

**STANDARD TREATMENT GUIDELINES**

**AND**

**ESSENTIAL DRUGS LIST**

**FOR**

**SOUTH AFRICA**

**HOSPITAL LEVEL  
ADULTS**

**2006 EDITION**

Copies may be obtained from:

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Private Bag X828  
Pretoria  
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Department of Health Website: [www.doh.gov.za](http://www.doh.gov.za)

First printed 1998  
Second edition 2006

ISBN: 1-920031-30-8

**NOTE:**

The information presented in these guidelines conforms to the current medical, nursing and pharmaceutical practice. Contributors and editors cannot be held responsible for errors, individual responses to drugs and other consequences.

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Published by:

The National Department of Health, Pretoria, South Africa

## FOREWORD

It is the vision of the National Department of Health to ensure that every citizen has access to good quality and affordable health care, including the access to medicines.

The goal of the National Drug Policy is to ensure an adequate and reliable supply of safe and efficacious medicines of acceptable quality in the most cost-effective manner to all citizens of South Africa. Resources are not unlimited and the appropriate management and use of drugs has often been underestimated and is increasingly being identified as a critical component of an efficient health care system. Thus affordability is a key element in ensuring access.

The National Department of Health through the Cluster: Pharmaceutical Policy and Planning has reviewed the Standard Treatment Guidelines and Essential Drugs List at hospital level for adults and paediatrics. These provide a vital tool to guide prescribers, particularly doctors working in district and regional hospitals.

More attention has been given to address healthy lifestyles, mental health conditions, neonatal conditions, palliative care and to strengthen the implementation of the Department's Comprehensive HIV and AIDS Prevention, Care, Management and Treatment Plan. More in depth emphasis has been placed on the review of the endocrine, hypertension, infections and tuberculosis chapters. Evidence-based decision-making has been strengthened in the selection of drug entities.

The National EDL Committee has endeavoured to consult widely with colleagues within the Department, Provincial Pharmacy and Therapeutic Committees, universities, experts in different specialities, relevant societies and stakeholders. I would like to take this opportunity to thank the National Essential Drugs List Committee, the Expert Review groups and all those who have contributed for their dedication and hard work. Congratulations to all role players on this achievement.

I hope this edition of the Standard Treatment Guidelines and Essential Drugs List for Hospital Level will guide you daily in treating all patients optimally.



**DR MANTO TSHABALALA-MSIMANG**  
**MINISTER OF HEALTH**

## INTRODUCTION

The Department of Health is committed to providing quality and affordable health care including access to medicines to all citizens in South Africa. This is a challenging task in our health care system.

One of the goals of the National Drug Policy is to develop the full potential of drugs to improve the health status of South Africans within the available resources. The second edition of the Standard Treatment Guidelines (STGs) and Essential Drugs List (EDL) at Hospital level for adults and paediatrics is a vehicle for implementation of the National Drug Policy. Legislation has been adapted to address issues of affordability and improved access to medicines.

Advocacy and training are vital elements for successful utilisation of the Hospital Level STGs and EDL. The concepts of evidence based selection of medicines and cost-effective treatment protocols need to be included in the training of doctors, pharmacists, nurses and other health care professionals. Pharmacovigilance remains an important aspect of ensuring the safety of medicine used. A reporting form in this regard is included in the book. The inclusion of the ICD-10 codes for conditions should facilitate analysis, peer review, billing, etc.

The Hospital Level STGs and EDL are aimed for use at District and Regional Hospitals. Formularies remain the responsibility of Provincial Pharmacy and Therapeutics Committees. The Hospital Level STGs and EDL should be used as guidelines to develop these formularies. Updating the STGs and EDL is an ongoing process. Suggestions for improvement will be welcomed and considered.

The intention of the STGs and EDL is to strengthen priority health interventions. The implementation of Department's Comprehensive HIV and AIDS Care, Management and Treatment Plan is encapsulated in this edition, particularly with regard to the use of antiretrovirals and treatment of opportunistic infections.

It should not be forgotten that patients must take full responsibility for their own health, including adherence to prescribed treatment and lifestyle changes.

I wish to record a special word of appreciation to the chairpersons to the expert groups, the groups themselves and all other contributors to this edition of the STGs and EDL.



Mr. T.D. Mseleku  
Director General: Health

## ACKNOWLEDGEMENTS

It is impossible to name all who have played a part in producing this edition. The treatment guidelines and essential drugs list, which appear in this book, have been compiled after a lengthy consultative process. They include recommendations and advice from numerous individuals and groups, including professional societies, expert committees, medical schools and secondary and tertiary hospitals. Most of the persons acknowledged also contributed much of their free time and without their dedication to the process this publication would not have been possible.

We offer sincere thanks to those who have contributed appropriate information and comments and to the members of the National Essential Drugs List Committee.

We are particularly grateful to members of the Adult Expert Committee for their dedication and hard work and Mr Steele, chairperson of the Committee. We are also appreciative of the technical and editorial support provided by Prof Pudifin.

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## THE ESSENTIAL DRUGS CONCEPT

The WHO describes Essential medicines as those that satisfy the priority health care needs of the population. Essential medicines are intended to be available within the context of functioning health systems at all times in adequate quantities, in the appropriate dosage forms, with assured quality and adequate information, and at a price the individual and the community can afford.

Effective health care requires a judicious balance between preventive and curative services. A crucial and often deficient element in curative services is an adequate supply of appropriate medicines. In the health objectives of the National Drug Policy, the government of South Africa clearly outlines its commitment to ensuring availability and accessibility of medicines for all people. These are as follows:

- To ensure the availability and accessibility of essential medicines to all citizens.
- To ensure the safety, efficacy and quality of drugs.
- To ensure good prescribing and dispensing practices.
- To promote the rational use of drugs by prescribers, dispensers and patients through provision of the necessary training, education and information.
- To promote the concept of individual responsibility for health, preventive care and informed decision-making.

Achieving these objectives requires a comprehensive strategy that not only includes improved supply and distribution, but also appropriate and extensive human resource development. The implementation of an Essential Drugs Programme (EDP) forms an integral part of this strategy, with continued rationalisation of the variety of medicines available in the public sector as a first priority. The private sector is encouraged to use these guidelines and drug list wherever appropriate.

The criteria for the selection of essential drugs for Primary Health Care in South Africa were based on the WHO guidelines for drawing up a national EDL. They include the following:

- any drug included must meet the needs of the majority of the population
- sufficient proven scientific data regarding effectiveness must be available
- any drug included in the EDL should have a substantial safety and risk/benefit ratio
- all products must be of an acceptable quality, and must be tested on a continuous basis
- the aim, as a rule, is to include only products containing single pharmacologically active ingredients
- combination products, as an exception, will be included where patient compliance becomes an important factor, or two pharmacologically active ingredients are synergistically active in a product
- products will be listed according to their generic names only

- where drugs are clinically equally effective, the drugs will be compared using the following:
  - the best cost advantage
  - the best researched
  - the best pharmacokinetic properties
  - the best patient compliance
  - the most reliable local manufacturer
- a request for a new product to be included on the EDL must be supported by scientific data and appropriate references on its advantages and benefits over an existing product.

The implementation of the concept of essential drugs is intended to be flexible and adaptable to many different situations. It remains a national responsibility to determine which medicines are regarded as essential.

It should be noted that the Essential Drugs List (EDL) reflects only the minimum requirements for Health Care level facilities. In keeping with the objectives of the National Drug Policy, provincial and local Pharmacy and Therapeutics Committees may provide additional drugs based on the services offered and the competency of the staff at each facility.

## HOW TO USE THIS BOOK

It is important that you become familiar with the contents and layout of the book in order to use the standard treatment guidelines effectively.

Where relevant this book is consistent with the Standard Treatment Guidelines for Primary Health Care, Integrated Management of Childhood Illness Strategy (IMCI) and other National Programme treatment guidelines.

The ICD-10 number, included with the conditions, refers to an international classification method used when describing certain diseases and conditions. A brief description and diagnostic clinical, radiological and laboratory tests are included to assist the medical officer to make a diagnosis. These guidelines also make provision for referral of patients with more complex and uncommon conditions to facilities with the resources for further investigation and management.

It is important to remember that the recommended treatments provided in this book are guidelines only and are based on the assumption that prescribers are competent to handle patients' health conditions presented at their facilities.

The treatment guidelines are presented in chapters according to the organ systems of the body. In order to find the relevant sections in the book easily, use the indices at the back of the book. These have been divided into indices of disease conditions and drugs. Some of the drugs listed are only examples of a therapeutic class. In such cases the Provincial Pharmacy and Therapeutics Committees (PTCs) will decide on their drug of choice within that therapeutic class.

All suspected adverse drug reactions must be reported. In this book, only the common adverse effects have been mentioned. Information on the reporting of adverse drug reactions is provided in the section Guidelines for Adverse Drug Reaction Reporting. The purpose of ADR reporting is to reduce the risks associated with the use of drugs and ultimately improve patient care.

The section on Patient Education in Chronic Conditions aims to assist health workers improve patient compliance and health generally.

Comments that aim to improve these treatment guidelines will be appreciated. The submission form and guidelines for completing the form are included in the book. Motivations will only be accepted from the Provincial PTC.

Comments from persons and institutions outside the public service should be sent to:

The Essential Drugs Programme  
Pharmaceutical Programmes and Planning  
Department of Health  
Private Bag X828  
Pretoria  
0001

## **MEASURING MEDICATION LEVELS**

Potentially toxic drugs, drugs with narrow therapeutic indices and those with variable pharmacokinetics should be monitored regularly to optimise dosing, obtain maximum therapeutic effect, limit toxicity and assess compliance.

Routine measurement is rarely warranted, but should rather be tailored to answer a specific clinical question, and is of most value in drugs with a narrow therapeutic index or where there is considerable individual variation in pharmacokinetics.

### **Lithium**

Measure serum levels at about 12 hours after the last dose – e.g. in the morning before that day's first dose. Levels should be less than 1 mmol/L and should be checked regularly while on therapy, with more frequent monitoring in the elderly and frail.

### **Aminoglycosides**

Peak levels will be adequate if dosing is adequate (5 mg/kg/day in a single daily dose); trough levels taken immediately before the next dose are valuable in identifying potential toxicity before it manifests as deafness or renal impairment. Aminoglycosides are contra-indicated in renal impairment.

### **Anti-epileptics**

Levels may be helpful to confirm poor adherence or to confirm a clinical suspicion of toxicity. Routine measurement in patients with well controlled seizures and no clinical evidence of toxicity is not appropriate. Individual levels may be difficult to interpret – if in doubt, seek assistance from a clinical pharmacokineticist.

## **PRESCRIPTION WRITING**

Drugs should be prescribed only when they are necessary for treatment following a clear diagnosis. Not all patients or conditions need a prescription for drugs. In certain conditions simple advice and non-drug treatment may be more suitable.

In all cases carefully consider the expected benefit of a prescribed medication against potential risks. This is important during pregnancy where the risk to both mother and fetus must be considered.

All prescriptions should:

- be written legibly in ink by the prescriber with the full name and address of the patient, and signed with the date on the prescription form
- have contact details of the prescriber e.g. name and telephone number

### **In all prescription writing the following should be noted:**

- the name of the drug or preparation should be written in full using the generic name and
- no abbreviations should be used due to the risk of misinterpretation. Avoid the Greek mu: write mcg as an abbreviation for micrograms

- Avoid unnecessary use of decimal points and only use where decimal points are unavoidable. A zero should be written in front of the decimal point where there is no other figure, e.g. 2 mg not 2.0 mg or 0.5 ml and not .5 ml
- Frequency. Avoid Greek and Roman frequency abbreviations which cause considerable confusion – qid, qod, tds, tid, etc. Instead either state the frequency in terms of hours (e.g. 8 hourly) or times per day in numerals (e.g. 3x/d)
- State the treatment regimen in full:
  - drug name and strength
  - dose or dosage
  - dose frequency
  - duration of treatment

e.g. amoxicillin 250 mg 8 hourly for 5 days

- In the case of “as required” a minimum dose interval should be specified, e.g. every 4 hours as required
- Most monthly outpatient prescriptions for chronic medication are for 28 days; check that the patient will be able to access a repeat before the 28 days are up.
- After writing a script, check that you have stated the dose, dose units, route, frequency, and duration for each item. Consider whether the number of items is too great to be practical for the patient, and check that there are no redundant items or potentially important drug interactions. Check that the prescription is dated and that the patient’s name and folder number are on the prescription card. Only then sign the prescription, and as well as signing provide some other way for the pharmacy staff to identify you if there are problems (print your name, use a stamp, or use a prescriber number from your institution’s pharmacy.)

## PENICILLIN DESENSITISATION

This has been included for information only.

Perform only in an ICU setting.

Discontinue all  $\beta$ -adrenergic antagonists. Have an IV line, ECG monitor and spirometer in place. Once desensitised, treatment must not lapse as risk of subsequent allergy increases.

A history of Stevens-Johnson syndrome, exfoliative dermatitis, erythroderma are absolute contra-indications to desensitisation (use only as an approach to IgE sensitivity).

**Oral route** is preferred. 1/3 of patients develop a transient reaction during desensitisation or treatment, which is usually mild.

A: Reconstitute phenoxymethylpenicillin 250 mg/5mL		
Step	Drug mg/mL	Amount to administer (mL)
Strictly every 15 minutes	<b>B:</b> To make 0.5 mg/mL solution Dilute 0.5 mL of reconstituted phenoxymethylpenicillin solution in 49.5 mL water.	
1	0.5 mg/mL solution	0.1 mL
2		0.2 mL
3		0.4 mL
4		0.8 mL
5		1.6 mL
6		3.2 mL
7		6.4 mL
	<b>C:</b> To make 5 mg/mL solution Dilute 1 mL of reconstituted phenoxymethylpenicillin solution in 9 mL water.	
8	5 mg/mL solution	1.2 mL
9		2.4 mL
10		4.8 mL
	<b>D:</b> Reconstituted phenoxymethylpenicillin 250 mg/5mL = 50 mg/mL	
11	50 mg/mL solution	1.0 mL
12		2.0 mL
13		4.0 mL
14		8.0 mL

After Step 14, observe for 30 minutes, then 1 g IV benzylpenicillin (Penicillin G). Interval between doses: 15 minutes.

**Parenteral route**

Step	Drug mg/mL	Amount to administer (mL)
Strictly every 15 minutes:		
1	0.1 mg/mL	0.1 mL
2		0.2 mL
3		0.4 mL
4		0.8 mL
5	1 mg/mL	0.16 mL
6		0.32 mL
7		0.64 mL
8	10 mg/mL	0.12
9		0.24
10		0.48
11	100 mg/mL	0.1
12		0.2
13		0.4
14		0.8
15		0.16
16		0.32
17		0.64

Interval between doses: 15 minutes.

After Step 17, observe for 30 minutes, then 1 g IV benzylpenicillin (Penicillin G).

## **A GUIDE TO PATIENT EDUCATION IN CHRONIC CONDITIONS**

Poor therapeutic outcome of chronic conditions such as asthma, diabetes, epilepsy and hypertension can, in many cases, be ascribed to:

- poor or non-adherence to an otherwise sound therapeutic regimen;
- lack of communication between the various health care providers involved in the patient's management;
- lack of effective communication between health care provider and patient;
- ineffective and/or insensitive regimens;
- inconsistency of medicine supply.

### **Patient Compliance**

A patient's compliance to his or her therapeutic regimen may be influenced by:

- medicine selection - prescribing should be the result of a process of concordance whereby the patient's needs and preferences are matched to the available therapeutic alternatives;
- patient education - this empowers the patient to make an informed decision as to whether he or she should comply or not.

Although both of the above require longer consultation time, this investment is rewarded many times over during the subsequent years of management.

Other influencing factors might be:

- adverse side effects of the medicines;
- lifestyle behaviour;
- level of responsibility to manage and control the disease.

### **Patients behaviour patterns contributing toward poor compliance**

Patients may perceive treatment as unnecessary.

In conditions that are asymptomatic, e.g. hypertension, or those that only produce transient symptoms such as epilepsy:

- the patient often questions the validity of complying with therapy where there are no obvious results. As a result he or she decides to abandon therapy particularly where the therapy introduces new symptoms (side effects);
- the patient is compliant in a cyclical fashion - for a short period following transient symptoms (eg. seizure) or increased awareness (eg. following a BP reading at the clinic) but after a period returns to being non-compliant until the next episode of symptoms or clinic visit.

In conditions where symptoms show no improvement and where therapy merely controls the pathophysiological process.

- the patient often feels that his/her therapy has not contributed toward quality of life and in many ways has placed certain demands upon his/her lifestyle.

To be compliant on a sustained basis means that the patient must adjust his/her lifestyle in such a fashion that the regimen becomes habit. Inclusion of a regimen into the patient's lifestyle is determined by the magnitude with which this adaptation intrudes upon his/her established pattern. The greater the demand, the less likely the patient is to comply. Thus for example a lunchtime dose in a school-going child who remains at school for extramural activity is unlikely to succeed. A shift worker may need to take a sedating medicine in the morning when working night shifts, and at night, when working day shifts.

Some patients' lifestyles make certain adverse responses acceptable which others may find intolerable. Sedation is unlikely to be acceptable to a student but an older patient with insomnia may welcome this side effect. This is where concordance plays a vital role.

#### **Education points to consider**

Focus on the positive aspects of therapy whilst being encouraging regarding the impact of the negative aspects and offer support to deal with the latter.

Provide realistic expectations regarding:

- normal progression of the illness - especially important in those diseases where therapy merely controls the progression.
- the improvement that therapy and non-drug treatment can add to the quality of life.

Establish therapeutic goals and discuss them openly with the patient.

Any action to be taken with loss of control or when side effects develop.

In conditions that are asymptomatic or where symptoms have been controlled, reassure the patient that this reflects therapeutic success, and not that the condition has resolved.

Where a patient raises concern regarding anticipated side effects, attempt to place this in the correct context with respect to incidence, the risks vs. the benefits, and whether or not the side effects will disappear after continued use.

#### **Towards concordance when prescribing**

Establish the patient's:

- occupation
- daily routine
- recreational activities
- past experiences with other medicines
- expectations of therapeutic outcome

Balance these against the therapeutic alternatives identified based on clinical findings.

Any clashes with the chosen therapy should be discussed with the patient in such a manner that the patient will conform to a changed lifestyle.

#### **Note:**

Education that focuses on these identified problems is more likely to be successful than a generic approach toward the condition/medicine.

### **Improving Continuity of Therapy**

Clear and concise records.

Patient involvement in the care plan.

Every patient on chronic therapy should know:

- his/her diagnosis
- the name of every medicine
- the dose and interval of the regimen
- his/her BP or other readings

**Note:** The prescriber should reinforce this only once management of the condition has been established.

When the patient seeks medical attention for any other complaints such as a cold or headache he/she must inform that person about any other condition/disease and its management

If a patient indicates that he/she is unable to comply with a prescribed regimen, consider an alternative - not to treat might be one option, but be aware of the consequences e.g. ethical

### **Notes on prescribing in chronic conditions.**

- Don't change doses without good reason.
- Never blame anyone or anything for non-adherence before fully investigating the cause.
- If the clinical outcome is unsatisfactory - investigate compliance (remember side effects may be a problem here).
- Always think about side effects and screen for them from time to time.
- When prescribing a new medicine for an additional problem ask yourself whether or not this medicine is being used to manage a side effect.
- Compliance with a once daily dose is best. Twice daily regimens show agreeable compliance. However once the interval is decreased to 3 times a day there is a sharp drop in compliance with poor compliance to 4 times a day regimens.
- Keep the total number of tablets to an absolute minimum as too many may lead to medication dosing errors and may influence compliance.

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## CHAPTER 1 ALIMENTARY TRACT

### 1.1 GASTROINTESTINAL DISORDERS

#### 1.1.1 COLITIS, ULCERATIVE (UC)

K51.9

##### **DESCRIPTION**

Idiopathic and chronic intestinal inflammation. Ulcerative colitis (UC) is a mucosal disease almost always involving the rectum and may extend proximal to all or part of the colon.

##### **Note:**

There are more common infective causes of bloody stools which should be excluded, e.g. amoebiasis, schistosomiasis and bacterial causes of dysentery e.g. shigellosis.

##### **NON-DRUG TREATMENT**

Fully explain the condition to the patient and relatives.

##### **Note:**

Surveillance colonoscopy to exclude dysplasia is required every 1–2 years in chronic ulcerative colitis of > 10 years duration.

Patients with disease limited to the rectum do not require surveillance colonoscopy.

##### **DRUG TREATMENT**

Correct electrolyte, haematinic and nutritional deficiencies by the enteral or parenteral route.

Loperamide should not be used during the acute flare due to the risk of toxic megacolon.

##### **ACUTE ATTACK**

##### **Mild to moderate disease**

- sulfasalazine, oral, 1–2 g, 4–6 times daily  
Maximum dose: 3–4 g daily.  
Monitor FBC.

If there is no response to sulfasalazine:

##### **ADD**

- prednisone, oral, 1.5 mg/kg daily  
Minimum dose: 30–40 mg daily.  
Once the symptoms have resolved, prednisone can be tapered slowly by 5 mg/week over a 3-month period.

## CHAPTER 1

## ALIMENTARY TRACT

### Severe disease

Admit patient.

Intravenous corticosteroids, e.g.:

- hydrocortisone, IV, 100 mg 6 hourly  
Failure to respond to 10 days of IV corticosteroids is an indication for an emergency colectomy.

### ADD

- azathioprine, oral, 2 mg/kg daily. Specialist initiated.

### OR

methotrexate, oral, 15–25 mg/week

### PLUS

folic acid, oral, 5 mg/week with methotrexate

Continue treatment until corticosteroids can be tapered.

### Local disease: proctosigmoiditis

Patients with limited disease rarely require inpatient treatment. They are usually systemically well.

- mesalazine, rectal, 1 g/day. Specialist initiated.  
These are most effective if combined with oral sulfasalazine.

### AND/OR

- prednisone, oral, 1.5 mg/kg/day for 14 days

### MAINTENANCE OF REMISSION

#### Extensive disease

- sulfasalazine, oral, 500 mg twice daily  
May be titrated to 1g 4 times daily.

Patients with recurrent severe attacks to maintain remission:

- azathioprine, oral, 2 mg/kg. Specialist initiated.

#### Limited disease

- sulfasalazine, oral, 500 mg twice daily  
May be titrated to 1 g 4 times daily.

### REFERRAL

- confirmation of diagnosis
- initiation of long-term therapy
- refractory cases
- fulminant colitis needs hospital admission and surgery may be required. All patients with a severe flare should have abdominal X-rays.  
Markers of a severe flare are:
  - tachycardia (> 100)
  - temperature > 38°C
  - > 6 bloody stools per day
  - dilated colon or small bowel on X-ray
- toxic megacolon (transverse colon diameter > 6 cm) requires hospital admission, parenteral fluids, corticosteroids, antibiotics and nasogastric suction. This is a

medical emergency and if the colonic dilation does not resolve within 24 hours an emergency colectomy is indicated, as the risk of perforation is high.

- surgery

### 1.1.2 CROHN'S DISEASE (CD)

K50.9

#### **DESCRIPTION**

Idiopathic and chronic intestinal inflammation. This is a transmural inflammatory condition affecting mainly the distal ileum or colon, but may affect the entire gastrointestinal tract. Common complications are intestinal obstruction and abscess formation.

#### **NON-DRUG TREATMENT**

Patients must stop smoking as this is a strong predictor of relapse.

Patient education and general support.

Parenteral nutrition support may be necessary.

Dietary advice.

Long-term specialist follow up is required.

Vitamin deficiencies are very common in small bowel Crohn's disease.

#### **DRUG TREATMENT**

The aim is to induce and maintain remission.

Antidiarrhoeal medication should not be used in acute flares of inflammatory CD.

Diarrhoea will subside with appropriate care.

After terminal ileal resections, to reduce diarrhoea due to bile salt malabsorption:

- cholestyramine, oral, 2–8 g daily

#### **ILEAL DISEASE**

All patients:

- vitamin B<sub>12</sub>, IM, 1 000 mcg, 3 monthly

Monitor for iron and folate deficiency.

#### **COLONIC DISEASE**

- sulfasalazine, oral, 500 mg twice daily, up to 1.5 g 3 times daily

For acute attacks, 1–2 g, 4–6 times daily may be given.

Maximum dose: 3–4 g daily.

Monitor FBC.

#### **AND**

- prednisone, oral, 1.5 mg/kg/day tapered to lowest possible maintenance dose over 3–4 weeks

#### **SEVERE DISEASE**

##### **Maintenance of remission**

Sulfasalazine may be useful for maintaining remission in patients with Crohn's colitis but is of no real use in purely ileal CD.

**Immunomodulators**

For patients with recurrent attacks of CD or those with extensive disease, i.e. ileum and colon:

- azathioprine, oral, 2 mg/kg/day. Specialist initiated.
- OR**
- methotrexate, oral, 15–25 mg/week. Specialist initiated.
- PLUS**
- folic acid, oral, 5 mg/week with methotrexate

Emergency management at specialist facility will include:

- resuscitation with parenteral fluids
- blood transfusions
- corticosteroids,
- antibiotics, and
- nasogastric suction as indicated

**PERI-ANAL DISEASE**

There is evidence of recurrence on withdrawal of therapy prolonged treatment may be indicated.

- metronidazole, oral, 400–800 mg 8 hourly
- OR**
- ciprofloxacin, oral, 500 mg 8 hourly

**REFERRAL**

- for further therapy
- peri-anal abscesses/fistula if surgery is required after appropriate assessment

**1.1.3 CONSTIPATION/ FAECAL IMPACTION**

K56.4

**DESCRIPTION**

A condition characterised by a change in usual bowel habits and dry, hard stools. There is a decreased frequency of bowel action and patients should be assessed individually.

Constipation may have many causes:

- |                                       |                                    |
|---------------------------------------|------------------------------------|
| ○ incorrect diet (fibre and fluid)    | ○ certain drugs                    |
| ○ lack of exercise                    | ○ metabolic                        |
| ○ pregnancy                           | ○ endocrine                        |
| ○ old age                             | ○ neurogenic                       |
| ○ psychogenic disorders               | ○ lower bowel abnormalities        |
| ○ chronic use of enemas and laxatives | ○ ignoring the urge                |
| ○ cancer of the bowel                 | ○ behavioural problems in children |

**NON-DRUG TREATMENT**

Treat underlying disease if possible.  
Dietary advice by dietician.



## **CHAPTER 1**

## **ALIMENTARY TRACT**

Dietary measures i.e. balanced diet with unprocessed foods, e.g. cereals, legumes, fruit and vegetables.

Correct dehydration. Ensure adequate fluid intake.

Wheat bran: introduce slowly and take with sufficient fluid. Side-effects include: bloating, cramps and flatulence.

Manual removal of impacted stools.

Encourage regular bowel habits.

Physical exercise to be encouraged.

### **DRUG TREATMENT**

#### **Osmotic laxatives**

- lactulose, oral, 10–20 mL daily  
Titrate to effect i.e. up to 60 mL/day.

#### **Stimulant laxatives**

For short term use only except in the elderly where long-term treatment may be indicated:

- sennosides A and B, oral, 7.5–15 mg at night 2–3 times a week for up to 4 weeks

#### **Polyethylene glycol-based purges**

For acute bowel preparation or for chronic constipation on specialist advice.

#### **Saline or phosphate enemas**

May occasionally be indicated in acute constipation.

### **REFERRAL**

- investigation for organic disease

### **1.1.4 DIVERTICULOSIS**

K57.9

#### **NON-DRUG TREATMENT**

Increase unprocessed foods in diet.

Supplement with bran.

#### **DRUG TREATMENT**

##### **LOCALISED DIVERTICULITIS**

- ciprofloxacin, oral, 500 mg 12 hourly

##### **PLUS**

- metronidazole, oral, 400 mg 8 hourly

#### **REFERRAL**

- clinical deterioration or failure to improve
- peritonitis
- fistulae
- strictures
- massive haemorrhage

**1.1.5 GASTRO-OESOPHAGEAL REFLUX DISEASE (GORD)**

K21.0

**DESCRIPTION**

GORD is a disorder which develops as a consequence of the reflux of gastric and duodenal contents into the oesophagus. It is usually characterised by heartburn and regurgitation. Complications that may develop in severe disease are strictures, ulceration, Barrett's oesophagus and adenocarcinoma of the oesophagus. Two thirds of patients have a normal endoscopy and are termed non-erosive reflux disease (NERD).

**LOS ANGELES CLASSIFICATION OF ENDOSCOPIC GRADING**

- A One or more mucosal breaks no longer than 5 mm, none of which extends between the tops of the mucosal folds.
- B One or more mucosal breaks more than 5 mm long, none of which extends between the tops of two mucosal folds.
- C Mucosal breaks that extend between the tops of two or more mucosal folds, but which involve less than 75% of oesophageal circumference.
- D Mucosal breaks which involve at least 75% of oesophageal circumference.

**NON-DRUG TREATMENT**

Dietary advice by dietician.

Weight reduction is recommended if overweight.

All patients with alarm symptoms, i.e. weight loss, haematemesis and malaena, dysphagia and anaemia, should have endoscopy at the earliest opportunity.

**DRUG TREATMENT**

Empiric therapy for GORD can be instituted provided there are no alarm symptoms.

- aluminium hydroxide/magnesium trisilicate 250/500 mg, oral, 1–2 tablets to be chewed 1 hour before and 3 hours after meals and at night, for 4 weeks

**OR**

cimetidine, oral, 400 mg twice daily

**CAUTION**

Cimetidine has a high potential for drug interactions when used concomitantly with other drugs.

**Antacids**

There is little evidence that alginate and dimethicone (simethicone) are more useful than simple antacids. This is for intermittent disease without alarm symptoms, i.e. no weight loss, no blood vomiting and under 45 years of age.

**PPIs**

A trial with a PPI confirms acid related disease. Only if no alarm symptoms:

- omeprazole, oral, 40 mg/day for 4 weeks



## CHAPTER 1

## ALIMENTARY TRACT

### **Recurrence of symptoms.**

Endoscopic confirmation of disease.

### **LOS ANGELES A OR B**

Restart PPI:

- omeprazole, oral, 20 mg/day  
Decrease to 10 mg/day after 4 weeks.

Try to step down to long-term H<sub>2</sub>-blocker therapy:

- cimetidine, oral, 400 mg twice daily

### **LOS ANGELES C OR D**

Restart PPI:

- omeprazole, oral, 20 mg/day  
Decrease to 10 mg/day after 4 weeks.

#### **Note:**

These patients usually need maintenance PPI therapy.

### **BARRETTS' OESOPHAGUS**

Restart PPI:

- omeprazole, oral, 20 mg/day

#### **Note:**

These patients usually need maintenance PPI therapy.

There is no convincing evidence that long-term treatment of Barretts' oesophagus reduces dysplasia and or progression to malignancy.

### **REFERRAL CRITERIA**

- for consideration of surgery in:
  - young patients who are PPI dependent and will require life-long therapy
  - patients unable to take PPIs
  - patients requiring high doses of PPIs with huge expense
  - patients with large hiatus hernias and "volume reflux"
  - a rolling hiatus hernia with obstructive symptoms requires surgery

### **1.1.6 HIATUS HERNIA**

K44

See Section 1.1.5: Gastro-Oesophageal Reflux Disease (GORD).

### **1.1.7 IRRITABLE BOWEL SYNDROME (IBS)**

K58

**(Synonyms: spastic colon, irritable colon)**

#### **DESCRIPTION**

Functional bowel disorder: Motility disturbance of the entire GIT resulting in recurrent symptoms of pain, constipation and/or diarrhoea and bloating.



## CHAPTER 1

## ALIMENTARY TRACT

### **NON-DRUG TREATMENT**

Reassure patient that there is no serious organic disorder, after limited investigations. High fibre/bran diets may be tried for patients with constipation. Warn about temporary increased flatus and abdominal distension. High fibre/bran diets are not effective for GLOBAL IBS (i.e. all symptoms).

Dietary advice by dietician.

### **DRUG TREATMENT**

Not specifically indicated.

Based on patients predominant symptoms.

Short-term symptomatic treatment for diarrhoea and/or constipation.

Laxatives only for constipation specific, see Section 1.1.3: Constipation/ Faecal Impaction.

Antidiarrhoeals only for diarrhoea specific, see Section 1.3.3: Diarrhoea, Acute Non-Inflammatory.

Tricyclic anti-depressants may be used as adjuvant therapy.

- amitriptyline, oral, 25–75 mg daily  
Titrate dose as appropriate.

### **1.1.8 PANCREATITIS, ACUTE**

K85

#### **DESCRIPTION**

Acute inflammatory condition of the pancreas.

The prognosis of acute pancreatitis can be estimated using Ranson's 11 prognostic signs:

##### **On admission**

- 1 age > 55 years
- 2 serum glucose > 11.1 mmol/L
- 3 serum LDH > 350 units/L
- 4 AST > 250 U
- 5 WBC > 16 000/microL

##### **48 hours after admission**

- 6 Hct decrease > 10%
- 7 serum urea > 1.8 mmol/L
- 8 serum Ca < 2 mmol/L
- 9 PaO<sub>2</sub> < 60 mmHg
- 10 base deficit > 4 mEq/L
- 11 estimated fluid sequestration > 6 L

## CHAPTER 1

## ALIMENTARY TRACT

Mortality increases with the number of positive signs:

- < 3 positive signs: mortality rate < 5% (mild)
- 3–4 positive signs: mortality rate 15–20% (moderate)
- > 6 positive signs: mortality rate – up to 100% (severe)

Pancreatitis associated with necrosis and haemorrhage has a mortality rate of  $\geq 10$ –50%.

### NON-DRUG TREATMENT

Nil per mouth.

Nasogastric suction when persistent vomiting or ileus occurs.

Parenteral fluid replacement to correct metabolic and electrolyte disturbances.

Parenteral nutrition support may be necessary.

### DRUG TREATMENT

#### Analgesia

- morphine, slow IV, 10–15 mg 4–6 hourly as required

#### ACUTE SYMPTOMATIC HYPOCALCAEMIA

- calcium gluconate 10%, IV infusion, 10 mL as a bolus over 10 minutes, followed by 60–120 mL diluted in 1 L sodium chloride solution 0.9%, administered over 12–24 hours

Monitor serum calcium at least 12 hourly.

If serum magnesium < 0.5 mmol/L:

#### ADD

- magnesium sulphate, IV infusion, 25–50 mmol in 12–24 hours  
1 mL magnesium sulphate 50% = 2 mmol magnesium

#### Antimicrobial therapy

For severe acute pancreatitis, i.e. Ranson > 4:

Broad spectrum IV antibiotics, e.g.:

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

#### PLUS

- gentamicin, IV, 5 mg/kg once daily

#### PLUS

- metronidazole, oral, 400 mg 8 hourly

#### OR

3<sup>rd</sup> generation cephalosporin, e.g.:

- cefotaxime, IV, 1 g 12 hourly

#### PLUS

- metronidazole, oral, 400 mg 8 hourly

### REFERRAL

- all patients with moderate or severe pancreatitis

**1.1.9 PANCREATITIS, CHRONIC**

K86.1

**DESCRIPTION**

Chronic inflammatory condition of the pancreas, which results in functional and structural damage. In most patients this is a chronic progressive disease leading to exocrine and endocrine insufficiency.

**NON-DRUG TREATMENT**

Abstinence from alcohol reduces abdominal pain in early stages of the disease. Small frequent meals, and restricted fat intake – reduce pancreatic secretion and pain. Elemental diets (i.e. parenteral or enteral nutrition) in chronically debilitated patients. When weight loss is not responding to exogenous enzymes and diet, consider supplementation with medium chain triglycerides.

There is a risk of developing cancer of the pancreas. This should be considered in patients who develop worsening pain, new onset diabetes or deterioration in exocrine function.

Dietary advice by dietician.

**DRUG TREATMENT**

Treatment is aimed at:

- pain
- malabsorption
- endocrine function. See Section 8.5.2: Insulin Dependent Diabetes Mellitus (IDDM) Type 1.

**Analgesia**

See Section 12.1: Chronic Pain.

**Note:**

Pancreatic enzymes may reduce pain by negative feedback on pancreatic secretion.

**Malabsorption**

Start treatment when steatorrhea > 7 g (or 21 mmol) fat in faeces/24 hours while on a 100 g fat per day diet.

Reduce dietary fat to less than 25 g/meal.

- lipase/protease 8 000/25 000 units, oral  
lipase: 30 000 units  
**PLUS**  
trypsin: 10 000 units during 4 hours post prandial  
Aim for 5% of normal maximum output.

Supplements of fat soluble vitamins may be indicated.

**1.1.10 PEPTIC ULCER**

K27

**DESCRIPTION**

Ulcer in the stomach mucosa (gastric ulcer: GU) or first few centimetres of the duodenum (duodenal ulcer: DU), which penetrates into or through the muscularis mucosa.

Diagnosis is made after investigation, preferably by endoscopy, as all GUs require 4-quadrant biopsy to exclude malignancy.

GUs and complicated DUs, those that have bled, perforated or are recurrent, must be rescoped until the ulcer has healed. *H. pylori* can then be assessed at scope by rapid urease testing (RUT) or biopsy.

**NON-DRUG TREATMENT**

Advise patient to avoid ulcerogenic medications, e.g. NSAIDs.

Advise patient to stop smoking and drinking alcohol.

Dietary advice by dietician.

**DRUG TREATMENT****H. PYLORI +VE**

The vast majority of GUs and DUs are associated with *H. pylori* infection and eradication therapy is indicated if infection is present. This will greatly reduce the rate of recurrent ulceration in the future. Empiric eradication of *H. pylori* is not recommended.

**Proton pump inhibitor (PPI)**

- omeprazole, oral, 40 mg/day  
Duodenal ulcer: for 7 days.  
Gastric ulcer: for 28 days.

**AND****H Pylori eradication**

- amoxicillin, oral, 1 g 12 hourly
- OR**
- For penicillin allergy:
- clarithromycin, oral, 500 mg 12 hourly

**PLUS**

- metronidazole, oral, 400 mg 12 hourly for 7 days

Failure of *H. pylori* eradication (best dealt with in a specialist setting):

- clarithromycin, oral, 500 mg 12 hourly

**PLUS**

- amoxicillin, oral, 1 g 12 hourly for 7 days

If resistant to this refer.

**H. PYLORI –VE**

These are usually a consequence of NSAID use.  
Stop NSAID until ulcer has healed.  
If patient unable to stop NSAID, refer to specialist.

**Proton pump inhibitor (PPI)**

- omeprazole, oral, 20 mg/day  
Duodenal ulcer: for 7–14 days.  
Gastric ulcer: for 28 days.

**RESISTANT DISEASE**

Ulcer not healing.  
High-risk patients, i.e. poor surgical risk and elderly or concomitant disease. Maintenance therapy with proton pump inhibitor, e.g.:

- omeprazole, oral, 20 mg/day. Specialist initiated.

**1.2 HEPATIC DISORDERS****1.2.1 HEPATITIS, NON-VIRAL**

K70.9

\* Notifiable if caused by agricultural chemicals and insecticides.

**DESCRIPTION**

Any form of hepatitis not caused by the common hepatotropic viruses.

Liver biopsy is indicated if hepatitis persists or diagnosis is unclear.

**NON-DRUG TREATMENT**

Diet: protein restricted if features of liver failure are present. Excessive protein restriction may accentuate catabolism.  
Alcohol is inadvisable in any form of hepatitis.  
Avoid other hepatotoxic agents.  
Monitor blood glucose regularly because hypoglycaemia is common.

**DRUG TREATMENT****HEPATITIS DUE TO INFECTIONS**

Antibiotic therapy based on culture.

**ALCOHOL INDUCED HEPATITIS**

Even if no bleeding:

- vitamin K<sub>1</sub>, IM/IV, 5–10 mg daily for 10 days
- thiamine, oral, 100 mg/day

Other vitamins if indicated.

**DRUG-INDUCED HEPATITIS**

Stop all potentially hepatotoxic medication immediately.

**AUTO-IMMUNE HEPATITIS**

Patients with hepatitis persisting with negative viral markers and no hepatotoxins. Biopsy and autoimmune markers are necessary to make the diagnosis.

- prednisone, oral, 0.5–1 mg/kg/day  
Taper down to a suitable maintenance dose.

**PLUS**

- azathioprine, oral, 0.5–1 mg/kg/day

**REFERRAL**

- where patients cannot be managed locally or biopsy cannot be done, i.e. diagnosis is unclear
- non-resolving hepatitis.

Refer timeously before extensive liver damage has occurred.

**1.2.2 LIVER FAILURE**

K72.9

**NON-DRUG TREATMENT**

Patient education.

Avoid hepatotoxic drugs and alcohol.

Rest and reduced physical activity are recommended.

Normal diet. Protein restriction indicated only when encephalopathy is evident. Severe protein restriction may accentuate catabolism. Use increments of 20 g protein per day as tolerated.

Monitor blood glucose regularly because hypoglycaemia is common.

Correct electrolyte disturbances.

Exclude GI bleed as precipitant.

Avoid any measure, e.g. drugs, that may worsen or precipitate functional deterioration.

Avoid vigorous paracentesis.

Exclude infection as precipitant, especially spontaneous bacterial peritonitis.

**DRUG TREATMENT**

On admission to change pH of large bowel:

- lactulose, oral, 10–30 mL

Thereafter, to attain 2–3 soft stools a day:

- lactulose, oral, 10–30 mL 3 times daily  
Titrate dose to 2–3 soft stools a day.

**EVEN IF NO BLEEDING**

- vitamin K<sub>1</sub>, IM/IV, 5–10 mg daily for 10 days

Other vitamins if indicated.

Multivitamin supplements should be considered and may be indicated.



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### REFERRAL

- all cases with severe acute or advanced chronic liver failure
- where a liver transplant is to be considered

### **1.2.3 PORTAL HYPERTENSION AND CIRRHOSIS**

K76.6

### DESCRIPTION

The complications of portal hypertension are:

- variceal bleeds
- ascites and fluid overload
- encephalopathy
- spontaneous bacterial peritonitis in patients with ascites

### NON-DRUG TREATMENT

Ascites: salt restriction, i.e. < 2 g/day.

Monitor weight regularly and bed rest.

Encephalopathy: low protein diet. Protein restriction indicated. Severe protein restriction may accentuate catabolism. Use increments of 20 g protein per day as tolerated.

Exclude infection, high protein load, occult bleed, sedatives and electrolyte disturbances.

Variceal bleeding: endoscopic sclerotherapy and/or banding.

### DRUG TREATMENT

#### **ASCITES, OEDEMA**

If no response to strict bed rest after 2–3 days:

- spironolactone, oral, 50–200 mg/day  
Titrate to higher dosages with caution.  
Optimal dose: 400 mg/day.  
May cause hyperkalemia.  
Can be combined with furosemide.  
Potassium supplementation is not necessary.

#### **AND**

If there is no response to spironolactone or if there is gross fluid retention:

- furosemide, oral, 20–40 mg/day, initially for a few days to increase natriuresis  
Titrate carefully to desired effect as rapid fluid shift may precipitate liver failure.  
Optimal dose: 160 mg/day.

Measure response to diuretics. Aim for weight loss of:

300–500 g/day	patients without oedema
800–1 000 g/day	patients with peripheral oedema



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### RESISTANT ASCITES

Patients not responding to optimal diuretic therapy, sufficient salt restriction and avoiding NSAIDs.

These patients may require regular large volume paracentesis, i.e. > 5 L, as outpatients, if possible.

Protect against haemodynamic collapse.

Crystalloid replacement.

### LARGE-VOLUME ASCITES

Large volume paracentesis is the method of choice as it is faster, more effective and has fewer adverse effects compared to diuretics.

Diuretics are indicated as maintenance therapy to prevent recurrence of ascites.

### ENCEPHALOPATHY

- lactulose, oral, 10–30 mL 3 times daily

### OESOPHAGEAL VARICES

To reduce the risk of bleeding:

- propranolol, oral 10–20 mg 12 hourly

## 1.3 DIARRHOEA, GASTROINTESTINAL AND LIVER INFECTIONS

### 1.3.1 CHOLERA

A00.9

\* Notifiable disease.

#### DESCRIPTION

Diarrhoea due to *Vibrio cholerae*, often in outbreaks.

#### NON-DRUG TREATMENT

Rehydration is the cornerstone of management. This should be done with oral rehydration solution (ORS) unless the patient is vomiting or profoundly dehydrated.

#### DRUG TREATMENT

- ciprofloxacin, oral, 1 g immediately as a single dose

### 1.3.2 ACUTE INFLAMMATORY DIARRHOEA (DYSENTERY)

A03.9

#### DESCRIPTION

Diarrhoea with neutrophils, blood and/or mucus. Causes include shigella, salmonella and campylobacter.

#### NON-DRUG TREATMENT

Rehydration is the cornerstone of management. This should be done with oral rehydration solution (ORS) unless the patient is vomiting or profoundly dehydrated. Stool culture advised.

**DRUG TREATMENT**

Loperamide is contraindicated as it may result in toxic megacolon.

**Antibiotic therapy**

Consider in severe cases or significant underlying disease.

- ciprofloxacin, oral, 500 mg 12 hourly for 3–7 days

**REFERRAL**

- persistent diarrhoea with blood and mucus for longer than 2 weeks

**1.3.3 DIARRHOEA, ACUTE NON-INFLAMMATORY**

A04.1

**DESCRIPTION**

Diarrhoea without blood or mucus. Common causes include viruses and enterotoxigenic strains of *E. coli*.

**NON-DRUG TREATMENT**

Rehydration is the cornerstone of management. This should be done with oral rehydration solution (ORS) unless the patient is vomiting or profoundly dehydrated.

**DRUG TREATMENT**

- loperamide, oral, 4 mg immediately, followed by 2 mg after each loose stool  
Maximum dose: 16 mg/day.

**1.3.4 DIARRHOEA, ANTIBIOTIC-ASSOCIATED**

A04.7

**DESCRIPTION**

Diarrhoea caused by altered bowel flora due to antibiotic exposure. Severe cases present with pseudomembranous colitis. Toxins produced by *Clostridium difficile* can be demonstrated on stool samples.

**NON-DRUG TREATMENT**

The most important aspect of management is discontinuing antibiotics.

Rehydration may be necessary. This should be done with oral rehydration solution (ORS) unless the patient is vomiting or profoundly dehydrated.

Surgery for bowel perforation.

**DRUG TREATMENT**

Loperamide is contraindicated as it may result in toxic megacolon.



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If diarrhoea does not settle on antibiotic withdrawal or if pseudomembranous colitis is present:

- metronidazole, oral, 800 mg 8 hourly for 10 days

### 1.3.5 AMOEBIC DYSENTERY

A06

#### **DESCRIPTION**

Diarrhoea with blood and/or mucus due to *E. histolytica*.

#### **NON-DRUG TREATMENT**

Rehydration may be necessary. This should be done with oral rehydration solution (ORS) unless the patient is vomiting or profoundly dehydrated.

Surgery for bowel perforation.

#### **DRUG TREATMENT**

Loperamide is contraindicated as it may result in toxic megacolon.

- metronidazole, oral, 800 mg 8 hourly for 10 days

### 1.3.6 GIARDIASIS

A07.1

#### **DESCRIPTION**

Infection with the protozoan parasite, *G. lamblia* which colonises the proximal small intestine.

#### **NON-DRUG TREATMENT**

Fluid and electrolyte replacement in severe diarrhoea.

#### **DRUG TREATMENT**

- metronidazole, oral, 400 mg 8 hourly for 5 days

### 1.3.7 TYPHOID

A01.0

See Section 9.9: Typhoid Fever.

### 1.3.8 HEPATITIS, VIRAL

B19.9

\* Notifiable disease

#### **DESCRIPTION**

Hepatitis is caused by one of the hepatotropic viruses, hepatitis A, B, C and E. Hepatitis A and E only cause acute hepatitis, whilst B and C cause acute and chronic hepatitis.

**NON-DRUG TREATMENT****ACUTE HEPATITIS**

Bed-rest until acute phase is over.

Alcohol should be avoided during the illness and for several months after clinical recovery. In cases of hepatitis B sexual contacts should be serologically screened. If they are seronegative (Anti-HBs negative) then they should receive hepatitis B active immunisation.

**DRUG TREATMENT**

For nausea and vomiting:

- metoclopramide, IV/oral, 10 mg 8 hourly as required

**HEPATITIS B VIRUS: PROPHYLAXIS FOLLOWING EXPOSURE E.G. NEEDLE STICK INJURY**

Persons at risk can be protected by passive immunisation with hyper immune serum globulin prepared from blood containing anti-HBs.

It is essential that all categories of healthcare workers (HCW) who are at risk of exposure, includes cleaning staff, be fully vaccinated against hepatitis B. All exposure incidents must be adequately documented for possible subsequent compensation.

**Recommended post-exposure prophylaxis for hepatitis B in HCW.**

HbsAg: hepatitis B surface antigen

HbsAb: hepatitis B surface antibody

HBIG: hepatitis B immune globulin

Vaccination status and antibody response status of HCW	Source patient		
	HBsAG positive	HBsAG negative	HBsAG unknown
unvaccinated or vaccination incomplete	<ul style="list-style-type: none"> <li>• HBIG, IM, 500 units *</li> <li>• HB vaccine (3 doses at monthly intervals)</li> </ul>	<ul style="list-style-type: none"> <li>• Initiate Hep B vaccination (month 0, 1 and 6)</li> </ul>	<ul style="list-style-type: none"> <li>• HBIG, IM, 500 units*</li> <li>• HB vaccine (3 doses at monthly intervals)</li> </ul>
vaccinated AND HBsAb > 10 units/mL <sup>#</sup>	No treatment	No treatment	No treatment
vaccinated AND HBsAb < 10 units/mL	<ul style="list-style-type: none"> <li>• HBIG, IM, 500 units</li> <li>• Repeat HB vaccine (3 doses at monthly intervals)</li> </ul>	No treatment	<ul style="list-style-type: none"> <li>• HBIG, IM, 500 units *</li> <li>• Repeat HB vaccine (3 doses at monthly intervals)</li> </ul>

\* HBIG and first dose of vaccine to be given simultaneously, but at different sites.

<sup>#</sup> If the delay in obtaining HBsAb results is more than 24 hours initiate treatment as for vaccinated AND HBsAb < 10 units/mL.

**1.3.9 LIVER ABSCESS, PYOGENIC**

K75.0

**DESCRIPTION**

Focal bacterial infection of the liver with pus, usually polymicrobial.

**NON-DRUG TREATMENT**

Drainage is essential in all cases. This should preferably be done percutaneously by inserting a catheter under ultrasound guidance.

**DRUG TREATMENT****Empiric antibiotic therapy**

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

**PLUS**

- gentamicin, IV, 5 mg/kg/day

**PLUS**

- metronidazole, oral, 400 mg 8 hourly

Duration of antibiotic therapy is ill defined, but may need to be for as long as 12 weeks in cases of multiple abscesses. Continue until drainage is complete and CRP has returned to normal values. Ultrasound resolution is very slow and is not useful for monitoring response to therapy.

**1.3.10 LIVER ABSCESS, AMOEBIC**

A06.4

**DESCRIPTION**

Focal hepatic infection due to *E. histolytica*. Only about a third of cases have concomitant amoebic colitis. Diagnosis may be established by a positive serological test. It is essential to exclude pyogenic infection (a diagnostic aspirate should be taken under ultrasound guidance in all cases where there is doubt).

**NON-DRUG TREATMENT**

Drainage is recommended for abscesses that are large, i.e. > 10 cm diameter, involve the left lobe or are near the surface of the liver. Drainage can be achieved by percutaneous aspiration under ultrasound guidance.

**DRUG TREATMENT**

- metronidazole, oral, 400 mg 8 hourly for 10 days