and/or wheezing and for oral theophylline treatment

Poor response

- refer immediately to hospital on oxygen therapy

Referral

- immediate referral:
 - a) any life-threatening features, e.g. extreme tachycardia, drowsy, confused, absent, wheeze, cyanosis, collapse
 - b) any features of a severe attack that may persist after the initial treatment
 - c) PEFV of less than 33% of the predicted normal or best value 15-30 minutes after nebulisation
 - d) poor response or incomplete response or high-risk patients - refer with oxygen therapy

A lower threshold to admission is appropriate in patients when:

- a) seen in the afternoon or evening, rather than earlier in the day
- b) recent onset of nocturnal symptoms or worsening of symptoms
- c) previous severe attacks, especially if the onset was rapid

16.3. Bronchitis, acute**Description**

A viral or bacterial infection of the bronchi.

- clinical feature - cough with generalised coarse crackles, with or without wheezes. The cough is initially often non-productive, but becomes productive with yellow or greenish sputum, especially when a secondary bacterial infection is present
- viral bronchitis is usually part of an upper respiratory viral infection accompanied by other manifestations of viral infection

Non-drug treatment

None.

**Criteria for antibiotic treatment
children**

- clinical criteria, if complicating factors such as:
 - a) a high temperature
 - b) nutritional deficiency
 - c) cardiac disease
 - d) previous pneumonia
 - e) bronchiectasis
 - f) immunocompromised

adults

- clinical criteria for treatment with an antibiotic if complicating factors are present:
 - a) clear evidence of secondary bacterial infection, i.e. discoloured sputum observed by the clinician
 - b) history of chronic bronchitis, evidence of chronic obstructive airways disease (COAD) or known bronchiectasis
- amoxicillin oral 8 hourly for 5 days
 - a) Children: 60-80mg/kg/day in divided doses
 - b) children over 12 years and adults: 500 mg
- penicillin-allergic patients:
 - a) erythromycin oral 6 hourly before meals for 5 days
 - b) children 5-10 kg: erythromycin stearate 62.5 mg
 - c) children 10-15 kg: erythromycin stearate 125 mg
 - d) children over 15 kg: erythromycin stearate 250 mg
 - e) adults: erythromycin stearate 500 mg
- paracetamol oral 4-6 hourly when needed to a maximum of four doses daily
 - a) children 3 months-1 year: 2.5 ml (120 mg/5 ml syrup)
 - b) children 1-5 years: 5-10 ml

- c) children over 12 years and adults: 1-2 tablets

16.4. Common cold and influenza

Description

Colds and influenza are self-limiting viral conditions; begin to clear within 3 days with colds and 7 days in influenza. May last up to 14 days.

- complications - secondary bacterial infections, including:
 - a) pneumonia
 - b) otitis media
 - c) streptococcal pharyngitis
 - d) sinusitis

Note

Children (especially if malnourished), the elderly and debilitated patients are at greater risk of developing complications.

!CAUTION! Malaria and measles may present with flu-like symptoms

Management objectives

- symptomatic treatment
- manage complications

Non-drug treatment

- steam inhalations
- bed rest if feverish
- return to clinic if earache, tenderness or pain over sinuses develops, or cough persists for longer than a week, or fever persists
- ensure plenty of fluids which will prevent secretions from becoming thick and difficult to cough up

Drug treatment

- **antibiotics are of no value for the common cold and influenza and could have serious side-effects**
- if common cold or flu with no complications, treat symptoms if necessary:
- fever
 - paracetamol oral 4-6 hourly when needed to a maximum of four doses daily
 - a) children 3 months - 1 year: 2.5 ml (120 mg/5 ml syrup)
 - b) children 1-5 years: 5-10 ml
 - c) children 5-12 years: ½ - 1 tablet (500 mg tablet)
 - 0.9% sodium chloride instilled in the nose for infants

Vaccination to be considered for risk group

Referral

Severe complications

16.5. Cough

See Chapter 18 - Symptoms and signs

16.6. Croup (laryngotracheobronchitis)

Description

- in croup there is inflammatory swelling of the vocal cords and the subglottic portion of the larynx, caused by infection
- croup is a common cause of potentially life-threatening airway obstruction in childhood

- most common causative pathogens are viruses - Parainfluenza or Herpes simplex following measles in children
- bacteria only occasionally cause croup, e.g. Streptococcus pneumoniae and Haemophilus influenzae
- croup due to diphtheria only occurs in incompletely immunised children
- a clinical diagnosis of viral croup can be made if a previously healthy child develops progressive inspiratory airway obstruction with stridor and a barking cough, in 1-2 days after the onset of an upper respiratory tract infection. A mild fever may be present.
- suspect foreign body aspiration if there is a sudden onset of stridor in an otherwise healthy child
- suspect epiglottitis if the following are present in addition to stridor:
 - a) very ill child
 - b) drooling saliva
 - c) unable to swallow
 - d) sitting upright with head held erect

Assessment of the severity of airway obstruction in croup:

SEVERITY	INSPIRATORY OBSTRUCTION	EXPIRATORY OBSTRUCTION	PALPABLE PULSUS PARADOXUS
Grade I	+		
Grade II	+	passive	
Grade III	+	active	+
Grade IV	Marked retractions, apathy, cyanosis		

Note

- pulsus paradoxus is very difficult to determine
- if the abdominal muscles are used actively during expiration (tenses the abdomen) Grade III obstruction is present

Non-drug treatment

- keep children comfortable and happy
- continue oral fluids
- encourage parents to remain with the child

Drug treatment

- paracetamol oral 4-6 hourly when needed to a maximum of four doses daily
 - a) children 3 months - 1 year: 2.5 ml (120 mg/5 ml syrup)
 - b) children 1-5 years: 5-10 ml
 - c) children 5-12 years: ½ - 1 tablet (500 mg tablet)
 - d) children over 12 years and adults: 1-2 tablets
 - always nebulise with oxygen at a flow rate of 4 L/minute
 - steroids are beneficial in viral croup
 - a. give an immediate dose if there has been no measles within the past month,
 - b) fever is below 38°C, and there is no evidence of oral herpes
 - prednisone oral 2 mg/kg as a single dose
- or**
- hydrocortisone sodium succinate IV in a dose of 2-8 mg/kg in 24 hours - a repeat dose is usually not indicated
 - antibiotics are seldom indicated in croup and should only be given in hospital
 - **do not** give sedatives or hypnotic agents

GRADE	MANAGEMENT
I	observe
II	<ul style="list-style-type: none"> • nebulise adrenaline by mask • mix 1 ml adrenaline 1:1 000 with 1 ml of saline • nebulise the entire volume with oxygen • repeat every 15 minutes until improved • refer for hospitalisation
III	<ul style="list-style-type: none"> • nebulise with adrenaline continuously

	<ul style="list-style-type: none"> • continuous endotracheal intubation if no improvement within 1-2 hours • refer to hospital promptly as it can get worse
IV	<ul style="list-style-type: none"> • immediate endotracheal intubation may be required • give 100% oxygen • nebulise adrenaline continuously • refer for hospitalisation promptly

Referral

- uncertain diagnosis
- all children with more than Grade I severity
- suspected foreign body
- suspected epiglottitis

16.7. Pneumonia**Description**

Infection of the lung parenchyma, usually caused by bacteria (e.g. Pneumococcus, H. influenzae).

- manifestations depend on the causative organism, the type of pneumonia (lobar pneumonia or broncho-pneumonia), the age and health status of the patient before the pneumonia and the extent of the pneumonia
- manifestations include malaise, fever (often with sudden onset with rigors), cough which becomes productive of rusty brown or yellow-green sputum, pleuritic type chest pain, shortness of breath and in severe cases shock and respiratory failure
- on examination there is fever, tachypnoea, crackles and/or bronchial breath sounds. There may be a pleural rubbing sound or signs of a pleural effusion

Note

Predisposing conditions include the very young and very old, other concomitant diseases, malnutrition, immune deficiency. Pneumococcal pneumonia often occurs in previously healthy adults.

Pneumonia in adults

- a chest X-ray should be taken in all patients if available
- a sputum smear and sputum for culture is advisable in all patients, especially those with predisposing conditions

Non-drug treatment

- encourage high fluid intake

Severe pneumonia in adults

Clinical features:

- moderate or severe respiratory distress
- fever of 39.5° or above
- confusion
- respiratory rate 30 breaths/min or more
- heart rate 120 beats/min or more
- systolic BP less than 90 mmHg
- diastolic BP less than 60 mmHg
- cyanosis
- age above 60
- multilobar consolidation
- concurrent severe illness, e.g. diabetes, heart failure, epilepsy

Referral

- all pneumonia cases

Pneumonia in children**Description**

- see adult condition

- additionally, indrawing of the lower chest wall, cyanosis and inability to drink in small children (2 months to 5 years) also indicate severe pneumonia needing urgent referral for admission
- pneumonia should be distinguished from bronchitis. The most valuable sign in pneumonia is the presence of tachypnoea

Severe pneumonia in children

- moderate respiratory distress:
 - tachypnoea
 - children 0-2 months: less than 60/min
 - children 2 months-1 year: less than 50/min
 - children over 1 year: less than 40/min
- severe respiratory distress:
 - tachypnoea and chest indrawing
 - unable to drink
 - impaired consciousness
 - cyanosis

Non-drug treatment

- adequate fluid intake
- oxygen 4 l/minute (mask, nasal cannula) for all with severe pneumonia

Referral

- all pneumonia cases

16.8. Tuberculosis

Description

A disease due to infection by *Mycobacterium tuberculosis* is a serious growing health problem in many developing countries, expanded and complicated by HIV/AIDS and multiple drug-resistant disease.

Management objectives

- cure the disease
- promote directly observed therapy, short-term (DOTS)
- prevent multi-drug resistance
- chemoprophylaxis in contacts

Note

A standard TB register monitoring system and treatment guidelines have been introduced in order to deliver a comprehensive service.

Non-drug treatment

- important factor for compliance in patient-centred care
 - a) the relationship between the person providing the care and the person suffering from the disease
 - b) feelings
 - c) expectations
 - d) potential barriers/problems which will prevent success
 - e) habits and past experience
 - f) monitor
 - g) encourage
 - h) provide feedback on progress
- lifestyle
- avoid the use of tobacco
- avoid alcohol
- if more than two doses of treatment are missed, extra effort should be made to identify and manage any problems the patient might have

Directly Observed Treatment Short-term (DOTS)

Treatment is chosen and ordered by the medical officer of CDCU. Treatment is delivered under the responsibility of the medical officer of CDCU.

- every dose of treatment is seen to be swallowed

Drugs are administered by a HCW in CDCU, in hospital or in a district health centre. Exceptionally the drug can be given by a member of the family or another person who has full confidence of the CDCU.

Drug treatment

- the total daily amount of each drug should be administered in one dose and not divided

NOTE: Rifampicin should not be available for TB at all in primary health care facilities as a single drug, but in combination with other TB drugs.

- the use of fixed-dose combinations is strongly encouraged in adults to enhance patient adherence and reduce the risk if inappropriate monotherapy
- pyridoxine oral 25 mg on the mornings that TB drugs are taken should be given routinely to TB patients:
 - a) during pregnancy
 - b) in alcoholics
 - c) with diabetes mellitus
 - d) with epilepsy

Important drug interactions

- rifampicin reduces the efficacy of oral and injectable contraceptives, resulting in possible unplanned pregnancies
 - a) see chapter 7: Family planning
 - b) ask about contraception and explain the problem and the consequences
 - c) if necessary, alter the oral or injectable contraceptive or suggest an IUCD
 - d) medroxyprogesterone acetate IM 150 mg should be given every 8 weeks in stead of every 12 weeks
 - e) norethisterone enanthate IM 200 mg every 6 weeks instead of every 8 weeks
 - f) combined oral contraceptives should contain at least 50 micrograms of ethinylestradiol
 - g) the pill-free interval should be reduced from 7 to 4 days

Side-effects of anti-TB drugs

The recommended TB drugs are safe.

- do not give streptomycin to:
 - a) pregnant women
 - b) persons over 65 years old
 - c) persons with impaired renal function
- do not give ethambutol to:
 - a) Inability (eg due to young age) to report symptomatic visual disturbances
 - b) clearance of less than 50 ml/minute

Chemoprophylaxis

Follow the guidelines of the WHO, isoniazide is used for chemoprophylaxis:

- a) Adults 300 mg daily for 6 months at least
- b) Children 5 mg/kg daily (max 300 mg) for 6 months at least

HIV/TB

- sputum smears in patients with HIV and TB are often negative as cavitation often does not occur until the TB is far advanced
- HIV patients with suspected TB should have repeated sputum cultures for TB, with sensitivity testing for isoniazid and rifampicin
- standard short-course treatment also effectively cures tuberculosis disease in patients with **HIV/AIDS**

- HIV-positive patients with a positive Mantoux test who are not ill from TB, should received chemoprophylaxis after that tuberculosis disease has been ruled out.

Multiple drug-resistant (MDR) TB

- diagnosed when there is resistance to:
- rifampicin and isoniazid on sputum culture sensitivity testing
- prevent resistance by ensuring cure the first time round
- MDR TB is the result of irregular treatment
- it is much more expensive to treat
- the cure rate is only between 30-50%
- cases are managed at CDCU
- the effectiveness of preventive therapy in persons exposed to MDR TB bacteria is not known
- all close contacts should be screened for signs and symptoms of MDR TB bacteria is not known
- all close contacts should be screened for signs and symptoms of MDR TB and by sputum sampling to detect early disease
- chest X-ray should be used, if available, as an ancillary diagnostic tool

Initiation of treatment

- treatment should be given seven times per week in both the intensive and continuation phases
- in special circumstances, treatment may be given three times per week in the continuation phase, provided it is properly supervised

CHAPTER 17 - SKIN CONDITIONS

17.1. Acne vulgaris

Description

A skin condition of sebum gland hypertrophy leading to a blocking and/or infection with *Propionibacterium* acnes.

- ranges in severity from mild (few blackheads) to severe with nodules and cysts
- more common in adolescence but may be protracted
- distributed on face, chest and back

Management objectives

- elimination of pathogens

Non-drug treatment

- wash with soap and water 2-3 times daily
- avoid cosmetics and hair spray
- do not squeeze lesions

Drug treatment

- if there are many pustules, apply 5% benzoyl peroxide gel at night
- severe cases of nodular acne
- doxycycline oral 100 mg daily for 14 days

then

- 50 mg daily for 3 months

Note

Additional contraception is essential for the 3 weeks if oral contraceptives are used.

Referral

- no improvement after 3 months
- development of severe complications

17.2. Bacterial infections of the skin

17.2.1. Boil, abscess

Description

Localised bacterial skin infection of hair follicles or dermis, usually with *Staphylococcus aureus*.

- the surrounding skin becomes:
 - a) swollen
 - b) red
 - c) hot
 - d) tender to touch

Note

Boils in diabetic or immunocompromised patients require careful management.

Management objectives

- elimination of the infection

Non-drug treatment

- encourage general hygiene
- apply local hot compresses three times daily until the boil/abscess starts draining
- drainage of abscess is treatment of choice, surgical incision being performed only after the lesion is mature

Drug treatment

- systemic antibiotics only as supportive therapy if there are:
 - a) swollen lymph nodes in the area
 - b) fever
- flucloxacillin oral 6 hourly for 5 - 7 days
 - a) children under 2 years: 62.5 mg
 - b) children 2-10 years: 125 mg
 - c) children over 10 years and adults: 250 mg - 500 mg
- penicillin-allergic patients:
 - a) erythromycin oral 6 hourly before meals for 5 - 7 days
 - a) children 5-10 kg: erythromycin stearate 62.5 mg
 - b) children 10-15 kg: erythromycin stearate 125mg
 - c) children over 15 kg: erythromycin stearate or 250 mg
 - d) adults: erythromycin stearate 500 mg

Referral

- no response to antibiotic therapy
- progression of the condition

17.2.2. Impetigo**Description**

A common skin infection due to *S. aureus* and streptococci that occurs mainly in children.

- clinical features:
 - a) purulent sores with crusts or scabs
 - b) painful
 - c) usually starts on the face
 - d) spreading to neck, hands, arms and legs

Management objectives

- elimination of the pathogen
- promotion of healing

Non-drug treatment

- prevention by keeping breaks in the skin clean
- avoid insect bites
- cut finger nails
- wash and soak sores in soapy water to soften and remove crusts
- instruct mother or patient to wash daily
- continue with treatment until sores are completely healed

Drug treatment

- Neomycin / bacitracin skin oint
- Antibiotic treatment is only locally necessary if one of the following is present
 - a) Multiple skin lesions
 - b) Fever
 - c) Swollen glands

First-line treatment for staphylococcal infections:

- flucloxacillin oral 6 hourly for 10 days
 - a) children under 2 years: 62.5 mg
 - b) children 2-10 years: 125 mg
 - c) children over 10 years and adults: 250 mg
- penicillin-allergic patients:
 - a) erythromycin oral 6 hourly before meals for 10 days
 - a) children 5-10 kg: erythromycin stearate 62.5 mg

- b) children 10-15 kg: erythromycin stearate 125 mg
- c) children over 15 kg: erythromycin stearate 250 mg
- d) adults: erythromycin stearate 250-500 mg

or

Cotrimoxazole:

- 0 - 6 yrs: 240 mg BD x 5 - 7 days
- 6 - 11 yrs: 480 mg BD x 5 - 7 days
- 12 yrs over 2 tabs BD x 5 - 7 days

Referral

- no improvement in 10 days
- complications such as glomerulonephritis

17.3. Cellulitis

Description

Usually caused by streptococci, but also staphylococci and occasionally other organisms.

- a diffuse spreading acute infection within solid tissues, characterised by:
 - a) oedema
 - b) increased local temperature
 - c) redness
 - d) without suppuration
- occurs mainly on the lower legs, but may occur anywhere
- may follow minor trauma or eczema, e.g. lower legs, varicose ulcers
- there frequently is lymphangitis and regional lymph node involvement manifested by tender swelling
- there may be severe systemic manifestations:
 - a) fever
 - b) chills
 - c) tachycardia
 - d) headache
 - e) hypotension
 - f) delirium

Admit all cases with severe systemic manifestation

- may present as an acute fulminant or chronic condition

Drug treatment

- mild cases
 - a) flucloxacillin oral 500 mg 6 hourly for 7 days
- penicillin-allergic patients
 - a) erythromycin stearate oral 500 mg 6 hourly for 7 days
 - b) benzathine penicillin IM 1.2 MU as a single dose is usually adequate
- severe cases
 - a) Admit for management

17.4. Eczema

16.4.1. Eczema, atopic

Description

- itchy red rash or dry rough skin linked to allergy
- in babies it appears at about 3 months
- a family history of asthma, hay fever or atopic dermatitis is common
- clinical features:

- a) inner (flexural) surfaces of the elbows, knees and creases of the neck
- b) in infants any part of the body can be affected
- c) very itchy
- d) can become chronic and infected

Management objectives

- treat the condition actively
- prevent spread to other areas

Non-drug treatment

- encourage cotton clothes
- cut nails short
- avoid scratching
- avoid perfumed soap

Drug treatment

- aqueous cream apply to dry areas as a moisturiser
 - 1% hydrocortisone cream applied twice daily for severe eczema if no response within 7 days
 - a) apply sparingly to the face
 - b) do not apply around the eyes
 - c) if there is a response then reduce the use of the hydrocortisone cream over a few days
- and**
- a) maintain treatment with aqueous cream

Referral

- no improvement in 2 weeks

17.5. Seborrhoeic eczema

Description

In its simplest form it is dandruff, which tends to be rather oily. Pruritus may or may not be present. It may become very extensive

Management objectives

- To reduce scale formation

Non-drug treatment

- cut nails short
- avoid scratching

Drug treatment

- 5 % salicylic in WSP apply to scalp at night and wash with citremide shampoo
- combine clotrimazole and hydrocortisone cream 1% (1:1) for facial lesions.

Refer if no improvement.

17.5.1. Infantile seborrhoeic dermatitis

17.5.2. Acute, moist or weeping eczema

Description

A form of seborrhoeic eczema with vesicles (microscopic to large) with oozing and eventual crusting and scaling.

Refer all cases

Description

A common contagious fungal infection (tinea) of the foot:

- itching, burning and stinging between usually 4th and 5th toes spreading to the sole

- secondary eczema of the hands may be an associated condition
- vesicles may occur in inflammatory cases
- reinfection is common

Non-drug treatment

- discourage the use of shared bathing or swimming areas until healed
- use own towels and toiletries
- keep feet dry:
 - a) wear open shoes or sandals
 - b) wear cotton socks if socks are worn
 - c) dry between toes after washing the feet or walking in water
 - d) wash feet twice daily before treatment application

Drug treatment

- topical treatment - apply to the affected area after drying
- clotrimazole cream twice daily for 4 weeks

Referral

- severe infection
- secondary infection
- no improvement after 4 weeks
- involvement of the nails

17.6. Fungal infections of the skin

17.6.1. Candidosis

(Vaginal candidiasis: see STD syndrome section 9.09)

Description

A skin infection caused by *Candida albicans*.

- most common sites for infection are any skin folds such as:
 - a) under the breasts
 - b) axilla
 - c) groin
 - d) perineum
 - e) nail folds
- the skin lesions or sores:
 - a) appear moist (weeping)
 - b) may have peripheral white pustules and scales
 - c) have clear edges
 - d) are red, raw-looking patches

Note

- infection often occurs in immune deficiency, thus:
 - a) exclude diabetes or other endocrine diseases
 - b) suspect HIV if the infection is severe or chronic

Management objectives

- eliminate the organism

Drug treatment

- applied 3 times daily for 14 days after healing.

Referral

- infections not responding to topical treatment

17.6.2. Nappy rash (candida)

Note

May be resistant to treatment due to the candida being harboured in the gastrointestinal tract.

Non drug treatment

- avoid disposable napkins
- frequent changing of cotton napkins to keep the affected area dry
- exclude maternal candidiasis

Drug treatment

- if topical treatment as above has failed
- nystatin suspension oral 100 000 IU/ml 0.5 ml after each feed

17.6.3. Ringworm**Description**

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

- arms and breast
- around the waist
- back
- buttocks
- groin

Clinical features:

- itchy ringlike patches
- raised borders
- patches slowly grow bigger
- as the patch extends a clear area develops in the centre

Non-drug treatment

- avoid spreading the infection to others
- do not share:
 - a) clothes
 - b) toilet articles
 - c) towels
- wash skin well and dry before applying ointment

Drug treatment

- treat any secondary skin infection first
- apply clotrimazole cream 2-3 times daily for 4-6 weeks
- continue using cream for at least 2 weeks after lesions have cleared
- for nail and scalp infections:
 - griseofulvin oral, once daily for a minimum of 8 weeks
- a) **children:** 10 mg/kg
- b) **adults:** 500 mg (1 tablet)
 - take with fatty meals or milk
 - **do not** give to women of child-bearing age unless they are using an effective contraceptive
 - **only** initiated by a doctor once the diagnosis has been clearly established

Note

Avoid exposure to the sun

Referral

- severe infection
- complications of infection of the scalp and face
- infection is widespread
- no response to treatment after 4 weeks

17.6.4. Pityriasis versicolor

Description

A superficial skin infection caused by commensal yeast - *pityrosporum orbicularis* common in tropics.

Clinical Features

- The eruption appears as hypopigmented patches with slightly scaling on a dark background
- Pink or brownish patches on a pale background
- Common on upper trunk but may become wide spread
- Recurrences are common

Drug Treatment

- For a wider area apply sodium thiosulphate solution after an evening bath to affected areas. Leave overnight and bath in the morning for 3 weeks
- On a small area apply clotrimazole cream or whitfield oint twice a day
- On face apply clotrimazole cream twice a day

Refer if no improvement.

17.7. Parasitic infections of the skin

17.7.1. Lice (pediculosis)

Description

An infestation of the hairy parts of the body with lice.

- 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:
 - a) itching
 - b) bite marks
 - c) secondary eczema and secondary infection may be present

Note

Body lice may carry typhus fever.

Non-drug treatment

- use a fine comb to comb out the nits after using shampoo
- the head can be shaved but it may not be necessary
- do not shave the pubic area
- treat the whole family as the condition spreads easily
- regularly wash bed linen and underclothes in warm water
- leave in the sun to dry

- 1% permethrin shampoo
 - a) use after shampoo
 - b) leave for 10 minutes before rinsing
 - c) do not apply to broken skin or sores
 - d) avoid contact with eyes

Referral

- secondary infection
- swollen glands
- fever

17.7.2. Scabies

Description

An infestation with the parasite *Sarcoptes scabiei*, most commonly in the skin folds.

- Spreads easily and usually more than one person in the household is affected

Clinical features:

- a) intense itching, much worse at night
- b) small burrows where the parasite has burrowed under the skin between fingers, toes, elbow areas and skin folds
- c) secondary infection due to scratching with dirty nails

Non-drug treatment

- all members of the household should be examined
- cut finger nails and keep them clean
- wash all linen and underclothes in hot water
- thoroughly wash the whole body with a mild soap and water, scrubbing the affected areas with a brush or wash-cloth
- rub the affected areas with a wash-cloth, and dry well with a clean towel
- put on clean, washed clothes after drug treatment

Drug treatment

- permethrin cream %

 - a) apply to the whole body from the neck to the feet
 - b) avoid the eyes
 - c) allow the lotion to dry
 - d) leave for 8-12 hours then wash off
 - e) repeat after 7 days

- Antihistamine tablets/syrup to reduce itching

Note

- itching may continue for 2-3 weeks after successful treatment
- do not continue if rash or swelling develops
- avoid contact with eyes and broken skin or sores

Referral

- severe secondary infection
- swollen glands
- fever

17.8. Nappy rash, non-fungal

Description

A diffuse reddish eruption caused mostly by residual soap or detergents in nappies, and irritation by diarrhoea stools.

Non-drug treatment

- educate caregiver and give advice on hygiene
- change nappies regularly and rinse thoroughly after washing
- do not use waterproof pants
- expose skin area to air and sunlight

Drug treatment

- zinc and castor oil ointment applied after each nappy change - if nappies are used
- if no response, suspect candida (see section 17.04.3)

Referral

- no response after 5 days

17.9. Sandworm

Description

Creeping eruption (cutaneous larva migrans) caused by hookworm of dog or cat, *Ancylostoma braziliense*:

- larvae of ovae in soil penetrate skin (feet, legs, buttocks, back)
- cause a winding thread-like trail of inflammation with:
 - a) itching
 - b) scratching dermatitis and bacterial infection

17.10. Urticaria**Description**

Urticaria is a skin disorder characterised by itchy weals (hives).

There are many causes, allergic, toxic or physical:

- allergic urticaria may be caused by drugs, plant pollen, insect bites or foodstuffs, e.g. fish, eggs, fruit, milk, meat

Management objectives

- prevention
- relief of itching
- identify and remove the cause

Non-drug treatment

- lifestyle adjustment
- detailed history taking

Note

Aspirin is commonly found in many patient medicines, and may be the cause.

Drug treatment

- chlorpheniramine oral for pruritus
 - a) children 6 months-1 year: 1 mg twice daily
 - b) children 1-5 years: 1-2 mg three times daily
 - c) children 5-12 years: 2-4 mg 3-4 times daily
 - d) children over 12 years and adults: 4 mg 3-4 times daily
- Calamine lotion on the skin may help to relieve the itch of urticaria, if severe.

Referral

- no improvement or response after 24 hours
- progressive illness

CHAPTER 18 - SIGNS AND SYMPTOMS

18.1. Arthralgia

Description

- joint pain without swelling, warmth, redness or systemic manifestations such as fever
- may be a manifestation of degenerative joint conditions (osteoarthritis) or of many local and systemic diseases, in which arthralgia may be an early manifestation
- may follow injury to the joint, e.g. work, play, position during sleep
- often accompanied by painful muscle spasm around the affected joint. Several joints may be affected
- any joint may be affected. Osteoarthritis often affects hips, knees, back, neck, shoulders
- systemic causes of arthritis may start with pain only, e.g. rheumatoid arthritis, gout, infective arthritis, lupus, reactive arthritis
- in children rheumatic fever should always be suspected, especially if arthralgia affects several joints in succession
- re-examine frequently to exclude other diseases

Management objectives

- exclude other conditions (X-ray, ESR and uric acid)
- pain relief

Non-drug treatment

- apply heat locally to the affected joint, take precautions not to burn the patient
- exercise after relief from pain
- reduce weight if overweight to decrease stress on the joint
- reassurance of patient after other causes have been excluded

Drug treatment

- treat for 1 week (maximum 2 weeks) provided no new signs develop
- methylsalicylate ointment, rub into affected areas
- paracetamol oral 4-6 hourly when needed to a maximum of four doses daily
- children 3 months-1 year: 2.5 ml (120 mg/5 ml syrup)
- children 1-5 years: 5-10 ml
- children 5-12 years: 1-1/2 tablets (500 mg tablet)
- children over 12 years and adults: 1-2 tablets

Referral

- chronic pain for over 2 weeks
- recurrent pain
- incapacitating pain
- backache
- signs of arthritis (swelling, redness, tender on pressure, warmth)
- fever

18.2. Cough

Description

- cough is an extremely common symptom of a large variety of conditions in the respiratory tract
- cough is produced by inflammatory, mechanical, chemical and thermal stimulation of cough receptors. Common triggering factors include infection, oedema, inhalation of irritant dusts, gases, cold or hot air, foreign bodies, pressure by tumour, aneurism or pleural effusion
- common conditions that include cough are bronchitis, asthma, tuberculosis, tonsillitis, lung edema, pneumonia, carcinoma, foreign bodies, HIV.
- cough may be productive :
 - a) infected or non-infected sputum
 - b) blood (haemoptysis)

c) or may be non-productive (dry cough)

- the elderly and children are inclined to swallow sputum, check therefore before diagnosing dry cough
- all patients with cough and haemoptysis need further investigation
- any cough that persists for 3 weeks needs special investigation
- a diagnosis of the cause of cough should always be made
- the cause of the cough must be treated appropriately

Management objectives

- make correct diagnosis of the cause
- treat the cause
- exclude serious underlying disease, e.g. TB, malignancy, asthma, foreign body aspiration, HIV
- stop smoking

Non-drug treatment

- recommend hot water with honey and lemon
- adequate hydration
- avoid irritants

Drug treatment

- cough mixtures should be avoided in productive cough

Referral

- any unexplained cough present for more than 3 weeks
- any cough which has any of the following associated symptoms:
 - a) blood in the sputum (haemoptysis)
 - b) weight loss
 - c) failure to thrive (children)
 - d) night sweats
 - e) unexplained chest pains
 - f) dyspnoea
 - g) persistent fever
- any cough which has not improved after appropriate or specific antimicrobial therapy:
 - a) any persistent cough in immunocompromised patients, e.g. HIV, TB diabetes mellitus, rheumatoid arthritis
 - b) persistent cough in patients exposed to occupational lung diseases, e.g. miners, chemical factory workers
 - c) suspected whooping cough (pertussis)
 - d) suspected pulmonary TB
 - e) lung cancer or other severe and chronic chest conditions

18.3. Febrile convulsions

Description

A seizure triggered by a raised temperature.

- there are two main kinds, simple and complex
- simple febrile convulsions:
 - a) these seizures occur between ages 6 months and 5 years and have a good prognosis
 - b) tends to occur at the beginning of the condition
 - c) often there is only one seizure which needs no specific treatment
- complex convulsions are characterised by:
 - a) focal recurrent seizure (fit)
 - b) seizure lasts longer than 10 minutes
 - c) residual neurological abnormality
 - d) intracranial infection

Note

Fever has many serious and benign causes.

- fever has its own symptoms, such as headache, body pains, rigors
- needs investigation and proper examination

- cause to be found and managed appropriately
- convulsions can be due to:
 - a) serious intracranial disease (meningitis)
 - b) extracranial disease (pneumonia, viral disease)
 - c) malaria, tick bite fever
 - d) condition peculiar to age group/sex, e.g. urinary tract infection
 - e) hypoglycaemia

Management objectives

- control convulsions
- lower fever
- make diagnosis

Non-drug treatment

- clear the airway
- treat for fever and its cause if these are known
- cool the body by wiping with a cool damp cloth –(tepid sponging)
- remove excess clothing

Drug treatment

- treat the underlying cause
- paracetamol oral/ suppositories, Dose- 15mg/kg 4 hourly.
 - a) children 3 months-1 year: 2.5 ml (120 mg/5 ml syrup)
 - b) children 1-5 years: 5-10 ml
- diazepam rectal 0,3-1mg/dose for convulsions, single dose
 - a) children under 3 years: maximum dose 5 mg
 - b) children over 3 years: maximum dose 10 mg

!CAUTION! Do not give aspirin to children

Referral

- convulsions different from the convulsions described above
- complex convulsions

18.4. Fever

Description

Fever is a natural and sometimes useful response to infection.

Note

- fever alone is **not** a diagnosis
- fever can cause:
 - a) pain
 - b) myalgia
 - c) arthralgia
 - d) headache
 - e) insomnia
 - f) convulsions in children
- fever and pain can be treated with one drug
- measure temperature correctly
- observe for signs of dehydration
- temperature above 40°C (hyperpyrexia) needs urgent lowering
- do not treat low-grade fever (below 38°C)
- in neonates and the elderly fever is often absent or preceded by other symptoms like confusion, failure to feed
- malaria must be seriously considered in anyone with fever living in a malaria endemic area or if a malaria area has been visited in the past 4 weeks

Management objectives

- lower body temperature
- prevent dehydration
- prevent convulsions
- stabilise before referral if necessary

Non-drug treatment

- place patient in a cool place and use fans for cooling if available
- remove excess clothing
- cover only with a sheet or other light covering
- tepid sponging of the body
- if the patient feels cold and begins to shiver then cover lightly

Drug treatment

- paracetamol oral 4-6 hourly when needed to a maximum of four doses daily
 - a) children 3 months-1 year: 2.5 ml (120 mg/5 ml syrup)
 - b) children 1-5 years: 5-10 ml
 - c) children 5-12 years: 1-1/2 tablets (500 mg tablet)
 - d) children over 12 years & adults: 1-2 tablets
- **only** treat for 3 days, then refer if a treatable cause cannot be found

18.5 Headache

Headache, mild, non-specific

Description

Headache can be benign or serious

Headache can have serious underlying causes such as hypertension, anaemia, stroke or brain tumor:

Organic headache will be associated with other neurological symptoms/signs:

- Vomiting
- Confusion
- Fever
- Impaired consciousness
- Paralysis
- Mood-change
- Convulsions
- Visual disturbances

Note

- Investigate the cause
 - a) An organic headache should be referred within a week
- Chronic recurrent headaches are a special diagnostic problem
 - a) In a health patient treat for one month then refer if no improvement
- Tension headache due to muscle spasm:
 - a) May be worse in the afternoon
 - b) Normally felt in the neck and the back of the head, but may be felt over the entire head
 - c) Often with dizziness and/or blurring vision
 - d) Often described as a tight band around the head
 - e) Not progressive through stages like migraine
 - f) Treat for one month and refer

Management

- Determine relaxation techniques
- Reassurance where applicable

Drug treatment

Paracetamol oral 4 – 6 hourly when needed to a maximum of four doses daily

- Dosage is as per the drug fomulary

Referral

- Headache in children lasting three days
- Recent headache of increasing severity
- Headache with neurological complications
- Newly developed headache persisting for fore than one week
- Chronic recurring headache if no improvement
- Suspected organic headache

18.6 Insomnia**Description**

- Difficulty in falling asleep or disturb sleep patterns that is of concern to the patient
- Problems with sleep are common and my have many causes
- Insufficient sleep has an impact on the patient's psychological state and ability to perform at work
- Insomnia may be:
 - a) Primary: due to environmental or physiological stress or illness
 - b) Secondary: due to pain, alcohol/drug abuse, anxiety

Note

History should include the following:

- Duration of the problem
- At what time does the patient go to bed and how long it take to fall asleep
- Does the patient sleep the whole night through and what time does he wake up
- Environmental factors, e.g. snoring partner, noise
- Does the patient sleep during the day
- Does the patient take any stimulants, e.g. caffèine, drugs,....

Management

- Restore normal sleep rhythm
- Treat the underlying cause

Non-drug treatment

- Patient counceling
- Lifestyle adjustment
- Teach the patient the importance of having a routine that prepares them for sleep
 - a) Food
 - b) Baths
 - c) Drink
 - d) Environment
 - e) Exercise

It helps to maintain a regular time for going to sleep and arising

Drug treatment

Benzodiazepines like diazepam 2.5 to 5 mg at night can be tried as a short term measure. Underlying cause has to be identified and managed. Do not prescribe for more than one week at a time because of the potential for addiction.

18.7 Itching (pruritus)

Description

A symptom characterized by:

- Localized or generalized itching
- May be accompanied by obvious skin lesions
- Many systemic diseases, e.g. hepatitis, may be accompanied by itching
- Causes may include scabies, insect bites, diabetes,....

Management objectives

- Establish diagnosis
- Treat cause
- Symptomatic relief

Non-drug treatment

- Tepid baths
- Cut fingernails

Drug treatment

- Calamine lotion applied when needed
- Chlorpheniramine oral for severe or refractory pruritus
 - a) Children 6 months – 1 year: 1 mg twice daily
 - b) Children 1 – 5 years: 1 – 2 mg three times daily
 - c) Children 5 – 12 years: 2 – 4 mg 3 – 4 times daily
 - d) Children over 12 years and adults: 4 mg 3 – 4 times daily

! CAUTION

Do not give an antihistamine to children under 6 months

18.8 Dizziness

(Solezon) is a word that patients use for a wide variety of complaints ranging from a vague feeling of unsteadiness to severe, acute vertigo. It is also frequently used to describe the light-headedness that is felt in anxiety and panic attacks, during palpitations, and in syncope or chronic ill-health. Therefore, the site and real nature of this symptom must be determined. While most patients complaining of dizziness do not have any serious underlying pathology, all complaints of dizziness has to be taken seriously, explored and put into context. It may signify a serious underlying pathology if the dizziness is persistent or associated with other symptoms like nausea or vomiting, headache, paraesthesia and other neurological symptoms.

18.9 Vertigo

An illusion of movement – is a more definite symptom. It is usually a sensation of rotation, or tipping in which the patient feels that the surroundings are spinning and moving. It can be classified as subjective if the patient feels that he is spinning around his environment or objective if he feels that the objects around him are spinning around him. It is often accompanied by nausea or vomiting. Vertigo indicates disease of the labyrinth, vestibular pathways or their central connections. A full neurological examination has to be done.

19.0 Blackout

Like dizziness, is a descriptive term applying either altered consciousness, visual disturbance or falling. Epilepsy, syncope, hypoglycaemia and other conditions must be considered. However, commonly no sinister cause is found. A careful history, particularly from an eye-witness, is essential.

19.1 Collapse

A vague, common term used by patients and relatives. It is not a diagnosis and the possible causes are multiple.

CHAPTER 19 - TRAUMA AND EMERGENCIES

The following conditions are emergencies and must be treated as such. Drugs used for treatment must be properly secured and their use recorded (time, dosage, routine) on the patient's notes and on the letter of referral.

19.1. Acute myocardial infarction

Description

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

- site: retro-sternal 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 lasting to several hours
- occurs at rest
- associated with:
 - a) pallor
 - b) sweating
 - c) arrhythmias
 - d) pulmonary oedema
 - e) a drop in BP

Note

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

Management objectives

- support and maintain vital functions
- alleviate pain and anxiety
- stabilise heart rhythm and BP
- reduce further damage to the heart muscle

Emergency treatment before transfer

- cardio-pulmonary resuscitation if necessary (see section 19.06)
- 100% oxygen continuously by nasal cannula
- morphine for pain relief
 - a) 5-10 mg s/c
 - b) glyceryltrinitrate 0.3 mg (Sublingually.)
 - c) tab. aspirin 150 mg. stat.

!CAUTION! Do not allow systolic BP to decrease by more than 10 mmHg **or** pulse rate to increase to above 90 per minute

- **monitor** continuously and also during transfer
 - a) pulse
 - b) BP
 - c) respiration depth and rate (count for a full minute)

Referral

- **all** suspected or diagnosed cases urgently

19.2. Acute pulmonary oedema

Description

A life-threatening condition with abnormal accumulation of fluid in the lungs

- causes are:
 - a) acute heart failure (common cause)
 - b) drowning or near drowning

c) over hydration with IV fluids

- persons with pulmonary oedema may present with acute bronchospasm
- a. it is important to distinguish this condition from an attack of acute asthma

!CAUTION! Morphine is contraindicated in acute asthma

Management objectives

- establish the cause of the pulmonary oedema and treat
- reduce the respiratory and cardiac workload by:
 - a) reducing agitation
 - b) inducing transient arterial and venous dilatation
 - c) decreasing the respiratory rate
 - d) slowing down the heart rate

Emergency treatment

- place the patient in a sitting, high or semi-Fowler's position
- administer 100% oxygen by mask to deliver 40% oxygen
- furosemide IV 40-80 mg to start diuresis in 15-20 minutes
 - a) if no response administer 40-80 mg after 30 minutes
 - b) if response inadequate follow with 20-40 mg in 2-4 hours
- morphine (used only in acute LVF):^a 5 – 10 mg s/c
- glyceryl trinitrate sublingual 0.5 mg 6 hourly
 - a) may be highly effective in causing dilatation of the veins and
 - b) redistributing blood volume away from the chest
- pulmonary oedema due to a hypertensive crisis or significant systolic hypertension may respond to a vasodilator
 - a) amlodipine and or lisinopril

Referral

- urgent referral of all cases
- administer oxygen therapy during transfer

19.3. Anaphylactic shock

Description

A very severe allergic reaction that may occur after an injection or exposure to any allergen

- clinical features:
 - a) collapse with shock
 - b) bronchospasm
 - c) laryngeal oedema

Management objectives

- prevent severe reactions by:
 - a) avoiding identified allergens
 - b) establishing the cause
 - c) teaching patients about prevention, early warning signs and management principles and ensuring the wearing of the medical identity discs
- restore cardiovascular function as soon as possible

Emergency treatment

- resuscitate (ABCD) immediately
- **assess** breathing and heartbeat
- **breathing**
 - a) if breathing, then give 100% oxygen
 - b) children: 4-6 l/min via nasal cannula
 - c) adults: 4-6 l/min face mask
- if the patient is not breathing

a) secure airway, ventilate with ambubag or ventilator

- **cardiac**

a) if there is **no** heartbeat

b) CPR

c) lay the patient flat if there is shock

- **intravenous solutions**

- 0.9% sodium chloride IV

or

- Ringer-lactate solution

a) adults: run IV fast

or

a) half-strength Darrows with 5% dextrose solution

b) children: run IV at 20 ml/kg in first 20-60 minutes

Drug treatment simultaneously

- adrenaline 1:1000 IV, SC or endobronchial is the mainstay of treatment and should be given immediately

- adrenaline 1: 1000 IV, 1 ml diluted with 0.9% sodium chloride to make 10 ml(0.1ml of 1:1000) give as a slow IV if unconscious

a) children: 0.1 ml/kg IV = (0.01mg/kg)

or

a) endobronchial through endotracheal tube for cardio-respiratory arrest (same dose)

b) repeat every 5 minutes when necessary for a maximum of three doses

or

a) SC (subcutaneous)

b) adults: SC, 0.5 ml undiluted immediately

- repeat every 10-20 minutes as needed

- check that heart rate is not over 140 beats/minutes

- hydrocortisone sodium succinate IV 100 mg / 200 mg immediately

- promethazine IM may be given additionally to counteract ongoing histamine release

a) children: 0.25 mg/kg

b) adults: 25-50 mg

19.4. Bites and stings

19.4.1. Animal and human bites

Description

Injuries which may result in:

a) infection - usually anaerobic bacteria

b) puncture wounds

c) tissue necrosis

d) complications for tetanus from animal bites

- animal bites – may be caused by:

a) domestic animals (horses, cows, rabid dogs, cats)

Management objectives

- avoid infection

- prevent tetanus

- avoid disability and scar formation

- pain relief

Non-drug treatment

- pre-exposure vaccine may be given to those at risk, e.g. occupation, endemic areas, laboratories

- prevention by health education and regular vaccination of domestic cats and dogs (legal requirement)

Emergency management

- irrigate and cleanse (scrub) the wound with 0.05% chlorhexidine solution

or

- 10% povidone iodine solution
- do **not** suture bite wounds
- thorough and prompt treatment to all bite wounds and scratches

- **previously immunised patients**

a) do not give rabies immunoglobulin

Tetanus prophylaxis

- tetanus adsorbed toxoid vaccine (TT) IM 0.5 ml
 - human tetanus immunoglobulin (TIG) IM
- a) unimmunised or never fully immunised patients: 250 IU
b) children: 5-10 IU/kg

Note: In a fully immunised person, tetanus toxoid vaccine or tetanus immunoglobulin might produce an unpleasant reaction, e.g. redness, itching, swelling or fever, but in the case of a severe injury the administration is justified

- prophylactic antibiotic use
 - amoxicillin/clavulanic acid orally 8 hourly for 5 days
- a) Children 40-50 mg/kg/day
b) children over 12 years and adult: 625mg
- penicillin-allergic patients
 - erythromycin oral 6 hourly before meals for 5 days
- a) children 5-10 kg: erythromycin 62.5 mg
b) children 10-15 kg: erythromycin 125 mg
c) children over 15 kg: erythromycin stearate or 250 mg
d) adults: erythromycin stearate 500 mg

Non-rabid bites (human & non-rabid animal bite)

- flush and cleanse
 - do not suture extensive bite wounds
 - prophylactic antibiotic use
 - amoxicillin/clavulanic oral 8 hourly for 5 days
- a) Children 40-50mg/kg/d
b) children over 12 years and adults: 625mg
- penicillin-allergic patients
 - erythromycin oral 6 hourly before meals for 5 days
- a) children 5-10 kg: erythromycin estolate 62.5 mg
b) children 10-15 kg: erythromycin estolate 125 mg
c) children over 15 kg: erythromycin stearate or estolate 250 mg
d) adults: erythromycin stearate 250 mg

Referral

- all large wounds needing elective suturing
- suspected rabid animal bites
- shock and bleeding
- deep wounds

19.4.2. Insect bites and stings

Description

Injury from stings and bites by bees, wasps, spiders, scorpions and other insects:

- **bees and wasps** - venom is usually mild but may provoke severe allergic reactions such as laryngeal oedema or anaphylactic shock
- **spiders and scorpions** - most are non-venomous or mildly venomous

Management objectives

- if a highly venomous species is thought to be responsible for the bite/sting apply first aid and supportive measures as for snakebite

Emergency treatment

- if anaphylactic shock
- if severe local symptoms treat as follows:
 - chlorpheniramine oral
 - a) children 6 months-1 year: 1 mg twice daily
 - b) children 1-5 years: 1-2 mg three times daily
 - c) children 5-12 years: 2-4 mg 3-4 times daily
 - d) children over 12 years and adults: 4 mg 3-4 times daily
 - calamine lotion applied if needed
 - paracetamol oral 4-6 hourly when needed to a maximum of four doses daily
 - a) children 3 months-1 year: 2.5 ml (120 mg/5 ml syrup)
 - b) children 1-5 years: 5-10 ml
 - c) children 5-12 years: ½-1 tablet (500 mg tablet)
 - d) children over 12 years and adults: 1-2 tablet(s)
- very painful scorpion stings need a local anaesthetic
- 2% lidocaine 2 ml injected around the bite

Referral

- if systemic manifestations are present

19.5. Burns

Description

Burns may be caused by heat (thermal burns), chemical compounds and physical agents, e.g. electrical. The extent and depth may vary from superficial (epidermis) to full-thickness skin and underlying tissues.

Management objectives

- burns are usually initially sterile
- speed healing while minimising the risk of infection

Emergency treatment

Throughout the first hour after the accident soak the affected area generously with, or immerse in cold water to limit the extent of the burn. Examine carefully to determine the extent of the burn and for respiratory obstruction due to thermal injury.

Fluid replacement

- burns of over 8% of body surface area (in children the palm of the hand is 1%)
 - a) IV fluid for resuscitation, apply sterile dressing and refer
- less serious and superficial burns
 - b) give IV fluid according to the calculation below

Calculation of fluid replacement

- the objective is to maintain normal physiology as reflected by urine output, vital signs and mental status
- general formula for use in first 24 hours

Ringer-lactate IV 1-1.5 ml/kg x % body surface area burned

• first 8 hours	• administer half the volume
• second 8 hours	• administer one quarter of the volume
• third 8 hours	• administer the balance

- paracetamol oral 4-6 hourly when needed to a maximum of four doses daily
 - a) children 3 months-1 year: 2.5 ml (120 mg/5ml syrup)
 - b) children 1-5 years: 5-10 ml
 - c) children 6-12 years: ½-1 tablet (500 mg tablet)

- d) children over 12 years and adults: 1-2 tablet(s)
- clean the wound gently with 0.9% sodium chloride or clean water
 - dress the burn with paraffin gauze dressing and then dry gauze on top
- a) the bandage should be thick enough to prevent seepage through to the outer layers
 b) change the dressing after 2-3 days, and as necessary thereafter
- **infected burn**
- a) 5% povidone iodine cream applied daily
 or
 b) 0.05% chlorhexidine solution daily

Tetanus prophylaxis

- tetanus adsorbed toxoid vaccine (TT) IM 0.5ml
 - human tetanus immunoglobulin (TIG) IM
- a) children: 5-10 IU/kg
 b) unimmunised or never fully immunised patients: 250 IU

Note: In a fully immunised person, tetanustoxoid vaccine or tetanus immunoglobulin might produce an unpleasant reaction, e.g. redness, itching, swelling or fever, but in the case of severe injury the administration is justified

Referral

- all children under the age of 3 months
- a) over 8% of body surface area burnt (in children the palm of the hand is 1%)
 b) deep burns or burns of the face, neck, hands or perineum
 c) circumferential burns
 d) deep electrical
 e) deep chemical
 f) inhalation burns
 g) infected burn

19.6. Cardiac arrest - cardio-pulmonary resuscitation

19.6.1 Cardiac arrest - adults

Description

Cardiac arrest is the sudden and usually unexpected cessation of effective cardiac output. Irreversible brain damage can occur within 2-4 minutes.

- clinical features:
- a) sudden loss of consciousness
 b) absent carotid pulse
 c) loss of spontaneous respiration
 d) pupil dilation

Management objectives

- urgent restoration of effective cardiac output and peripheral perfusion
- adequate oxygenation

Emergency treatment

- diagnose rapidly and mentally note the time of starting
 - commence resuscitation immediately
 - call for skilled help
 - a precordial thump is recommended for immediate treatment where a defibrillator is not immediately available
 - place the patient on a firm flat surface
 - initiate ABCD sequence of CPR
 - if possible, get someone to document medication and progress
- or
- collect all ampoules used and total them at the end

a) airway

- try to wake the patient
- clear vomit or foreign body from the mouth manually
- tilt the head backwards with one hand on the forehead (**do not do this where a neck fracture is suspected**)
- lift the chin forward with the fingers of the other hand
- raise the shoulders to tilt the neck backwards unless a neck fracture is suspected
- insert artificial airway if available
- when the patient is breathing well, lay him/her on the side to protect the airway and support the patient by bending the uppermost arm and leg

!CAUTION! No ventilation is possible until the airway is open

b) breathing

- check for breathing
 - no **breathing** then apply artificial respiration
- 1) mouth-to-mouth
- or**
- 2) mouth-to-nose
- or**
- 3) ambubag
- continue until spontaneous breathing occurs
 - oxygenation with 100% oxygen
 - endotracheal intubation is essential - use a tube of approximately the same diameter as the child's little finger or of a size that will just fit into the nostril
 - if prolonged ventilation is required, intubation is the best method of securing the airway
 - pre-oxygenate well before intubation

c) circulation

- check for carotid or other large pulse
- if no pulse, give a single precordial thump or defibrillate
- initiate CPR if there is no pulse or no breathing
- continue until return of the pulse and/or respiration

d) drip, doctor, drugs

- put up IV fluid with either 0.9% sodium chloride
- or**
- Ringer-lactate solution

Initial emergency drug treatment**a) adrenalin**

- adrenaline 1:1 000 IV, SC or endobronchial is the mainstay of treatment and should be given immediately
 - adrenaline 1: 1 000 IV, 1 ml diluted with 0.9% sodium chloride from the drip to make 10 ml
- or**
- 1) endobronchial through endotracheal tube for cardio-respiratory arrest (same dose)
 - 2) repeat every 5 minutes when necessary for a maximum of three doses
 - 3) adults: SC, 0.5 ml undiluted immediately, repeat every 10-20 minutes as needed, check that heart rate is not over 140 beats/minute
- doctor initiated medication

b) 2% lidocaine IV 50-100 mg for ventricular tachycardia or atropine 0.5-1 mg diluted for bradycardia

- reassess every minute until the patient shows signs of recovery
- continue until transfer to hospital
- consider stopping resuscitation attempts and pronouncing death if:

c) further resuscitation is clearly inappropriate clinically, e.g. incurable underlying disease**d) no success after all the above procedures have been carried out after 30 minutes or longer**

- consider carrying on for longer especially when:

- a) the patient is young
- b) hypothermia and drowning
- c) assumed electrolyte imbalance

19.6.2. Cardiac arrest - children

Description

The most common underlying cause or cardiac arrest in children is respiratory failure and hypoxia resulting from lung or airway disease or injury:

- croup
- bronchiolitis
- asthma
- pneumonia
- birth asphyxia
- inhalation of foreign body
- pneumothorax
- status epilepticus / fitting

Hypoxia is the most common cause of bradycardia or cardiac arrest in children. Asystole is the most common cardiac arrest rhythm in infancy and childhood, usually preceded by bradycardia. Ventricular fibrillation is unusual in children and it is therefore inappropriate to include a blind precordial thump or DC shocks in the management of cardiac arrest in children. Cardiac arrhythmias are unusual in children, unless due to severe electrolyte abnormalities or drug overdose.

Management objectives

- urgent restoring of effective cardiac output and peripheral perfusion
- adequate oxygenation

Emergency treatment

- diagnose rapidly and mentally note the time of starting
- commence resuscitation immediately
- summon skilled help
- cardiac massage is recommended for immediate treatment
- place the patient on a firm flat surface
- initiate ABCD sequence of CPR
- if possible, get someone to document medication and progress

or

collect all ampoules used and total them at the end

A) Airway

- try to wake the patient (check the level of consciousness)
- clear vomit of foreign body from the mouth manually, followed by oropharyngeal suction.
- tilt the head backwards with one hand on the forehead (**do not do this where a neck fracture is suspected**)
- lift the chin forward with the fingers of the other hand
- raise the shoulders to tilt the neck backwards unless a neck fracture is suspected
- insert artificial airway if available and oropharyngeal airway in unconscious patient.
- when the patient is breathing well, lay him/her on the side to protect the airway and support the patient by bending the uppermost arm and leg

!CAUTION! No ventilation is possible until the airway is open

- consider the possibility of a foreign body; if suspected, apply Heimlich manoeuvre or modification for size
- Heimlich manoeuvre:

a) child over 5 years

- a) make a fist with one hand
- b) place immediately below the child's xiphisternum
- c) grasp the child with the other hand
- d) apply force (1-6 times) in the direction of the upper thoracic spine

b) child under 5 years

- place the child face-down on one arm of the health worker
- deliver 1-4 sharp blows to the lower thoracic back with the hand

!CAUTION! Do not use blind finger sweeps of the mouth or posterior pharynx: this can impact any obstruction further down the airway

B) Breathing

- check for breathing
- no breathing then apply artificial respiration
 - a) mouth-to-mouth

or

 - b) mouth-to-nose

or

 - c) ambubag and face mask are preferable if available
 - d) breathe (inflate the chest) at least 15 times/minute (faster in babies)
 - e) do not stop unless breathing starts or help arrives
 - continue until spontaneous breathing occurs
 - oxygenation with 100% oxygen
 - endotracheal intubation is essential - use a tube of approximately the same diameter as the child's little finger or of a size that will just fit into the nostril
 - if prolonged ventilation is required, intubation is the best method of securing the airway
 - pre-oxygenate well before intubation

!CAUTION! Cardiac massage is useless unless there is an airway and the lungs are being filled with air

C) Circulation

- check the heartbeat
 - a) carotid in the older child

or

 - b) femoral

or

 - c) brachial pulse
 - **no pulse**, start cardiac compressions or massage
 - rate of compressions 80-100 beats/minute
 - continue with ventilation in between chest compressions
 - initiate CPR if there is no pulse or no breathing
 - keep patient covered and warm while resuscitating
 - ventilate if there is a pulse, but no breathing
 - continue until return of the pulse and/or respiration

D) Drip, doctor, drugs

- put up IV fluid with 5% Dextrose saline drip or half strength normal saline drip for children.
- or**
- Ringer-lactate solution
 - summon the doctor without stopping CPR

Initial emergency drug treatment

- adrenaline 1: 1000, initially 10 micrograms/kg IV or via endotracheal tube
 - a) adrenaline 1: 1000, 1ml diluted to 10 ml from the drip
 - b) children: 0.1 ml/kg
 - c) following and subsequent doses, a 5-10 fold increase is recommended
 - d) repeat every 3 minutes when needed for 3-4 doses
 - bradycardia or slow heart rate
 - a) hypoxia is the most common cause of bradycardia, so adequate ventilation or oxygenation is usually all that is needed
 - atropine IV 0.02 mg/kg to a maximum of 1 mg
 - alkalinising agents, e.g. sodium bicarbonate have not been shown to be useful during acute resuscitation
 - a) **only** use after clinical consideration of profound acidosis in patients with respiratory or circulatory arrest and

- b) after the first dose of adrenaline
 - difficult or impossible IV access within 2-3 minutes: administer medication down the endotracheal tube; adrenaline dose via this route is 10 times the standard dose
 - atropine can also be given via this route
 - **fluid therapy**
- a) administer a bolus of 0.9 % sodium chloride to follow the IV or intraosseous injection of any drug used in resuscitation
- b) especially if the injection is peripheral
- c) 5-20 ml, depending on the size of the child
 - **dextrose**
- a) sick children, especially infants, may be hypoglycaemic
- b) look for evidence during resuscitation
- c) treat proven hypoglycaemia with 10% dextrose solution IV, 5 ml/kg
- d) avoid unnecessary or excessive treatment

- **drug administration route**
- a) **IV** via a free-running drip
- b) ensure that excessive volumes of fluid do not run into the patient during the resuscitation
- c) use 60 drop per ml administrations sets for all drips unless hypovolaemia is thought to be responsible for the arrest
- d) **intraosseous route**
- e) resuscitation drugs, fluids and blood can be safely given
- f) drugs rapidly reach the heart
- g) access is safe, simple, rapid
- h) children of all ages and adults
- i) tibial technique, 2-3 cm below the knee

19.7. Delirium with acute confusion and aggression

Description

Delirium is an sudden onset state of confusion in which there is impaired consciousness.

- many possible causes, many outside the central nervous system
- the differential diagnosis includes psychiatric conditions, like schizophrenia and the manic phase of a bipolar disorder
- consider organic or physical illness as a possible cause, which may include:
 - a) central nervous system disorders
 - b) drug-related problems
 - c) typhoid,
 - d) Infections such as encephalitis, meningitis, sepsis, pneumonia in elderly patients.
 - e) metabolic disorders

- clinical features:
 - a) restlessness
 - b) agitation
 - c) aggressiveness
 - d) violent behaviour alone occurs in exceptional cases only
- risk factors for delirium include:
 - a) extreme of age
 - b) pre-existing dementia
 - c) cerebrovascular disease
 - d) space-occupying brain lesions
 - e) substance intoxication and withdrawal
 - f) prescription drugs such as anticholinergics and hypnotics
 - g) admission to intensive care units
 - h) epilepsy
 - i) sepsis, encephalitis/meningitis.
- main clinical features are:
 - a) impaired consciousness
 - b) confusion

d) disorientation

- other symptoms may also be present:

a) restlessness

b) agitation

c) hallucinations

d) autonomic symptoms such as sweating, tachycardia and flushing

- other patients may be hypo-active, with reduced responsiveness to the environment
- a fluctuating course and disturbances of the sleep-wake cycle are characteristic

Management objectives

- stabilise the patient
- treat the underlying cause

Emergency treatment

- non-organic, non-psychotic causes
- verbal intervention is the first step
- if communication is difficult, restrain and give psychotropic medication
- diazepam IV, 10-20 mg for immediate sedative or hypnotic action or 5-10 mg IV, in acutely anxious patient.
- do not administer at a rate over 5 mg/minute
- monitor for respiratory depression
- if no response

then

- haloperidol IV, 5-10 mg slowly
- or
- 5-10 mg IM/IV in restless and agitated patients only.

Referral

- to relevant ward depending of cause

19.8. Nose bleed (epistaxis)

Description

Most bleeding occurs from an area anterior and inferior on the nasal septum (Kiesselbach area). This may be caused by local or systemic diseases or local trauma. Always look for other conditions associated with nose bleeds, especially if recurrent, e.g. hypertension, bleeding tendency.

Management

Acute episode

- most bleeding can be controlled by pinching the nasal wings (alae) together for 5-10 minutes
- if this fails, the bleeding site must be found and the patient must be referred

Referral

- recurrent nose bleeds
- a) attempt to stop the present bleed
- refer for determination of cause

19.9. Eye, chemical burn

Description

Damage to the eye caused by contact with irritating chemical substance, e.g. acids, alkalis.

Management objectives

- remove chemical
- prevent damage
- avoid infection

Emergency treatment

- irrigate liberally with water or 0.9% sodium chloride and repeat several times if severe
- test visual acuity before fluorescein test for corneal injury or abrasions
- 1% fluorescein instilled in the eyes for diagnosis of local or diffuse damage

Local damage

- a) administer antibiotic, cover with eye pad and review after 24 hours

Diffuse damage

- a) 1% chloramphenicol ophthalmic ointment instilled 3-4 times daily

Oral analgesic

Referral: all patients

19.10. Eye injury, foreign body**Description**

A foreign body may be embedded in conjunctiva or cornea or deeper:

- conjunctival or eyelid foreign body may cause corneal abrasion
- disturbance of vision is serious

Management objectives

- relieve pain
- prevent infection
- prevent permanent loss of function
- remove the foreign body if superficial

Non-drug treatment

- proper history imperative, must be detailed
- check visual acuity first, before testing with fluorescein
- stain with fluorescein for corneal foreign body or complication (abrasion)
- check after removal of foreign body

Note

- do not use an eye pad with:
 - a) ecchymosis
 - b) lid oedema
 - c) bleeding
- allow drainage
- fluorescein confirms:
 - a) an embedded foreign body or rust ring
 - b) multiple foreign bodies
 - c) abrasions

Emergency treatment

- remove foreign body by washing
- or**
- irrigation
- or**
- with cotton-tipped stick (cotton bud)
- or**
- back of needle (cornea)
- a) visual acuity will be abnormal with a corneal foreign body or abrasion
- The nature of the trauma determines the type of injury
- a) 1% fluorescein drops for diagnosis
 - b) 0.5% tetracaine drops to remove foreign body only
 - c) 0.9% sodium chloride or clean water to irrigate the eyes

- d) 1% chloramphenicol ophthalmic ointment instilled 3-4 times daily
- e) review the problem daily

Referral

- hyphaema (blood in the anterior chamber of the eye)
- scleral and corneal laceration
- lid oedema
- subconjunctival bleeding persisting for more than 24 hours
- post-traumatic dilation of the pupil
- persistent corneal defect or corneal opacity

19.11. Exposure to poisonous substances

Note: Poisoning from agricultural stock remedies is notifiable

Description

the rapid and positive identification of the poison is essential:

- a) keep a sample or the poison container
- b) simple inspection or by assessing its smell or odour **except** in suspected cyanide exposure
- c) poisoning may also occur by inhalation and skin absorption

Management objectives

- prevent further absorption of the toxic substance
- maintain vital functions
- reverse the effects of the poison

Non-drug treatment

Most cases of poisoning are accidental

- where there is no definite history, suspect poisoning from the signs and symptoms
- treatment depends on:
 - a) type of poison
 - b) method of poisoning
 - c) time lapsed since poisoning
 - d) condition of the patient
- prevention depends on parent education and proper child care
- emphasize that drugs and poisons should be stored out of reach of children
- phone the nearest hospital or poison centre for advice

Emergency management

- perform resuscitation ABCD if the patient is unconscious
- take a history and identify the nature and route of poisoning
- thoroughly wash any poison off the skin and remove splashed clothes

Note

- health care workers should avoid inhaling, swallowing poison or having skin contact

Ingested poisons

- induce vomiting except in:
 - a) coma
 - b) convulsions
 - c) strong acids or alkalis
 - d) petroleum products
- syrup of ipecacuanha oral with large volumes of water to drink
 - a) children 6-12 months: 15 ml
 - b) children 12 months to 12 years: 20 ml
 - c) children over 12 years and adults: 25 ml
 - d) repeat after 20 minutes if no vomiting has occurred

Gastric lavage is of value within the first hour except where peristalsis is reduced.

- activated charcoal
- a) 50 g activated charcoal provided in a 500 ml bottle
- b) add 400 ml water and shake very well
- c) make sure that all the charcoal has been wetted
- d) dose 5 ml of this mixture per kg of body weight
- e) remove by suction or with purgatives
- f) repeat until a total of 100 g charcoal has been ingested and recovered

Specific antidotes

- oxygen for the management of hypoxia, especially in carbon monoxide poisoning
- atropine for the treatment of organophosphate and carbamate poisoning
- a) adults: initial trial dose of atropine IV 1-2 mg pralidoxine for organophosphate
- b) further dose if no adverse effects, 2-4 mg every 10-15 minutes
- naloxone
- a) in the treatment of opioid drug overdose
- b) dose 0.4-2 mg IV at appropriate intervals up to a maximum of 10 mg
- acetylcysteine is the antidote of choice in paracetamol overdose (over 125-250 mg/kg). If transfer to hospital is delayed, the administration of acetylcysteine should be initiated. Most effective if treatment is initiated within 8 hours of ingestion of paracetamol

diazepam for convulsions

- a) **children:** rectally 10 mg of the IV solution, repeat after 5-10 minutes if needed. 5mg. in children below the age of 5 Years.
- b) **children:** IV 0.2 mg/kg slowly over 3 minutes
- c) **adults:** IV 10-20 mg administered at a rate of 2 mg/minute until seizures stop
- Magnesium sulphate oral, in a glass of water, single dose as a general purgative
- a) children: 250mg/kg
- b) adults: 10-20 g

Referral all children

- all cases of severe poisoning
- a) petroleum and paraffin products
- b) corrosives acids and alkalis
- send the following to hospital with the patient
- a) written information
- b) the container
- c) any vomitus

19.12. Injuries

Description

- soft tissue injury may take many forms:
 - a) pain only
 - b) traumatic swelling
 - c) bruises (intact skin)
 - d) cuts
 - e) abrasions
 - f) puncture wounds
 - g) other open wounds of varying size and severity
- contamination with dirt and soil complicates the outcome of treatment
- human and animal bites can cause extensive injuries and infection
- fractures must be excluded, even when treatment with rest and ice is instituted
- stop obvious bleeding
- injury to internal organs must be recognised and referred:
 - a) including subtle signs for organ rupture

- b) blood in the urine - kidney damage
- c) shock - internal bleeding
 - referral must not be delayed by waiting for a diagnosis
 - an injury causing a sprain or strain may be overlooked, e.g. sport, exercise, sleep, and the symptoms appear late
 - closed injuries and fractures of long bone may be serious and damage blood vessels

Management objectives

- prevent further damage
- avoid infection
- avoid disability and scar formation
- relieve pain and swelling
- prevent tetanus through wound care and immunisation

Emergency management

- immobilise injured limb
- monitor heart rate
- monitor pulses below an injury on a limb with swelling

Wound care

- clean the wound
- suture or splint when needed
- avoid primary suture if the wound is:
 - a) infected
 - b) dirty/contaminated
 - c) crushed
 - d) in need of debridement
 - e) missile inflicted
 - f) caused by bites

Drug treatment

- paracetamol oral 4-6 hourly when needed to a maximum of four doses daily
 - a) children 3 months-1 year: 2.5 ml (120 mg/5 ml syrup)
 - b) children 1-5 years: 5-10 ml
 - c) children 5-12 years: ½-1 tablet (500 mg tablet)
 - d) children over 12 years and adults: 1-2 tablet(s)
- continue treatment for 1 week with periodic reviewing

Tetanus prophylaxis

- tetanus adsorbed toxoid vaccine (TT) IM, 0.5ml
- human tetanus immunoglobulin (TIG) IM
 - a) **children:** 5-10 IU/kg
 - b) **unimmunised or never fully immunised patient:** 250 IU

NOTE. In a fully immunised person, tetanus toxoid vaccine or tetanus immunoglobulin might produce an unpleasant reaction e.g. redness, itching, swelling or fever, but in the case of a severe injury the administration is justified

Referral

- urgent referral:
 - a) extensive closed or open wounds
 - b) injury to vital structures/internal organs
 - c) sepsis
 - d) shock
 - e) anaemia
 - f) blood in the urine
 - g) babies and young children
 - h) enlarging and/or pulsating swelling

19.13. Shock

Description

A life-threatening syndrome in which peripheral blood flow and tissue perfusion are inadequate.

Poor peripheral perfusion leads to:

- a) inadequate oxygen delivery
- b) anaerobic respiration
- c) increased production of lactic acid

Clinical manifestations include:

- a) a low systolic BP under 80 mmHg
- b) altered mental status
- c) oliguria (low urine output)
- d) clammy and pale extremities, often cyanotic, with poor capillary refill

Mechanisms of shock include:

- a) hypovolaemia due to acute haemorrhage or increased loss of other body fluids (hypovolaemic shock)
- b) heart failure due to reduced systolic function, disturbed heart rhythm or heart valve defects (cardiogenic shock)
- c) extracardiac obstructive mechanisms such as pulmonary embolism
- d) maldistribution of blood flow due to increased vascular permeability occurring in anaphylactic or septic shock
 - prompt diagnosis of the underlying causes is essential to ensure optimal treatment

Management objectives

- restore peripheral tissue perfusion and oxygenation

Emergency management

- support vital functions
- keep patient warm
- position with legs raised
- control haemorrhage
- initiate fluid resuscitation as soon as possible

Referral

- refer to hospital as soon as possible after stabilisation

19.14. Sprains and strains

Description

Overt or unnoticed soft tissue injuries.

sites include:

- a) joints
- b) near joints
- c) parts of limbs
- d) back or neck

causes include:

- a) sport injuries
- b) slips
- c) twists
- d) overuse of muscles
- e) abnormal posture

clinical features:

- a) pain, especially on movement

- b) tenderness on touch
- c) limited movement
- d) no bruise
- e) swelling may or may not be present.

Note

In children always bear non-accidental injuries in mind.

Management objectives

- diagnose correctly
- exclude serious injuries
- exclude infection
- immobilise and relieve pain

Emergency treatment

- immobilise with firm bandage and/or temporary splinting
- ibuprofen oral 6-8 hourly
- children over 12 years and adults: 200-400 mg
- paracetamol oral 4-6 hourly when needed to a maximum of four doses daily

a) children 3 months-1 year: 2.5 ml (120 mg/5 ml syrup)

b) children 1-5 years: 5-10 ml

c) children 5-12 years: ½-1 tablet (500 mg tablet)

d) children over 12 years and adults: 1-2 tablet(s)

- the value of topical analgesics has not been proven

Referral

- severe progressive pain
- progressive swelling
- extensive bruising
- deformity
- joint tenderness on bone
- no response to treatment
- severe limitation of movement
- suspected serious injury
- recurrence

19.15. Status epilepticus**Description**

A series of seizures lasting longer than 10 minutes without regaining consciousness.

- adequate ventilation and oxygenation are crucial to prevent hypoxic brain damage
- hypoglycaemia may cause convulsions
- potential for high mortality

Management objectives

- control convulsions
- ensure adequate ventilation and oxygenation
- exclude and treat causes such as hypoglycaemia and intoxication
- control convulsions and maintain life-support measures during referral

Emergency treatment

- place the patient in a recovery position
- do not place anything in the patient's mouth
- maintain airway

- assist respiration and give 100% oxygen
- prepare for suction and intubation
- check blood glucose
- diazepam
- a) children: IV 0.2-0.3 mg/kg (maximum 10 mg) over 3 minutes
- or**
- b) children under 10 kg:** rectal 5 mg (1 ml)
- or**
- c) children over 10 kg:** 10 mg (2 ml)
- d) adults:** IV 10-20 mg slowly do not give faster than 2 mg/minute
- e) repeat within 10-15 minutes if needed
- f) maximum of 30 mg within 1 hour
- g) expect a response within 1-5 minutes
- or**
- h) adults:** IV 10 mg slowly
- i) repeat after 5-10 minutes, up to 30 mg in total
- j) once the seizures are controlled an infusion of 5 mg/hour may be given until the signs of cerebral abnormality have subsided (only after admitting the patient to the hospital)**

!CAUTION! Avoid diazepam IM since absorption is slow and erratic. Do not mix with other drugs.

phenytoin IV to be given if the seizure is not controlled with diazepam.

- a) children:** 10-20 mg/kg at a rate of 1-3 mg/kg minute
 - b) adults:** 15-20 mg/kg at a rate not exceeding 50 mg/kg/minutes
- when stabilised, phenytoin oral 300-600 mg as a single dose before transfer

Referral : all patients once stabilised

19.16. Hypoglycaemia and hypoglycaemic coma

Description

Hypoglycaemia can rapidly cause irreversible brain damage and/or death

Clinical features:

- 1) sympathetic stimulation
 - a) pallor
 - b) sweating
 - c) tachycardia
 - d) abdominal pain
 - e) hunger
- 2) neurological
 - a) headache
 - b) irritability
 - c) impaired concentration
 - d) confusion
 - e) delirium
 - f) coma
 - g) convulsions
 - h) transient aphasia (speech disorder)

- there may be few or no symptoms if:
 - a) the blood sugar is chronically low
 - b) the patient is very ill
 - c) malnourished
 - d) impaired autonomic nervous system response, e.g. the elderly, very ill, malnourished, or those with long-standing diabetes mellitus, beta-blocker medication
- people at risk of hypoglycaemia:
 - a) neonates with low birth weight, ill in any way, not feeding well
 - b) malnourished or sick children who have not eaten for over 8 hours

- c) shocked, unconscious, convulsing patients
- d) diabetic on treatment developing abnormal behaviour or symptoms

Management objectives

- identify hypoglycaemia
- treat hypoglycaemia

Emergency treatment

- diagnose with testing strips for blood glucose
- do not wait, but obtain blood for glucose determination if possible

conscious patient, able to feed

a) administer sweets, sugar, glucose by mouth

unconscious patient

b) 50% dextrose solution IV, immediately

followed by

a) 10% dextrose solution

b) if no access to veins, give the above by nasogastric tube

Referral: all patients

