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ACKNOWLEDGEMENTS

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Members, Q.E.H. Drug and Therapeutics Committee

Typesetting by Mrs. Suzanna Rouse, Data Processing Department;
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Arrangement of Information

The Barbados National Drug Formulary (BNDF) 30th Edition is divided into four sections.

Section 1 - GUIDE TO RATIONAL PRESCRIBING

This section contains information and tables designed to help doctors, pharmacists, nurses and other Health Care Personnel make rational judgments relative to drugs, disease states and the patient.

Section 11 - CLASSIFIED NOTES ON DRUGS AND PREPARATIONS

This section places drugs in their pharmacological class. In addition, information is supplied on most drug-products relative to indications, cautions/side effects, dose-range and preparations. This information is designed to help doctors and other Health Care Personnel in the selection of appropriate drugs for the appropriate disease state or condition. Benefit drugs and narcotic drugs are marked with (B) and (N) respectively e.g. Gliclazide (B) - Benefit Drug; Morphine (N) - Narcotic Drug.

MICONAZOLE

Indications: Vaginal Candidiasis.

Dose Range: One applicatorful at bedtime for 7 days.

Preparation: 2% Vaginal Cream.

*Micospec (CAR/COL); 6.0600 per Tube (1). (Drug product which has been awarded the contract showing unit price and the maximum reimbursable quantity per prescription per month).

Section 111 - SPECIALLY AUTHORISED DRUGS (SAD’s)

This section contains a listing of SAD’s approved for use.

Section IV – GENERIC/BRAND INDEX

This section lists drug-products by both generic and brand names.
PREFACE TO THIRTIETH EDITION

The Barbados National Drug Formulary attempts both to provide general guidelines on prescribing, and set out indications, cautions/side effects and dose ranges. The prescriber is asked to pay particular note to the sections on prescription writing and variation in dose response. These sections are followed by notes on the special situations requiring dose modification including adverse effects and drug interactions. Emphasis is placed throughout these sections and the Product Listing with Recommended Dose Ranges on the need to tailor doses to the individual patient.

The Barbados National Drug Formulary (BNDF) is intended to be a pocket book for quick reference. It is of greatest value to young doctors, but also to every prescriber who needs to use a drug for the first time, to check general guidelines, major cautions and side effects or dose ranges. It is also useful to identify an unfamiliar drug name or seek help with an unusual patient. In short, it assists in rational prescribing. It is also an educational tool for pharmacists, nurses and other members of the health care team. When more detailed information is required standard reference books should be consulted or help sought from the Drug Information Centre, Barbados Drug.

Rational prescribing must pay attention to costs. Drug selection has attempted to reconcile preparations of acceptable quality with cost. There will always be the temptation to question drug quality when desirable therapeutic results are not achieved, but it should be remembered that Pharmaceutical variation between brands is usually much less than patient sources of variation. Thus, having chosen the appropriate drug, the dose regime must be chosen with care and the prescription written with even more care to instructions and compliance by the patient. Finally, always ask whether a drug is needed at all.
The Drug Formulary Committee acknowledges the permission of the Editors of the British National Formulary to adopt some of their excellent tables. Just as the product listing will include changes from year to year, suggestions for improvement in prescribing guidelines and presentation of the next edition will be most welcomed.

Suggestions to be addressed to:

The Chairman  
Drug Formulary Committee  
C/o Barbados Drug Service  
Alico Building  
Cheapside  
St. Michael

Safe Prescribing.
BARBADOS DRUG SERVICE
SUPPLY PROTOCOLS

The protocols outlined below became effective on December 8, 1986, except where indicated to the contrary. They cover all beneficiaries of the Barbados Drug Service irrespective of whether or not the beneficiary obtains the service in the government or private sector.

The protocols have been designed to result in a more effective rationalization of the supply of drugs and related items to beneficiaries, and to maintain the cost effectiveness of the Barbados Drug Service.

It is hoped that all health care personnel will pay particular attention to the protocols and will do all that they can to ensure that the Barbados Drug Service is able to continue to provide quality drugs to all Barbadians at an affordable price. Remember, every drug that is prescribed in relationship to wants and not needs represents WASTAGE in our programme. Wastage will directly or indirectly prevent another patient from receiving a drug he/she may need in the future.
THE PROTOCOLS

1.  **ANTIBIOTICS**

   (a) All antibiotics shall continue to be available. However, the following should be prescribed with great care and attention to the proper indications, preferably after culture and sensitivities of the organism.

   (i) Cephalosporins e.g. Cefaclor by Remedica.

   (ii) Quinolones e.g. Ciprofloxacin by Remedica; Ofloxacin by Remedica.

   (iii) Roxithromycin e.g. Roxithromycin by Remedica.

   *Please note that only the oral forms of the above are involved in the protocol.*

   (b) A maximum of a seven (7) day supply of any antibiotic will be honoured, except in exceptional cases where the physician indicates in writing on the prescription that the patient has a condition requiring a 10 or 14 day supply. Duration of therapies exceeding 14 days, including repeats will need a prior authorization from the Director, BDS, except for acne patients requiring antibiotic therapy. S.A.D. applications are required for this indication.

   *With respect to the above please note the more definitive statements below:*

   1A. (i) At polyclinics the above exempt antibiotics (1(a)) shall only be dispensed if the prescription is signed or co-signed by a Medical Officer of Health. Where the M.O.H. is not available at the time, the prescription can be dispensed but such prescription will have to be reviewed by the M.O.H. at a subsequent date. At Clinics where no M.O.H. is assigned these drugs can be supplied but prescriptions for their use shall be closely monitored by the BDS.
At the Queen Elizabeth, Psychiatric and Geriatric Hospitals the above antibiotics shall only be dispensed if the prescription is signed or co-signed by a Consultant.

Where appropriate first and second line antibiotics such as penicillin, erythromycin, amoxicillin, co-trimoxazole and tetracycline should be used first in the drug therapy protocol.

Where appropriate the results of sensitivity tests should first be obtained before requesting the use of the more expensive antibiotics.

2. ANALGESIC/ANTIPYRETIC AGENTS

Please note the following:

(i) Paracetamol liquid -

Children - a maximum of 150mls. No Refills.

Adults - a maximum of 300mls. No Refills.

Only for patients 12 years and under or over 65 years. Exceptional cases must first be approved by the Director.

(ii) Paracetamol tablets - a maximum of 180 tablets per month. Refills will be honoured.

(iii) Aspirin 75mg and 81mg - a maximum of 60 tablets per month. Aspirin 300mg soluble - a maximum of 16 tablets per month. No Refills. (except where the physician prescribes to the contrary for MI and CVA. CVA/MI - 60 of 75mg/81mg 

30 of 300mg

(iv) Aspirin 650mg - 120 tablets per month.
(ix)

(v) A maximum of a **14 day** supply of all analgesic medication shall be supplied except where the protocol allows for contrary dispensing e.g. Cataflam see page 248. This limitation applies to all drug products found in the BNDF 30th Edition under section 28.08.

(vi) A maximum of 14 days per month of all narcotic analgesics will be honoured with a maximum of 2 refills per prescription.

3. NON-STERoidal ANTI-INFLAMMATORY DRUGS (NSAIDs)

   (i) A maximum of a **14 day** supply **PER MONTH** or the **maximum stated quantity** of any NSAID shall be dispensed.

   (ii) BDS will not reimburse for **two (2) NSAIDs** on the same prescription. Except where an initial acute therapy of Diclofenac Potassium is indicated, not lasting for more than 5 days, after which treatment with an NSAID will be reimbursed.

   (iii) Exceptions to 3 (i) are:

      (a) Diclofenac Sodium 25mg e.g., Apo-Diclo (APO/COL) - **100** tablets.

      (b) Ibuprofen 400mg e.g. Ibuprofen (HEA/ALA) - **120** tablets.

   (iv) BDS will reimburse for a maximum of 15 Diclofenac Potassium of either strength. **No Refills.**
4. **TOPICAL PREPARATIONS**

   The following applies:

   (i) A maximum of two (2) tubes or bottles per prescription per month of topical preparations where both are dispensed at the same time except where protocol allows for contrary dispensing e.g. antifungals, corticosteroids, or antibiotics. Effective April 1, 2007, BDS will not reimburse for refills on any topical preparation i.e. creams, ointments, shampoos, powders, lotions or dressings. **No Refills will be honoured except in the public sector once the total quantity prescribed falls within the limit given in the protocol.**

   (ii) The BDS will reimburse for one (1) pack of 10 dressings per month. **No Refills.**

   (iii) **Benzoyl Peroxide**

       BDS will reimburse the Private Sector for a maximum of one tube per month of 5% gel. The 10% gel is only for use in the public sector in the treatment of varicose leg ulcers. **No Refills.**

   (iv) **Enemas/Suppositories**

       (a) The BDS will not reimburse for more than two enemas per prescription e.g. fleet enema.

       (b) The BDS will not reimburse for more than one box of Suppositories of any size e.g. proctoglyyenol - 5, Glycerin Adult -12.

       (c) The BDS will not reimburse for combinations of oral and rectal NSAIDs.

5. **LIPID LOWERING DRUGS** (became effective on July 1, 1991).

   (i) Serum cholesterol is an important risk factor; but it is only one risk factor for coronary heart disease (CHD), and taken alone is a relatively poor predictor of **individual CHD risk.** The National Cholesterol Education Programme (NCEP) for the treatment of hypercholesterolaemia has suggested the following
guidelines. Secondary causes of hyperlipidaemia should be considered before instituting drug therapy.

Drug therapy should be instituted together with non-pharma-cological interventions such as diet, exercise, and smoking cessation.

When prescribing HMG CoA reductase inhibitors (statins), liver and muscle enzymes should be monitored as per drug manufacturer’s recommendations. Prescribers should be cognisant of potential drug interactions, pre-existing liver disease or alcohol abuse.

Table 1. NCEP Guidelines for Lipid Management

<table>
<thead>
<tr>
<th>Patient category</th>
<th>Diet therapy intervention level</th>
<th>Drug therapy intervention level</th>
<th>LDL cholesterol goal</th>
</tr>
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<tbody>
<tr>
<td>Without CHD and with fewer than two other CHD risk factors</td>
<td>≥4.1 mmol/L</td>
<td>≥4.9 mmol/L</td>
<td>&lt;4.1 mmol/L</td>
</tr>
<tr>
<td>Without CHD and with two or more other CHD risk factors</td>
<td>≥3.4 mmol/L</td>
<td>≥4.1 mmol/L</td>
<td>&lt;3.4 mmol/L</td>
</tr>
<tr>
<td>With CHD</td>
<td>≥2.6 mmol/L</td>
<td>≥3.4 mmol/L</td>
<td>&lt;2.6 mmol/L</td>
</tr>
</tbody>
</table>

a May also include Peripheral vascular disease (including symptomatic carotid artery disease.

b Other risk factors for CHD include: age (males: ≥45 years; females ≥55 years or premature menopause without oestrogen replacement therapy). Family history of premature CHD; before age 55 in male first degree relative or before age 65 in female first degree relative; Diabetes mellitus; Current cigarette smoking; Hypertension; Low HDL; High HDL is a negative risk factor.

(xii)

(ii) The BDS will not reimburse for a combination of statins (e.g. atorvastatin and simvastatin).

(iii) Where the drug is available in multiple strengths, BDS will reimburse for a maximum of 30 tablets of any strength except otherwise stated. Combinations of strengths will not be honoured.

6. HYPOTENSIVE AGENTS (became effective on March 30, 1992).

(i) Bendrofluazide e.g. Bezide 5mg tablets. Maximum of 30 tablets per month.

(ii) Amiloride/Hydrochlorothiazide e.g. Apo-Amilzide/Amiloride/Hydrochlorothiazide. Maximum of 30 tablets per month.

(iii) Combinations of ACE Inhibitors or ARB with another ACE Inhibitor or ARB will not be honoured e.g. Diovan with Zestril, Zestril and Triace, Micardis and Cozaar. BDS will not reimburse.

7. PROTON PUMP INHIBITORS

(i) The BDS will not reimburse for more than a four-week supply of proton pump inhibitors per six month period per patient.

(ii) Generic Omeprazole is excluded from protocol effective January 15, 2002.

8. H2 ANTAGONIST/PROTON PUMP INHIBITORS WITH NSAIDs

The following became effective on November 19, 1999: The BDS will not reimburse for H2 antagonist and proton pump inhibitors when prescribed with NSAIDs.

9. ANTI-DIABETIC PREPARATIONS

(i) The BDS will not reimburse for more than one Sulfonylurea per prescription e.g. Glibenclamide Gliclazide,Glimepiride.
(iii) Effective April 1, 2008 the BDS will only honour prescriptions from Endocrinologists or Medical Officers of Health, for combinations of oral sulphonylureas and insulin. This combination should only be used in that small percentage of patients who are not controlled by tablets or insulin as monotherapy.

(iii) The BDS will not reimburse for more than 120 tablets per month of Diamicron MR. This is a sustained release preparation for once daily dosing.

(iv) Effective April 1, 2008 the BDS will only reimburse for one bottle of 50’s testing strips every three months to patients on oral diabetic medication or those diabetic patients controlled on diet and exercise alone. In order for the diabetics controlled on diet and exercise alone to benefit, the prescription must clearly indicate that the patient is diabetic and controlled on diet and exercise only. BDS will reimburse for one bottle of 50’s testing strips every month to patients receiving insulin. BDS will not reimburse for Autodisc Sensors 100’s.

(v) BDS will reimburse for a maximum of 10 insulin syringes to patients with a history of using insulin.

10. **Liquid preparations** are to be dispensed to children 12 years and under, unless the medical condition prohibits the use of tablets. In such cases permission must first be given by the Director.

11. **The BDS will not reimburse for two or more combinations of drugs under the same pharmacological heading,** unless prior approval has been given by the Director. Example, captopril and enalapril; atorvastatin and pravastatin; ramipril and losartan; tamsulosin and cyproterone.

12. **ANTIHISTAMINES**

The BDS will reimburse for a maximum of 14 days of all antihistamines except where otherwise stated. Effective April 1, 2007, **No Refills will be honoured except in the public sector once the total quantity prescribed, falls within the limit given in the protocol. N.B. Liquid preparations are**
reserved for children 12 and under or the elderly who are unable to take tablets.

13. ANTI-ASTHMATIC AGENTS

(i) The BDS will reimburse for a maximum of 20 ampoules of any UDV preparation e.g. Atrovent or Combivent. See Asthmatic Inhalers - Reimbursable Combinations pg. xv.

(ii) The BDS will not reimburse for prescriptions for salmeterol as monotherapy.
14. **ASTHMATIC INHALERS - REIMBURSABLE COMBINATIONS**

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Fenoterol</th>
<th>Ipratropium</th>
<th>Salmeterol</th>
<th>Salbutamol</th>
<th>Salbutamol-/Ipratropium</th>
<th>Budesonide-/Formoterol</th>
<th>Fluticasone/salmeterol</th>
<th>Budesonide</th>
<th>Beclomethasone</th>
<th>Budesonide</th>
<th>Fluticasone</th>
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<tr>
<td>Fenoterol (Berotec)</td>
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<td>Yes</td>
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<td>Salbutamol (Ventolin)</td>
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<td>Salbutamol /Ipratropium (Combivent)</td>
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<td>Budesonide /Formoterol (Symbicort®)</td>
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<td>Budesonide (Pulmicort)</td>
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<td>Fluticasone /Flixotide</td>
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<tr>
<td>Ipratropium (Atrovent)</td>
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**NOTE:**
- All other combinations are not reimbursable under the BDS programme
- Salbutamol (Ventolin®) is given for use in the acute attack only. Salmeterol which is a long acting Beta-2 adrenergic agonist is not beneficial in the acute asthmatic attack
15. **ALPHA ADRENERGIC BLOCKERS**
   The BDS will not reimburse for combinations of terazosin and tamsulosin.

16. **VASODILATORS**
   Nimodipine is approved for use in the public sector only.

17. **SKELETAL MUSCLE RELAXANTS**
   The BDS will reimburse for a maximum of a 7 day supply of muscle relaxants listed in section 12:20 of the BNDF. **No Refills will be honoured.** Exempt from this protocol is generic baclofen.

18. **ENT ANTI-INFLAMMATORY AGENTS**
   The BDS will reimburse for only one bottle of an inhaled nasal steroid per month e.g. Rynase or Nasonex etc.

19. **ANTI-GLAUCOMA AGENTS**
   To be used in patients who are unresponsive or intolerant to other agents. The BDS will reimburse for only prescriptions written by an ophthalmologist, for the following preparations: Brimonidine - Alphagan®, Bimatoprost - Lumigan®, Dorzolamide/Timolol - Cosopt®, Latanoprost/Timolol - Xalacom®, Latanoprost - Xalatan®, Travoprost - Travatan®.

   **All reimbursable quantities** by the BDS will be governed by the maximum doses given in the Barbados National Drug Formulary where there is no stated protocol.

**NB.** The above protocols apply to any brand currently in the BNDF which falls into the respective therapeutic categories. The Protocol on each drug takes precedence over any other group or class protocol which may be in effect for that drug e.g. 5-day supply of cataflam vs. 14-day for other NSAIDs.

**Any supplies contrary to the above will need the prior approval of the Director, Barbados Drug Service.**
The World Anti-Doping Code
2011 Prohibited List International Standard

This information is intended as a guide for health care professionals and athletes to alert them to the drugs that may be restricted in and out of competition in some or all sports. Please note that this is not a complete list of all prohibited substances but refers only to those drugs found in the Barbados National Formulary. This list is updated each calendar year and any queries should be directed to the National Anti-Doping Commission or the relevant sporting organisation.

<table>
<thead>
<tr>
<th>Drugcode</th>
<th>Banned in and out of competition</th>
<th>Banned only in competition</th>
<th>Therapeutic use exemption required</th>
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<td>Absorbable Gelatin</td>
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<tr>
<td>Acetazolamide</td>
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<tr>
<td>Albumin</td>
<td>X</td>
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<td>Amiloride/HCTZ</td>
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SECTION I

Guide to Rational Prescribing
Prescription Writing

The writing of prescriptions is a crucial part of a doctor’s management of a patient.

It is obviously very important that this function should serve its intended purpose i.e. to provide for the patient an effective, accurate and convenient method of administration of medication.

The written prescription is the means of direct communication from the doctor to the pharmacist. It is also an important legal document. It is therefore imperative that sound guidelines for prescription writing be established and followed scrupulously.

There are two (2) general prescription formats;

1) The out-patient prescription written on a prescription sheet, e.g. a prescription form or a doctor’s letterhead.

2) The in-patient prescription written on the patient’s treatment card and included in the Hospital notes.

(a) Out-Patient Prescriptions

The following must be recorded on each prescription:
NAME: (HOSPITAL Reg. # for hospital patients)
AGE:
DATE:

The address can be of value in case of confusion of name:
The name of the drug usually generic, (unless a specific
Brand-name drug is indicated.
The dosage form (e.g. 100mg).
The formulation (if necessary, e.g. spansules, or enteric coated pill).

Route of administration
Frequency of administration
Duration of treatment e.g.
  two (2) weeks (or fourteen (14) days), and/or number of tablets.
For p.r.n. drugs - the reason for administering the drug, e.g. “p.r.n. for headache”.
Particular guidelines - e.g. before meals, or not to exceed twelve (12) tabs/day.
Repeat prescription instruction - e.g. repeat twice only or **NO REPEAT**
Labelling instructions - All labels must now indicate the name of the drug except where the
Medical practitioner requests that this not be done.

**Signature**
**Name printed**
**Verification stamp**, if Hospital clinic or polyclinic.

**Special Notes:**
The **drug name** should be clearly stated. Generic names are to be preferred unless a specific brand name is required for a special reason e.g. Lanoxin, the Glaxo Smithkline brand of digoxin.

**Drug Selection**
It is important, to note that the Formulary lists drugs under the generic name. The brand supplied by the Barbados Drug Service being asterisk, followed by other locally available drugs, chiefly as an aid in identification.
Abbreviations of drug names can lead to misunderstandings and must be avoided. They can and do increase the risk of a prescription being misread.

Latin
Old-fashioned Latin phrases serve little useful purpose, and only serve to increase errors. Abbreviations of Latin are even worse (for example p.c. for after meals). Illegible abbreviations of little used archaic Latin may have sentimental value to some but can no longer be justified.

Legibility
Failure to write legibly leads to many kinds of errors and accidents. The patient should be told the name of the drug and asked to commit it to memory. The pharmacist should be requested to include the name of the medication on the label. This is especially useful when the patient is receiving more than one medication. A separate note for the patient may help to reduce errors.

The formulation should be convenient and easy to take. Consideration must be given to the age, disability and intelligence of the patient. (e.g. young children generally take liquids more easily than tablets but children of 6 or over can usually take tablets, at much lower cost!)

The route, frequency and duration of administration and in the case of a “p.r.n.” the indication for administration must be clearly given. In the case of acute brief illnesses careful thought should be given to duration, to avoid over
prescription and wastage.

Finally, the doctor’s signature **must** be written clearly. The pharmacist may not be able to decipher the signature, so the doctor’s name should also be printed legibly or a rubber stamp used if letterhead stationary is not used, and the prescription should be carbon copied into the patient’s notes.

In the case of Hospital prescriptions the verification stamp of the department from which the prescription originates should be affixed. All pre-stamped prescription pads should be carefully safe-guarded.

(b) **In-Patient Prescriptions**

The same instructions generally apply to the prescription written on the Treatment Card.

In this case the dosage, duration and route of administration are particularly important as the Pharmacist uses this information to determine the quantity of drugs sent to the ward for the patient.

In-Patient prescriptions are not usually filled for more than one week at a time. Some key drugs are stocked on medical wards and supplied from these stocks.

Since in-patient treatment more often involves the use of narcotic and controlled substances, multiple drug use and frequent changes, **accurate prescription writing and double checking is mandatory.**
6 Prescription Writing

Final Comment

Careful prescribing reduces time spent by the pharmacist contacting the doctor for clarification, improves patient compliance, improves results of treatment, and reduces life-threatening errors.

Special Notes on Labelling

Pharmacists should ensure that the following information is clearly stated on the label:

(1) Name of Patient
(2) Date prescription dispensed
(3) Prescription number
(4) Directions for use
(5) Name of Physician
(6) Name/Manufacturer of drug
(7) Strength of drug
(8) Number of repeats
Prescribing for Children

Prescribing for children is difficult and fraught with danger. The neonatal period is the most dangerous especially as all neonates are not of the same gestational age. Thus liver and kidney function may vary enormously. In general, metabolism and renal filtration are delayed in prematurity and in the first few days of life, but are often increased in children compared to adults.

**Dosage**

Three empirical methods of determining paediatric doses are from age, body-weight or surface area. The first is easiest but the least accurate. Use of surface area is most reliable but requires measurement of height and weight and use of a nomogram or table (e.g. in the Pharmaceutical Codex, London Pharmaceutical press).

Using body weight, usually:

\[
\text{Dose} = \frac{\text{Patient's weight in kg}}{72} \times \text{average adult dose}
\]

or

\[
\text{Dose} = \frac{\text{Patient's weight in lb}}{150} \times \text{average adult dose}
\]

However, children require a relatively higher dose/kg bodyweight because of faster metabolisms. Fair estimates are twice the adult figure up to four months and 1 ½ times up to four years.

\[
\text{Dose} = \frac{\text{Surface area of patient (m}^2\text{)}}{1.8} \times \text{average adult dose}
\]
8 Prescribing for the Elderly

The Table gives best estimates for all except neonates -

<table>
<thead>
<tr>
<th>Age over:</th>
<th>Body Weight (Kg)</th>
<th>Body Surface (M$^2$)</th>
<th>% of Adult Dose</th>
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<tr>
<td>4 weeks</td>
<td>3.5</td>
<td>0.21</td>
<td>12.5</td>
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<tr>
<td>2 months</td>
<td>4.5</td>
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<td>15</td>
</tr>
<tr>
<td>4 months</td>
<td>6.5</td>
<td>0.36</td>
<td>20</td>
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Prescribing for the Elderly

**Kinetic Factors**

Elderly patients have reduced body mass, volume of distribution, hepatic metabolism capacity, and renal function. All of these factors result in accumulation of drugs, and adult doses should be reduced in elderly patients.

**Side Effects**

In addition, the elderly are often more sensitive to CNS, cardiac and hypotensive drugs. Thus toxic side effects are much more common in the elderly than in younger patients. Confusion may result from sedatives or antidepressants. Tricyclics and analgesics may constipate.
Compliance

The elderly comply poorly with multiple drug therapy, due to their poor vision and failure to understand instructions. Full written instructions may help but some may need supervision. It is of immense value to request patients to bring their tablets/bottles with them to the clinic or pharmacy for clarification and to check compliance.

Conclusions

1. Keep drug regimes simple.
2. Provide clear legible instructions, check patient’s understanding of instructions and check returned medication bottles.
3. Review and revise regime. Discontinue if no definite benefit.

Prescribing in Liver Disease

Liver disease may effect drug response in several ways.

IMPAIRED METABOLISM

The majority of drugs are metabolized in the liver and can therefore accumulate in severe, acute or chronic liver disease. Liver enzymes and bilirubin give no indication of drug metabolizing capacity but impaired prothrombin time and decreased serum albumin should suggest impaired drug metabolism and risk of toxicity.

Low serum albumin may also produce increased
toxicity of high protein bound drugs because of reduced binding, e.g. phenytoin and prednisolone.

REDUCED CLOTTING
Impaired clotting factor synthesis results in greater sensitivity to warfarin and aspirin.

ENCEPHALOPATHY
Diuretics (through hypokalemia), sedatives and narcotics may all precipitate confusion and coma. Avoid morphine particularly, as well as all hepatotoxic drugs if possible.

FLUID OVERLOAD
Avoid drugs which may exacerbate ascites and oedema (e.g. phenylbutazone and steroids) unless specially indicated as in chronic active hepatitis.
Table 1: Drugs to be avoided or used with caution in liver disease

<table>
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<th>Drugs</th>
<th>Comments</th>
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<td>ACE Inhibitors</td>
<td>Use of prodrugs such as enalapril, fosinopril, perindopril, quinapril and ramipril require close monitoring</td>
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<td>Amlodipine</td>
<td>Metabolised by liver: reduce dose</td>
</tr>
<tr>
<td>Antidepressants</td>
<td>Increased sedation: decrease dose. Avoid in severe disease</td>
</tr>
<tr>
<td>Antihistamines</td>
<td>Avoid, may cause coma</td>
</tr>
<tr>
<td>Anxiolytics and Hypnotics</td>
<td>Decrease dose; may cause coma</td>
</tr>
<tr>
<td>Antipsychotics</td>
<td>All may precipitate coma</td>
</tr>
<tr>
<td>Antidepressants</td>
<td>Reduce dose or avoid in severe liver disease</td>
</tr>
<tr>
<td>Anticoagulants</td>
<td>Avoid especially if PT is already prolonged</td>
</tr>
<tr>
<td>Aspirin</td>
<td>Avoid - increased risk of gastro-intestinal bleeding</td>
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<td>Astemizole</td>
<td>see Antihistamines</td>
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<tr>
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<td>see Gold</td>
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<td>Aurothiomalate</td>
<td>see Gold</td>
</tr>
<tr>
<td>Azathioprine</td>
<td>May need dose reduction</td>
</tr>
<tr>
<td>Azithromycin</td>
<td>Avoid; jaundice reported</td>
</tr>
<tr>
<td>Bamhuterol</td>
<td>Avoid in severe liver disease</td>
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<tr>
<td>Bendrofluazide</td>
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<td>Benzdiazepines</td>
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<td>Beta-blockers</td>
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<td>Bumetanide</td>
<td>see Loop Diuretics</td>
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<td>Bupivacaine</td>
<td>see Lignocaine</td>
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<td>Carbamazepine</td>
<td>Metabolism impaired in advanced liver disease</td>
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<td>Ceftriaxone</td>
<td>Reduce dose and monitor plasma concentration if there is both hepatic and severe renal impairment</td>
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<td>Chloral Hydrate</td>
<td>see Anxiolytics and Hypnotics</td>
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<tr>
<td>Chloramphenicol</td>
<td>Avoid - increased risk of bone-marrow depression</td>
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Table 1: Drugs to be avoided or used with caution in liver disease (continued)

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<td>Clarithromycin</td>
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<td>Chlorothiazide</td>
<td>see Thiazides</td>
<td>Clemastine</td>
<td>see Antihistamines</td>
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<td>Chlorpheniramine</td>
<td>see Antihistamines</td>
<td>Clindamycin</td>
<td>Reduce dose</td>
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<td>Chlorpromazines</td>
<td>see Antipsychotics</td>
<td>Clofibrate</td>
<td>Avoid in severe liver disease</td>
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<td>Chlorpropamide</td>
<td>see Sulphonylureas</td>
<td>Clonipramine</td>
<td>see Antidepressants, Tricyclic</td>
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<td>Chlortetracycline</td>
<td>see Tetracyclines</td>
<td>Codeine</td>
<td>see Opioid Analgesics</td>
</tr>
<tr>
<td>Cholestyramine</td>
<td>Interferes with absorption of fat-soluble vitamins and may aggravate absorption in primary biliary cirrhosis; likely to be ineffective in complete biliary obstruction</td>
<td>Clobazam</td>
<td>see Anxiolytics and Hypnotics</td>
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<td>Choline Theophyllinate</td>
<td>see Theophylline</td>
<td>Cloniphene</td>
<td>Avoid in severe liver disease</td>
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<td>Cimetidine</td>
<td>Increase risk of confusion; reduce dose</td>
<td>Clomiphene</td>
<td>Avoid in severe liver disease</td>
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<td>Codeine</td>
<td>see Opioid Analgesics</td>
</tr>
<tr>
<td>Cisapride</td>
<td>Half dose initially</td>
<td>Contraceptives, Oral</td>
<td>Avoid in active liver disease and in patients with a history of pruritus or cholestasis during pregnancy</td>
</tr>
<tr>
<td>Citalopram</td>
<td>Use doses at lower end of range</td>
<td>Dantrolene</td>
<td>Avoid - may cause severe liver damage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Demeclocycline</td>
<td>see Tetracyclines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Desflurane</td>
<td>Reduce dose</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Desipramine</td>
<td>see Antidepressants, Tricyclic</td>
</tr>
</tbody>
</table>
Table 1: Drugs to be avoided or used with caution in liver disease (*continued*)

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Comments</th>
<th>Drugs</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diazepam</td>
<td>see Anxiolytics and Hypnotics</td>
<td>Ethynodiol Diacetate</td>
<td>see Progestogens</td>
</tr>
<tr>
<td>Diclofenac</td>
<td>see NSAIDs</td>
<td>Fenofibrate see Clofibrate</td>
<td></td>
</tr>
<tr>
<td>Dilunisal</td>
<td>see NSAIDs</td>
<td>Flecainide</td>
<td>Avoid (or reduce dose) in severe liver disease</td>
</tr>
<tr>
<td>Dihydrocodeine</td>
<td>see Opioid Analgesics</td>
<td>Fluconazole</td>
<td>Toxicity with related drugs</td>
</tr>
<tr>
<td>Diltiazem</td>
<td>Reduce dose</td>
<td>Flunitrazepam see Anxiolytics and Hypnotics</td>
<td></td>
</tr>
<tr>
<td>Dimenhydrinate</td>
<td>see Antihistamines</td>
<td>Flupenthixol see Antipsychotics</td>
<td></td>
</tr>
<tr>
<td>Diphenoxylate</td>
<td>see Opioid Analgesics</td>
<td>Fluphenazine see Antipsychotics</td>
<td></td>
</tr>
<tr>
<td>Doxorubicin</td>
<td>Reduce dose according to bilirubin concentration</td>
<td>Flurbiprofen see NSAIDs</td>
<td></td>
</tr>
<tr>
<td>Doxycycline</td>
<td>see Tetracyclines</td>
<td>Fosinopril see ACE Inhibitors</td>
<td></td>
</tr>
<tr>
<td>Epirubicin</td>
<td>Reduce dose according to bilirubin concentration</td>
<td>Frusemide see Loop Diuretics</td>
<td></td>
</tr>
<tr>
<td>Ergometrine</td>
<td>Avoid in severe liver disease</td>
<td>Fusidic Acid</td>
<td>Impaired biliary excretion; may be in-creased risk of hepatotoxicity; avoid or reduce dose</td>
</tr>
<tr>
<td>Ergotamine</td>
<td>Avoid in severe liver disease - risk of toxicity increased</td>
<td>Gemfibrozil</td>
<td>Avoid in liver disease</td>
</tr>
<tr>
<td>Erythromycin</td>
<td>May cause idiosyncratic hepatotoxicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethinyloestradiol</td>
<td>see Oestrogens</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 1: Drugs to be avoided or used with caution in liver disease (continued)

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestodene see Progestogens</td>
<td></td>
</tr>
<tr>
<td>Glibenclamide see Sulphonylureas</td>
<td></td>
</tr>
<tr>
<td>Gliclazide see Sulphonylureas</td>
<td></td>
</tr>
<tr>
<td>Glipizide see Sulphonylureas</td>
<td></td>
</tr>
<tr>
<td>Gold (auranofin, Aurothiomalate)</td>
<td>Avoid in severe liver disease - hepatotoxicity may occur</td>
</tr>
<tr>
<td>Haloperidol see Antipsychotics</td>
<td></td>
</tr>
<tr>
<td>Heparin</td>
<td>Reduce dose in severe disease</td>
</tr>
<tr>
<td>Hydrochlorothiazide see Thiazides</td>
<td></td>
</tr>
<tr>
<td>Hydroxyprogesterone Hexanoate see Progestogens</td>
<td></td>
</tr>
<tr>
<td>Hydroxyzine see Antihistamines</td>
<td></td>
</tr>
<tr>
<td>Hypnotics see Anxiolytics and Hypnotics</td>
<td></td>
</tr>
<tr>
<td>Ibuprofen see NSAIDs</td>
<td></td>
</tr>
<tr>
<td>Imipramine see Antidepressants Tricyclic</td>
<td></td>
</tr>
<tr>
<td>Indapamide see Thiazides</td>
<td></td>
</tr>
<tr>
<td>Indomethacin see NSAIDs</td>
<td></td>
</tr>
<tr>
<td>Isoniazid</td>
<td>Avoid if possible idiosyncratic hepatotoxicity more common</td>
</tr>
<tr>
<td>Isotretinoin</td>
<td>Avoid - further impairment of liver function may occur</td>
</tr>
<tr>
<td>Isradipine</td>
<td>Reduce dose</td>
</tr>
<tr>
<td>Itraconazole</td>
<td>Avoid - toxicity with related drugs</td>
</tr>
<tr>
<td>Ketoconazole</td>
<td>Induces hepatitis-like reaction; may accumulate in severe liver disease; contraindicated unless no alternative</td>
</tr>
<tr>
<td>Ketoprofen see NSAIDs</td>
<td></td>
</tr>
<tr>
<td>Ketorolac see NSAIDs</td>
<td></td>
</tr>
<tr>
<td>Ketotifen see Antihistamines</td>
<td></td>
</tr>
<tr>
<td>Lignocaine</td>
<td>Avoid (or reduce dose) in severe liver disease</td>
</tr>
<tr>
<td>Loop Diuretics</td>
<td>Hypokalaemia may precipitate coma; potassium-sparing diuretic should be used to prevent this increased risk of hypomagnesaemia in alcoholic cirrhosis</td>
</tr>
</tbody>
</table>
Table 1: Drugs to be avoided or used with caution in liver disease (continued)

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lorazepam</td>
<td>see Anxiolytics and Hypnotics</td>
</tr>
<tr>
<td>Magnesium Salts</td>
<td>Avoid in hepatic coma if risk of renal failure</td>
</tr>
<tr>
<td>Medroxyprogesterone Acetate</td>
<td>see Progestogens</td>
</tr>
<tr>
<td>Mefenamic Acid</td>
<td>see NSAIDs</td>
</tr>
<tr>
<td>Metformin</td>
<td>Avoid - increased risk of lactic acidosis</td>
</tr>
<tr>
<td>Methadone</td>
<td>see Opioid Analgesics</td>
</tr>
<tr>
<td>Methotrexate</td>
<td>Dose-related toxicity - avoid in non-malignant conditions (e.g. psoriasis)</td>
</tr>
<tr>
<td>Methyldopa</td>
<td>Avoid - increased risk of hepatotoxicity</td>
</tr>
<tr>
<td>Metoclopramide</td>
<td>Reduce dose</td>
</tr>
<tr>
<td>Metolazone</td>
<td>see Thiazides</td>
</tr>
<tr>
<td>Metoprolol</td>
<td>Reduce oral dose</td>
</tr>
<tr>
<td>Metronidazole</td>
<td>Reduce dose in severe liver disease</td>
</tr>
<tr>
<td>Minocycline</td>
<td>see Tetracyclines</td>
</tr>
<tr>
<td>Moclobemide</td>
<td>Reduce dose in severe liver disease</td>
</tr>
<tr>
<td>Morphine</td>
<td>see Opioid Analgesics</td>
</tr>
<tr>
<td>Nalidixic Acid</td>
<td>see 4-Quinolones</td>
</tr>
<tr>
<td>Nandrolone</td>
<td>see Anabolic Steroids</td>
</tr>
<tr>
<td>Naproxen</td>
<td>see NSAIDs</td>
</tr>
<tr>
<td>Narcotic Analgesics</td>
<td>see Opioid Analgesics</td>
</tr>
<tr>
<td>Nifedipine</td>
<td>Reduce dose</td>
</tr>
<tr>
<td>Nitrazepam</td>
<td>see Anxiolytics and Hypnotics</td>
</tr>
<tr>
<td>Nitrofurantoin</td>
<td>Cholestatic jaundice and chronic active hepatitis reported</td>
</tr>
<tr>
<td>Nitroprusside</td>
<td>Avoid in severe liver disease</td>
</tr>
<tr>
<td>Norethisterone</td>
<td>see Progestogens</td>
</tr>
<tr>
<td>Norfloxacin</td>
<td>see 4-Quinolones</td>
</tr>
<tr>
<td>Nortriptyline</td>
<td>see Antidepressants, Tricyclic</td>
</tr>
<tr>
<td>NSAIDs</td>
<td>Increased risk of gastro-intestinal bleeding and can cause fluid retention; avoid in severe liver disease</td>
</tr>
<tr>
<td>Oestradiol</td>
<td>see Oestrogens</td>
</tr>
<tr>
<td>Oestriol</td>
<td>see Oestrogens</td>
</tr>
</tbody>
</table>
### Table 1: Drugs to be avoided or used with caution in liver disease (continued)

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oestrogens</td>
<td>Avoid; see also contraceptives, Oral</td>
</tr>
<tr>
<td>Ofloxacin see 4-Quinolones</td>
<td></td>
</tr>
<tr>
<td>Omeprazole</td>
<td></td>
</tr>
<tr>
<td>Opioid Analgesics</td>
<td>Avoid or reduce dose - may precipitate coma</td>
</tr>
<tr>
<td>Oral Contraceptives see Contraceptives, Oral</td>
<td></td>
</tr>
<tr>
<td>Oxazepam see Anxiolytics and Hypnotics</td>
<td></td>
</tr>
<tr>
<td>Oxytetracycline see Tetracyclines</td>
<td></td>
</tr>
<tr>
<td>Papaveretum see Opioid Analgesics</td>
<td></td>
</tr>
<tr>
<td>Paracetamol</td>
<td>Dose-related toxicity - avoid large doses</td>
</tr>
<tr>
<td>Paroxetine see Antidepressants, SSRI</td>
<td></td>
</tr>
<tr>
<td>Pentazocine see Opioid Analgesics</td>
<td></td>
</tr>
<tr>
<td>Pericyazine see Antipsychotics</td>
<td></td>
</tr>
<tr>
<td>Perindopril see ACE Inhibitors</td>
<td></td>
</tr>
<tr>
<td>Perphenazine see Antipsychotics</td>
<td></td>
</tr>
<tr>
<td>Pethidine see Opioid Analgesics</td>
<td></td>
</tr>
<tr>
<td>Phenazocine see Opioid Analgesics</td>
<td></td>
</tr>
<tr>
<td>Phenelzine see MAOIs</td>
<td></td>
</tr>
<tr>
<td>Pheniramine see Antihistamines</td>
<td></td>
</tr>
<tr>
<td>Phenobarbitone</td>
<td>May precipitate coma</td>
</tr>
<tr>
<td>Phenothiazines see Antipsychotics</td>
<td></td>
</tr>
<tr>
<td>Phenylbutazone see NSAIDs</td>
<td></td>
</tr>
<tr>
<td>Phenytoin</td>
<td>Reduce dose to avoid toxicity</td>
</tr>
<tr>
<td>Pilocarpine</td>
<td>Reduce oral dose</td>
</tr>
<tr>
<td>Piperazine</td>
<td>Avoid</td>
</tr>
<tr>
<td>Piperazine Oestrone Sulphate see Oestrogens</td>
<td></td>
</tr>
<tr>
<td>Piroxicam see NSAIDs</td>
<td></td>
</tr>
<tr>
<td>Pravastatin</td>
<td>Avoid in active liver disease or unexplained persistent elevations in serum transaminases</td>
</tr>
<tr>
<td>Prednisolone</td>
<td>Side-effects more common</td>
</tr>
<tr>
<td>Prednisone</td>
<td>Prednisolone is preferable (prednisone needs conversion to prednisolone by liver before active)</td>
</tr>
<tr>
<td>Primidone</td>
<td>Reduce dose may precipitate coma</td>
</tr>
<tr>
<td>Drugs</td>
<td>Comments</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Procainamide</td>
<td>Avoid or reduce dose</td>
</tr>
<tr>
<td>Prochlorperazine</td>
<td>see Antipsychotics</td>
</tr>
<tr>
<td>Progesterone</td>
<td>see Progestogens</td>
</tr>
<tr>
<td>Progestogens</td>
<td>Avoid; see also Contraceptive, Oral</td>
</tr>
<tr>
<td>Promazine</td>
<td>see Antipsychotics</td>
</tr>
<tr>
<td>Promethazine</td>
<td>see Antihistamines</td>
</tr>
<tr>
<td>Propranolol</td>
<td>Reduce oral dose</td>
</tr>
<tr>
<td>Protriptyline</td>
<td>see Antidepressants, Tricyclic</td>
</tr>
<tr>
<td>Quinapril see ACE Inhibitors</td>
<td></td>
</tr>
<tr>
<td>4-Quinolones</td>
<td>Hepatitis with necrosis reported with ciprofloxacin; hepatitis also reported for norfloxacin; nalidixic acid partially conjugated in liver; reduce dose of ofloxacin in severe liver disease</td>
</tr>
<tr>
<td>Ramipril see ACE Inhibitors</td>
<td></td>
</tr>
<tr>
<td>Ranitidine</td>
<td>Increased risk of confusion; reduce dose</td>
</tr>
<tr>
<td>Rifampicin</td>
<td>Impaired elimination; may be increased risk of hepatotoxicity; avoid or do not exceed 8mg/kg daily</td>
</tr>
<tr>
<td>Sertraline see Antidepressants, SSRI</td>
<td></td>
</tr>
<tr>
<td>Simvastatin</td>
<td>Avoid in active liver disease or unexplained persistent elevations in serum transaminases</td>
</tr>
<tr>
<td>Sodium Aurothiomalate see Gold</td>
<td></td>
</tr>
<tr>
<td>Sodium Bicarbonate see Antacids</td>
<td></td>
</tr>
<tr>
<td>Sodium Fusidate see Fusidic Acid</td>
<td></td>
</tr>
<tr>
<td>Sodium Nitroprusside see Nitroprusside</td>
<td></td>
</tr>
<tr>
<td>Sodium Valproate see Valproate</td>
<td></td>
</tr>
<tr>
<td>Stilboestrol see Oestrogens</td>
<td></td>
</tr>
<tr>
<td>Sulindac see NSAIDs</td>
<td></td>
</tr>
<tr>
<td>Sulphonylureas</td>
<td>Increased risk of hypoglycaemia in severe liver disease; avoid or use small dose; can produce jaundice</td>
</tr>
</tbody>
</table>
Table 1: Drugs to be avoided or used with caution in liver disease (continued)

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Comments</th>
<th>Drugs</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suxamethonium</td>
<td>Prolonged apnoea may occur in severe liver disease due to reduced hepatic synthesis of pseudo-cholinesterase</td>
<td></td>
<td>hypomagnesae mia in alcoholic cirrhosis</td>
</tr>
<tr>
<td>Tenoxicam</td>
<td>NSAIDs</td>
<td>Thiopentone</td>
<td>Reduce dose for induction in severe liver disease</td>
</tr>
<tr>
<td>Terbinafine</td>
<td>Reduce dose</td>
<td>Tolbutamide</td>
<td>Sulphonylureas</td>
</tr>
<tr>
<td>Terfenadine</td>
<td>Cardiovascular abnormalities</td>
<td>Trifloperazine</td>
<td>Antipsychotics</td>
</tr>
<tr>
<td>Testosterone</td>
<td>Androgens</td>
<td>Trimeprazine</td>
<td>Antidepressants</td>
</tr>
<tr>
<td>Tetracyclines</td>
<td>Avoid (or use with caution) - dose-related toxicity by i/v route; SLE syndrome and hepatic damage reported with minocycline</td>
<td>Trimipramine</td>
<td>Antidepressants</td>
</tr>
<tr>
<td>Theophylline</td>
<td>Reduce dose</td>
<td>Tricyclic</td>
<td></td>
</tr>
<tr>
<td>Thiazides</td>
<td>Avoid in severe liver disease; hypokalaemia may precipitate coma (potassium-sparing diuretic can prevent); increased risk of</td>
<td>Valproate</td>
<td>Avoid if possible - hepatotoxicity and liver failure may occasionally occur (usually in first 6 months)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Verapamil</td>
<td>Reduce oral dose</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zidovudine</td>
<td>Accumulation may occur</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zopiclone</td>
<td>see Anxiolytics and Hypnotics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zuclopenthioxol</td>
<td>see Antipsychotics</td>
</tr>
</tbody>
</table>
Prescribing in Renal Disease

In patients with renal impairment many drugs or their metabolites are excreted more slowly. It is therefore important to know what drugs will require dose reduction or are to be avoided altogether. An exception to this rule is gentamicin where careful use of a nomogram and monitoring of blood levels (peak one (1) hour after i.m. dose and trough before next dose) make its use relatively safe. (see nomogram on p. 21).

Most drugs are conveniently given at an interval equal to the half-life. If a drug is excreted exclusively by the kidney a reduction in Glomerular Filtration Rate (and hence creatinine clearance) will produce a corresponding reduction in drug excretion. Thus if GFR falls by half the drug half-life can be expected to double; the dosage interval should therefore be doubled, while the loading dose and maintenance dose are not changed.

For practical purposes serum creatinine gives the most useful index of renal function. It does however fall with age and may not reflect the true state in the elderly, who may be assumed to have a GFR of 50ml/min even if serum creatinine is within normal limits.

In table 3 (p.22) advice on dosage is based on three (3) grades of renal impairment (see table 2, p.20).

Note: Tobramycin and gentamicin have almost
identical half-lives (1-3 hours), prolonged in patients with renal failure because they are excreted, unmetabolised, by the kidneys.

The gentamicin Nomogram can therefore be used in an identical manner for prescribing tobramycin, milligram for milligram.

Table 2: Grades of Renal Impairment

<table>
<thead>
<tr>
<th>Grade</th>
<th>$GFR^*$ Or Creatinine Clearance</th>
<th>Serum Creatinine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>20-50 ml/min</td>
<td>150-300umol/l</td>
</tr>
<tr>
<td>Moderate</td>
<td>10-20 ml/min</td>
<td>300-700umol/l</td>
</tr>
<tr>
<td>Severe</td>
<td>&lt;10 ml/min</td>
<td>700umol/l</td>
</tr>
</tbody>
</table>

$GFR^*$ Glomerular Filtration Rate
The nomogram provides a loading dose (L), a maintenance dose (M) and a suitable interval between doses for a patient whose creatinine concentration (A), age (B) and body weight (D) are known. To use the nomogram, join A to B with a line which cuts C; join this point to D with a line which cuts L and M.

(Modified from Mawer et al.) 1974.
### Table 3: Drugs to be avoided or used with caution in renal failure

<table>
<thead>
<tr>
<th>Drugs</th>
<th>GFR ml/ Minute</th>
<th>Dosage recommendations</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetazolamide</td>
<td>20-50</td>
<td>Avoid</td>
<td>Metabolic acidosis</td>
</tr>
<tr>
<td>Acyclovir</td>
<td>10-20 - &lt;10</td>
<td>Reduce dose</td>
<td>Possible transient increase in plasma</td>
</tr>
<tr>
<td>Allopurinol</td>
<td>10-20</td>
<td>100mg daily</td>
<td>Increased toxicity; rashes 100mg on alternate days</td>
</tr>
<tr>
<td></td>
<td>&lt;10</td>
<td>100mg on alternate days</td>
<td></td>
</tr>
<tr>
<td>Alprazolam</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminium Salts</td>
<td>&lt;10</td>
<td></td>
<td>Aluminium is absorbed and may accumulate</td>
</tr>
</tbody>
</table>

*Note: Absorption of aluminium from aluminium salts is increased by citrates, which are contained in many effervescent preparations (such as effervescent analgesics)*

<table>
<thead>
<tr>
<th>Drugs</th>
<th>GFR ml/ Minute</th>
<th>Dosage recommendations</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amantadine</td>
<td>20-50 - 10-20</td>
<td>Reduce dose</td>
<td>Excreted by kidney</td>
</tr>
<tr>
<td>Amiloride</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aminoglycosides</td>
<td>20-50</td>
<td>Reduce dose</td>
<td>Monitor plasma concentrations; ototoxic; nephrotoxic</td>
</tr>
<tr>
<td>Amoxycillin</td>
<td>&lt;10</td>
<td>Reduce dose</td>
<td>Rashes more common</td>
</tr>
<tr>
<td>Amphotericin</td>
<td>20-50</td>
<td></td>
<td>Use only if no alternative; nephrotoxicity may be reduced with use of complexes</td>
</tr>
</tbody>
</table>
Table 3: Drugs to be avoided or used with caution in renal failure

<table>
<thead>
<tr>
<th>Drugs</th>
<th>GFR ml/Minute</th>
<th>Dosage recommendations</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ampicillin</td>
<td>&lt;10</td>
<td>Reduce dose</td>
<td>Rashes more common</td>
</tr>
<tr>
<td>Analgesics see Opioid Analgesics and NSAIDs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antipsychotics</td>
<td>&lt;10</td>
<td>Start with small doses</td>
<td>Increased cerebral sensitivity</td>
</tr>
<tr>
<td>Anxiolytics and Hypnotics</td>
<td>&lt;10</td>
<td>Start with small doses</td>
<td>Increased cerebral sensitivity</td>
</tr>
<tr>
<td>Aspirin</td>
<td>&lt;10</td>
<td>Avoid</td>
<td>Sodium and water retention; deterioration in renal function; increased risk of gastro-intestinal bleeding</td>
</tr>
<tr>
<td>Atenolol see Beta-blockers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auranofin see Gold</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aurothioma late see Gold</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Azathioprine</td>
<td>&lt;10</td>
<td>Reduce dose</td>
<td>Excreted by kidney</td>
</tr>
<tr>
<td>Baclofen</td>
<td>20-50</td>
<td>Use smaller doses (e.g. 5mg daily)</td>
<td></td>
</tr>
<tr>
<td>Bambuterol</td>
<td>20-50</td>
<td>Reduce dose</td>
<td></td>
</tr>
<tr>
<td>Bendrofluazide see Thiazides</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benznidazepines see Anxiolytics and Hypnotics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzylpenicillin</td>
<td>Max. 6g</td>
<td></td>
<td>Neurotoxicity - high doses may cause convulsions</td>
</tr>
</tbody>
</table>
## Table 3: Drugs to be avoided or used with caution in renal failure

<table>
<thead>
<tr>
<th>Drugs</th>
<th>GFR ml/Minute</th>
<th>Dosage recommendations</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beta-blockers</td>
<td>10-20</td>
<td>Start with small dose of acebutolol (active metabolite accumulates)</td>
<td>Reduce dose of atenolol, nadolol, pindolol, sotalol (all excreted unchanged)</td>
</tr>
<tr>
<td></td>
<td>&lt;10</td>
<td>Start with small dose</td>
<td>Higher plasma concentrations after oral administration; may reduce renal blood flow and adversely affect renal function in severe impairment; manufacturer advises avoid celiprolol and sotalol</td>
</tr>
<tr>
<td>Betaxolol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bicarbonate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calcitonin</td>
<td>10-20</td>
<td>Reduce dose</td>
<td>Excreted by kidney; hyperkalaemia and other side-effects more common (but specialised role in some forms of renal disease)</td>
</tr>
<tr>
<td>Captopril</td>
<td>20-50</td>
<td>Reduce dose and monitor response; avoid if possible</td>
<td></td>
</tr>
<tr>
<td>Carbamazepine</td>
<td></td>
<td></td>
<td>Manufacturer advises caution</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 3: Drugs to be avoided or used with caution in renal failure

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<th>Comments</th>
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<tbody>
<tr>
<td>Carbenicillin</td>
<td>10-20</td>
<td>Reduce dose</td>
<td>Neurotoxic; may produce bleeding diathesis; 1g contains 5.4 mmol sodium</td>
</tr>
<tr>
<td>Carboplatin</td>
<td>see Cisplatin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cefadroxil</td>
<td>10-20</td>
<td>Reduce dose</td>
<td></td>
</tr>
<tr>
<td>Cefotaxime</td>
<td>&lt;10</td>
<td>Use half dose</td>
<td></td>
</tr>
<tr>
<td>Cefoxitin</td>
<td>20-50</td>
<td>Reduce dose</td>
<td></td>
</tr>
<tr>
<td>Ceftazidime</td>
<td>20-50</td>
<td>Reduce dose</td>
<td></td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>&lt;10</td>
<td>Reduce dose</td>
<td>Also monitor plasma concentration if both severe renal and hepatic impairment</td>
</tr>
<tr>
<td>Cefuroxime</td>
<td>10-20 - &lt;10</td>
<td>Reduce parenteral dose</td>
<td></td>
</tr>
<tr>
<td>Cephalexin</td>
<td>&lt;10</td>
<td>Max. 500mg daily</td>
<td></td>
</tr>
<tr>
<td>Cephalzin</td>
<td>20-50</td>
<td>Reduce dose</td>
<td></td>
</tr>
<tr>
<td>Cephradine</td>
<td>20-50</td>
<td>Reduce dose</td>
<td></td>
</tr>
<tr>
<td>Chloral Hydrate</td>
<td>see Anxiolytics and Hypnotics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chloramphenicol</td>
<td>&lt;10</td>
<td>Avoid unless no alternative</td>
<td>Dose-related depression of haematopoesis</td>
</tr>
<tr>
<td>Chloridiazepoxide</td>
<td>see Anxiolytics and Hypnotics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorquine</td>
<td>20-50 – 10-20</td>
<td>Reduce dose</td>
<td>Only on prolonged use</td>
</tr>
<tr>
<td></td>
<td>&lt;10</td>
<td>Avoid</td>
<td></td>
</tr>
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<tr>
<td>Chlorothiazide see Thiazides</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorpromazine see Antipsychotics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorpropamide</td>
<td>20-50</td>
<td>Avoid</td>
<td>Tolbutamide and glicludone suitable alternatives</td>
</tr>
<tr>
<td>Chlortetracycline see Tetracyclines</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorthalidone see Thiazides</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cilastatin see Primaxin®</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cimetidine</td>
<td>20-50 - 10-20</td>
<td>600-800mg</td>
<td>Occasional risk of confusion</td>
</tr>
<tr>
<td></td>
<td>&lt;10</td>
<td>400mg daily</td>
<td></td>
</tr>
<tr>
<td>Ciprofibrate</td>
<td>10-20</td>
<td>100mg on alternate days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;10</td>
<td>Avoid</td>
<td></td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>10-20</td>
<td>Use half dose</td>
<td></td>
</tr>
<tr>
<td>Cisapride</td>
<td>10-20</td>
<td>Start with half dose</td>
<td></td>
</tr>
<tr>
<td>Cisplatin</td>
<td>20-50</td>
<td>Avoid if possible</td>
<td>Nephrotoxic and neurotoxic</td>
</tr>
<tr>
<td>Citalopram</td>
<td>10-20 - &lt;10</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Citrates</td>
<td></td>
<td>Absorption of aluminium from aluminium salts is increased by citrates, which are contained in many</td>
<td></td>
</tr>
</tbody>
</table>
## Prescribing in Renal Disease

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<th>GFR ml/Minute</th>
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<tbody>
<tr>
<td>Clarithromycin</td>
<td>10-20 - &lt;10</td>
<td>Use half dose</td>
<td>effervescent preparations (such as effervescent analgesics)</td>
</tr>
<tr>
<td>Clobazam see Anxiolytics and Hypnotics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clofibrate</td>
<td>20-50 - 10-20</td>
<td>Reduce dose</td>
<td>Further deterioration in renal function; myopathy</td>
</tr>
<tr>
<td></td>
<td>&lt;10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Codeine see Opioid Analgesics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colchicine</td>
<td>&lt;10</td>
<td>Avoid or reduce dose if no alternative</td>
<td></td>
</tr>
<tr>
<td>Co-trimoxazole</td>
<td>10-20</td>
<td>Reduce dose</td>
<td>Rashes and blood disorders; may cause further deterioration in renal function</td>
</tr>
<tr>
<td>Cyclophosphamide</td>
<td>10-20</td>
<td>Reduce dose</td>
<td></td>
</tr>
<tr>
<td>Cycloserine</td>
<td>20-50 - 10-20</td>
<td>Reduce dose</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;10</td>
<td>Avoid</td>
<td></td>
</tr>
<tr>
<td>Demeclocycline see Tetracycline</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desmopressin</td>
<td></td>
<td></td>
<td>Antidiuretic effect may be reduced</td>
</tr>
<tr>
<td>Dextromethorphan see Opioid Analgesics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dextropropoxyphene see Opioid Analgesics</td>
<td></td>
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## Prescribing in Renal Disease

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<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diazepam</td>
<td></td>
<td></td>
<td><strong>see Anxiolytics and Hypnotics</strong></td>
</tr>
<tr>
<td>Diazoxide</td>
<td>&lt;10</td>
<td>75-150mg i.v.</td>
<td>Increased sensitivity to hypotensive effect</td>
</tr>
<tr>
<td>Diclofenac</td>
<td></td>
<td></td>
<td><strong>see NSAIDs</strong></td>
</tr>
<tr>
<td>Diflunisal (excreted by kidney)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digoxin</td>
<td>20-50</td>
<td>Reduce dose</td>
<td>Toxicity increased by electrolyte disturbances</td>
</tr>
<tr>
<td>Dihydrocodeine</td>
<td></td>
<td></td>
<td><strong>see Opioid Analgesics</strong></td>
</tr>
<tr>
<td>Diltiazem</td>
<td></td>
<td></td>
<td>Start with smaller dose</td>
</tr>
<tr>
<td>Dimenhydrinate</td>
<td>&lt;10</td>
<td></td>
<td>May accumulate</td>
</tr>
<tr>
<td>Disopyramide</td>
<td>20-50</td>
<td>100mg every 8 hrs/150mg every 12 hrs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10-20</td>
<td>100mg every 12 hrs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;10</td>
<td>150mg every 24 hrs</td>
<td></td>
</tr>
<tr>
<td>Doxycycline</td>
<td></td>
<td></td>
<td><strong>see Tetracyclines</strong></td>
</tr>
<tr>
<td>Enalapril</td>
<td>20-50</td>
<td>Reduce dose and monitor response; Avoid if possible</td>
<td>See also Captopril</td>
</tr>
<tr>
<td>Enflurane</td>
<td>&lt;10</td>
<td></td>
<td>Avoid</td>
</tr>
<tr>
<td>Ephedrine</td>
<td>&lt;10</td>
<td></td>
<td>Increased CNS toxicity</td>
</tr>
<tr>
<td>Ergometrine</td>
<td>&lt;10</td>
<td></td>
<td>Avoid</td>
</tr>
<tr>
<td>Drugs</td>
<td>GFR ml/Minute</td>
<td>Dosage recommendations</td>
<td>Comments</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------</td>
<td>------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>Ergotamine</td>
<td>10-20</td>
<td>Avoid</td>
<td>Nausea and vomiting; risk of renal vasoconstriction</td>
</tr>
<tr>
<td>Erythromycin</td>
<td>&lt;10</td>
<td>Max. 1.5g daily</td>
<td>Otitisotoxicity</td>
</tr>
<tr>
<td>Esmolol see Beta-blockers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethambutol</td>
<td>20-50</td>
<td>Reduce dose</td>
<td>Optic nerve damage</td>
</tr>
<tr>
<td>Etoposide</td>
<td>20-50</td>
<td>Reduce dose</td>
<td></td>
</tr>
<tr>
<td>Famotidine</td>
<td>&lt;10</td>
<td>Reduce dose</td>
<td></td>
</tr>
<tr>
<td>Fenbufen see NSAIDs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fenofibrate</td>
<td>20-50</td>
<td>200mg daily</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10-20</td>
<td>100mg daily</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;10</td>
<td>Avoid</td>
<td></td>
</tr>
<tr>
<td>Fentanyl see Opioid Analgesics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flecaïnide</td>
<td>20-50</td>
<td>Max. Initial dose</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>100mg daily</td>
<td></td>
</tr>
<tr>
<td>Fluconazole</td>
<td>20-50</td>
<td>Reduce dose for multiple dose therapy</td>
<td></td>
</tr>
<tr>
<td>Fluoxetine</td>
<td>20-50 - 10-20</td>
<td>Avoid</td>
<td></td>
</tr>
<tr>
<td>Flupenthixol see Antipsychotics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluphenazine see Antipsychotics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flurbiprofen see NSAIDs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluvastatin</td>
<td>&lt;10</td>
<td>Avoid</td>
<td></td>
</tr>
<tr>
<td>Fluvoxamine</td>
<td>10-20</td>
<td>Start with smaller dose</td>
<td></td>
</tr>
<tr>
<td>Fosinopril</td>
<td>20-50</td>
<td>Start with 10mg daily</td>
<td>See also Captopril</td>
</tr>
</tbody>
</table>
### 30 Prescribing in Renal Disease

**Table 3: Drugs to be avoided or used with caution in renal failure**

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<tr>
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<th>GFR ml/Minute</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Frusemide</td>
<td>10-20</td>
<td>May need high doses</td>
<td>Deafness may follow rapid i/v injection</td>
</tr>
<tr>
<td>Gallamine</td>
<td>10-20</td>
<td>Avoid</td>
<td>Prolonged paralysis</td>
</tr>
<tr>
<td>Ganciclovir</td>
<td>20-50</td>
<td>Reduce dose</td>
<td>Consult data sheet</td>
</tr>
<tr>
<td>Gemfibrozil</td>
<td>&lt;10</td>
<td>Start with 900mg daily</td>
<td></td>
</tr>
<tr>
<td>Gentamicin see Aminoglycosides</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glibenclamide</td>
<td>&lt;10</td>
<td>Avoid</td>
<td>Increased risk of prolonged hypoglycaemia</td>
</tr>
<tr>
<td>Gliclazide</td>
<td>&lt;10</td>
<td>Start with small dose</td>
<td>Increased risk of hypoglycaemia</td>
</tr>
<tr>
<td>Glipizide</td>
<td>&lt;10</td>
<td>Start with small dose</td>
<td>Increased risk of hypoglycaemia</td>
</tr>
<tr>
<td>Gliquidone</td>
<td>&lt;10</td>
<td>May need dose reduction</td>
<td>Increased risk of hypoglycaemia</td>
</tr>
<tr>
<td>Gold (auranofin, aurothiomalate)</td>
<td>20-50</td>
<td>Avoid</td>
<td>Nephrotic</td>
</tr>
<tr>
<td>Guanethidine</td>
<td>10-20</td>
<td>Avoid</td>
<td>Increased postural hypotension and decrease in renal blood flow</td>
</tr>
<tr>
<td>Haloperidol see Antipsychotics</td>
<td></td>
<td></td>
<td>Risk of bleeding increased</td>
</tr>
<tr>
<td>Heparin</td>
<td>&lt;10</td>
<td>Avoid</td>
<td>Excreted by kidney</td>
</tr>
<tr>
<td>Hetastarch</td>
<td>&lt;10</td>
<td>Avoid</td>
<td>Ineffective</td>
</tr>
<tr>
<td>Hexamine</td>
<td>20-50</td>
<td>Avoid</td>
<td></td>
</tr>
<tr>
<td>Hydralazine</td>
<td>10-20</td>
<td>Start with small dose</td>
<td>Increased hypotensive effect</td>
</tr>
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<tr>
<td>Hydrochlorothiazide see Thiazides</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydroflumethiazide see Thiazides</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydroxychloroquine</td>
<td>20-50 - 10-20</td>
<td>Reduce dose</td>
<td>Only on prolonged use</td>
</tr>
<tr>
<td></td>
<td>&lt;10</td>
<td>Avoid</td>
<td></td>
</tr>
<tr>
<td>Hypnotics see Anxiolytics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ibuprofen see NSAIDs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imipenem see Primaxin (R)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indapamide see Thiazides</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indomethacin see NSAIDs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulin</td>
<td>&lt;10</td>
<td>May need dose reduction</td>
<td>Insulin requirements fall; compensatory response to hypoglycaemia is impaired</td>
</tr>
<tr>
<td>Isoniazid</td>
<td>&lt;10</td>
<td>Max. 200mg daily</td>
<td>Peripheral neuropathy</td>
</tr>
<tr>
<td>Isotretinoin</td>
<td>20-50</td>
<td>Avoid</td>
<td>Increased risk of toxicity</td>
</tr>
<tr>
<td>Ketoprofen see NSAIDs</td>
<td></td>
<td>Reduce dose and monitor response</td>
<td>See also Captopril</td>
</tr>
<tr>
<td>Lisinopril</td>
<td>20-50</td>
<td>Avoid if possible or reduce dose and monitor plasma concentration carefully</td>
<td></td>
</tr>
<tr>
<td>Lithium</td>
<td>20-50</td>
<td>10-20</td>
<td>Avoid</td>
</tr>
<tr>
<td>Magnesium Salts</td>
<td>10-20</td>
<td>Avoid or reduce</td>
<td>Increased risk of toxicity; magnesium trisilicate mixture also has high sodium content</td>
</tr>
</tbody>
</table>
### Prescribing in Renal Disease

**Table 3: Drugs to be avoided or used with caution in renal failure**

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<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mefenamic Acid</td>
<td>see NSAIDs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melphalan</td>
<td>10-20</td>
<td>Reduce dose</td>
<td>Avoid high intravenous doses</td>
</tr>
<tr>
<td></td>
<td>&lt;10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mercaptopurine</td>
<td>10-20</td>
<td>Reduce dose</td>
<td></td>
</tr>
<tr>
<td>Metformin</td>
<td>20-50</td>
<td>Avoid</td>
<td>Increased risk of lactic acidosis</td>
</tr>
<tr>
<td>Methadone</td>
<td>see Opioid Analgesics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methotrexate</td>
<td>20-50</td>
<td>Reduce dose</td>
<td>Accumulates; nephrotoxic</td>
</tr>
<tr>
<td></td>
<td>10-20</td>
<td>Avoid</td>
<td></td>
</tr>
<tr>
<td>Methyldopa</td>
<td>10-20</td>
<td>Start with small dose</td>
<td>Increased sensitivity to hypotensive and sedative effect</td>
</tr>
<tr>
<td>Metoclopramide</td>
<td>&lt;10</td>
<td>Avoid or use small dose</td>
<td>Increased risk of extrapyramidal reactions</td>
</tr>
<tr>
<td>Metolazone</td>
<td>see Thiazides</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metoprolol</td>
<td>see Beta-blockers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midazolam</td>
<td>see Anxiolytics and Hypnotics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minocycline</td>
<td>see Tetracyclines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morphine</td>
<td>see Opioid Analgesics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nadolol</td>
<td>see Beta-blockers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nalidixic</td>
<td>10-20</td>
<td>Avoid</td>
<td>Increased risk of nausea, rashes, photosensitivity; ineffective because of inadequate urine concentration</td>
</tr>
</tbody>
</table>
### Table 3: Drugs to be avoided or used with caution in renal failure

<table>
<thead>
<tr>
<th>Drugs</th>
<th>GFR ml/minute</th>
<th>Dosage recommendations</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Naproxen see NSAIDs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Narcotic Analgesics see Opioid Analgesics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neomycin</td>
<td>20-50</td>
<td>Avoid</td>
<td>Ototoxic; nephrotoxic</td>
</tr>
<tr>
<td>Neostigmine</td>
<td>10-20</td>
<td>May need dose reduction</td>
<td></td>
</tr>
<tr>
<td>Nifedipine</td>
<td>10-20</td>
<td>Start with small dose</td>
<td>Reversible deterioration in renal function has been reported</td>
</tr>
<tr>
<td>Nitrazepam see Anxiolytics and Hypnotics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitrofurantoin</td>
<td>20-50</td>
<td>Avoid</td>
<td>Peripheral neuropathy; ineffective because of inadequate urine concentrations</td>
</tr>
<tr>
<td>Nitroprusside</td>
<td>10-20</td>
<td>Avoid prolonged use</td>
<td></td>
</tr>
<tr>
<td>Nizatidine</td>
<td>20-50</td>
<td>Use half dose</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10-20</td>
<td>Use one-quarter dose</td>
<td></td>
</tr>
<tr>
<td>Norfloxacin</td>
<td>&lt;10</td>
<td>Use half dose</td>
<td></td>
</tr>
<tr>
<td>NSAIDs</td>
<td>20-50</td>
<td>Avoid if possible</td>
<td>Deterioration in renal function; sodium and water retention; deterioration also reported after topical use</td>
</tr>
<tr>
<td>Ofloxacin</td>
<td>20-50</td>
<td>Usual initial dose, then use half dose</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10-20</td>
<td>Usual initial dose, then 100ng every 24 hours</td>
<td></td>
</tr>
</tbody>
</table>
## Prescribing in Renal Disease

Table 3: Drugs to be avoided or used with caution in renal failure

<table>
<thead>
<tr>
<th>Drugs</th>
<th>GFR ml/Minute</th>
<th>Dosage recommendations</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opioid Analgesics</td>
<td>10-20 - &lt;10</td>
<td>Reduce doses or avoid</td>
<td>Increased and prolonged effect; increased cerebral sensitivity</td>
</tr>
<tr>
<td>Oxazepam see Anxiolytics and Hypnotics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxytetracycline see Tetracyclines</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pancuronium see Tubocurarine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Papaveretum see Opioid Analgesics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Penicillamine</td>
<td>20-50</td>
<td>Avoid if possible or reduce dose</td>
<td>Nephrotoxic</td>
</tr>
<tr>
<td>Pentamidine</td>
<td>20-50</td>
<td>Reduce dose</td>
<td>Consult data sheet</td>
</tr>
<tr>
<td>Pentazocine see Opioid Analgesics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pericyazine see Antipsychotics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perindopril</td>
<td>20-50</td>
<td>Reduce dose and frequency and monitor response</td>
<td>See also Captopril</td>
</tr>
<tr>
<td>Perphenazine see Antipsychotics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pethidine see Opioid Analgesics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phenobarbitone</td>
<td>&lt;10</td>
<td>Avoid large doses</td>
<td></td>
</tr>
<tr>
<td>Phenothiazines see Antipsychotics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phenylbutazone see NSAIDs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pindolol see Beta-blockers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Piperacillin</td>
<td>10-20</td>
<td>Reduce dose</td>
<td>Neurotoxic</td>
</tr>
<tr>
<td>Piperazine</td>
<td>&lt;10</td>
<td>Reduce dose</td>
<td>Neurotoxic</td>
</tr>
<tr>
<td>Piroxicam see NSAIDs</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 3: Drugs to be avoided or used with caution in renal failure

<table>
<thead>
<tr>
<th>Drugs</th>
<th>GFR ml/Minute</th>
<th>Dosage recommendations</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium Salts</td>
<td>10-20</td>
<td>Avoid routine use</td>
<td>High risk of hyperkalaemia</td>
</tr>
<tr>
<td>Potassium-sparing Diuretics</td>
<td>20-50</td>
<td></td>
<td>Moderate plasma K⁺; high risk of hyperkalaemia in renal impairment; amiloride excreted by kidney unchanged</td>
</tr>
<tr>
<td>Pravastatin</td>
<td>10-20 - &lt;10</td>
<td>Start at lower end of dosage range</td>
<td></td>
</tr>
<tr>
<td>Prazosin</td>
<td>&lt;10</td>
<td>Start with small dose</td>
<td>Increased sensitivity to hypertensive effect and possible CNS toxicity</td>
</tr>
<tr>
<td>Primaxin (R)</td>
<td>20-50</td>
<td>Reduce dose</td>
<td></td>
</tr>
<tr>
<td>Primidone</td>
<td>&lt;10</td>
<td>Avoid large doses</td>
<td></td>
</tr>
<tr>
<td>Probenecid</td>
<td>10-20</td>
<td>Avoid</td>
<td>Ineffective and toxicity increased</td>
</tr>
<tr>
<td>Procainamide</td>
<td>20-50</td>
<td>Avoid or reduce dose</td>
<td></td>
</tr>
<tr>
<td>Procarbazine</td>
<td>10-20</td>
<td>Reduce dose</td>
<td></td>
</tr>
</tbody>
</table>

Prochlorperazine see Antipsychotics
Promazine see Antipsychotics
Propranolol see Beta-blockers
## Prescribing in Renal Disease

Table 3: Drugs to be avoided or used with caution in renal failure

<table>
<thead>
<tr>
<th>Drugs</th>
<th>GFR ml/Minute</th>
<th>Dosage recommendations</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prophylthiouracil</td>
<td>20-50</td>
<td>Reduce dose</td>
<td></td>
</tr>
<tr>
<td>Pseudoephedrine</td>
<td>&lt;10</td>
<td>Avoid</td>
<td>Increased CNS toxicity</td>
</tr>
<tr>
<td>Pyridostigmine</td>
<td>10-20</td>
<td>Reduce dose</td>
<td>Excreted by kidney</td>
</tr>
<tr>
<td>Quinapril</td>
<td>20-50</td>
<td>Start with 2.5mg daily</td>
<td>See also Captopril</td>
</tr>
<tr>
<td>Ramipril</td>
<td>20-50</td>
<td>Start with 1.25mg daily</td>
<td>See also Captopril</td>
</tr>
<tr>
<td>Ranitidine</td>
<td>&lt;10</td>
<td>Use half normal dose</td>
<td>Occasional risk of confusion</td>
</tr>
<tr>
<td>Salicylates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salsalate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salt Substitutes</td>
<td>10-20</td>
<td>Avoid routine use</td>
<td>High risk of hyperkalaemia</td>
</tr>
<tr>
<td>Sertraline</td>
<td></td>
<td></td>
<td>Use with caution</td>
</tr>
<tr>
<td>Simvastatin</td>
<td>10-20 - &lt;10</td>
<td>Doses above 10mg daily</td>
<td>should be used with caution</td>
</tr>
<tr>
<td>Sodium Aurothiomalate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sodium Bicarbonate</td>
<td>&lt;10</td>
<td>Avoid</td>
<td>Specialised role in some forms of renal disease</td>
</tr>
<tr>
<td>Sodium Nitroprusside</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sodium Salts</td>
<td>&lt;10</td>
<td>Avoid</td>
<td></td>
</tr>
<tr>
<td>Sotalol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spironolactone</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3: Drugs to be avoided or used with caution in renal failure

<table>
<thead>
<tr>
<th>Drugs</th>
<th>GFR ml/Minute</th>
<th>Dosage recommendations</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Streptomycin see Aminoglycosides</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sucralfate</td>
<td>&lt;10</td>
<td>Avoid</td>
<td>Aluminium is absorbed and may accumulate</td>
</tr>
<tr>
<td>Sulindac see NSAIDs (excreted by kidney)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulphadiazine</td>
<td>&lt;10</td>
<td>Avoid</td>
<td>High risk of crystalluria</td>
</tr>
<tr>
<td>Sulphadimidine see Sulphonamides</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulphasalazine</td>
<td>&lt;10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulphonamides</td>
<td>10-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulphonylureas see under individual drugs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tenoxicam see NSAIDs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terbinafine</td>
<td>20-50</td>
<td>Use half normal dose</td>
<td></td>
</tr>
<tr>
<td>Tetracyclines (except doxy-</td>
<td>20-50</td>
<td>Avoid - use doxycycline</td>
<td>Anti-anabolic effect, increased</td>
</tr>
<tr>
<td>cycline and minocycline)</td>
<td></td>
<td>or minocycline if</td>
<td>plasma urea, further deterioration in renal function</td>
</tr>
<tr>
<td>Thiazides and Related</td>
<td>10-20</td>
<td>Avoid</td>
<td>Ineffective (metolazone remains effective but risk of excessive diuresis)</td>
</tr>
</tbody>
</table>
## Prescribing in Renal Disease

### Table 3: Drugs to be avoided or used with caution in renal failure

<table>
<thead>
<tr>
<th>Drugs</th>
<th>GFR ml/minute</th>
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<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thioguanine</td>
<td>10-20</td>
<td>Reduce dose</td>
<td></td>
</tr>
<tr>
<td>Thioridazine</td>
<td>see Antipsychotics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tiaprofenic Acid</td>
<td>see NSAIDs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ticarcillin</td>
<td>10-20</td>
<td>Reduce dose</td>
<td>1g contains 5.3 mmol sodium</td>
</tr>
<tr>
<td>Timolol</td>
<td>see Beta-blockers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tobramycin</td>
<td>see Aminoglycosides</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tocainide</td>
<td>20-50</td>
<td>Reduce dose</td>
<td></td>
</tr>
<tr>
<td>Tolbutamide</td>
<td>&lt;10</td>
<td>May need dose reduction</td>
<td>Increased risk of hypoglycaemia</td>
</tr>
<tr>
<td>Triamterene</td>
<td>see Potassium-sparing Diuretics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trifluoperazine</td>
<td>see Antipsychotics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trimeprazine</td>
<td>&lt;10</td>
<td>Avoid</td>
<td></td>
</tr>
<tr>
<td>Trimethoprim</td>
<td>10-20</td>
<td>Reduce dose</td>
<td></td>
</tr>
<tr>
<td>Vancomycin</td>
<td>20-50</td>
<td>Avoid parenteral use if possible</td>
<td>Ototoxic; nephrotoxic</td>
</tr>
<tr>
<td>Zidovudine</td>
<td>20-50</td>
<td></td>
<td>Excreted by kidney; increased risk of toxicity</td>
</tr>
<tr>
<td>Zopiclone</td>
<td>see Anxiolytics and Hypnotics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zuclopenthixol</td>
<td>see Antipsychotics</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Adverse Reactions/Side Effects/Interactions

Any drug may produce an adverse reaction or side effect. Since some adverse reactions may be life-threatening it should be self-evident that drugs should -

(i) not be prescribed unnecessarily

(ii) not be prescribed without the prescriber being aware of the drug's pharmacological nature and general potential for side effects, most easily obtained from data sheets, package inserts etc.

No physician can be expected to be aware of all a drug's side effects. Many reference books are available to supplement the key facts included under cautions/side effects in this formulary. Every doctor should have at least one such volume on his desk, but the Queen Elizabeth Hospital Pharmacy, the Queen Elizabeth Hospital Medical Library and the Barbados Drug Service are sources of more comprehensive information.

A useful guide in considering a drug's side effects is to consider them under the following headings.

(i) A pharmacological side effect, e.g. diarrhoea with an adrenergic blocker such as guanethidine;

(ii) A toxic side
40 Adverse Reactions

effect, e.g. fainting hypotension due to an excess dose of the Anti-hypertensive;

(iii) An allergic reaction e.g. rash or anaphylaxis;

(iv) An idiosyncratic or unexpected effect. This may or may not be predictable, e.g. malignant hyperpyrexia induced by anesthetics and suxamethonium has a genetic basis and may be anticipated by careful history taking.

To avoid side effects the following guiding principles are recommended;

1. Think twice before prescribing. Weigh possible risks with possible benefits and be able to justify the prescription.

2. Be prepared to advise the patient if drug treatment is not indicated. Often diet, avoidance of precipitating factors or simple explanation is all the patient needs. Do not reinforce patients’ assumptions that every ill requires a drug!

3. Take a careful history for previous drug reactions and a family history.

4. Ask if the patient is taking other drugs or if he drinks alcohol.

5. Remember the possibility of renal or hepatic disease and titrate the dose according to size, age, smoking habit or disease state.
6. Have instructions on dosage and name of drug written on labels, have the patient repeat the instructions and perhaps in the case of the elderly provide additional written notes.

7. Warn patients if serious reactions are likely to occur, especially problems such as drowsiness while driving.

8. A patient card noting drug treatment, especially for diabetics, epileptics, asthmatics and patients on steroids is strongly advised.

9. Keep the number of drugs to a minimum to reduce risk of patient confusion and interactions.

**Drug-Interactions**

The number of potential drug interactions is legion, and other sources of reference are advised. Again every doctor should acquire his own reference handbook. The following outstanding interactions should be widely known and avoided.

(a) **Infusions**

Incompatibilities, e.g. ampicillin in dextrose and many drugs added to blood infusions, (dextrose following, blood precipitates fibrin). Check package inserts for warnings.

(b) **Pharmacodynamic interactions**

These are predictable from a knowledge of drug actions. Outstanding examples are the toxic effect of hypokale-
mia induced by diuretics on digoxin, the MAOI’s and foods, the antagonistic effect of tricyclic antidepressants on guanethidine or debrisoquine and the effect of antihistamines on alcohol (sedation or coma.)

(c) Pharmacokinetic Interactions

These are numerous, resulting most commonly from interactions affecting drug metabolism.

(i) Absorption
Magnesium trisilicate and tetracyclines chelate with iron salts reducing the absorption of both.

(ii) Distribution
Many drugs displace warfarin from plasma proteins;

(iii) Metabolism
Barbiturates, Phenytoin, rifampicin, griseofulvin and other drugs induce hepatic drug metabolism enzymes and accelerate drug elimination. Dangerous effects can therefore occur on stopping or starting either drug. Problems are most likely with warfarin and oral contraceptives.

Many drugs inhibit metabolism of other drugs producing an increased effect. Warfarin, once again, and phenytoin are important drugs affected.

(iv) Excretion
Probenecid blocks renal excretion of penicillins, cephalosporins indomethacin. Aspirin blocks methotrexate and increases its toxicity.
Conclusions

(1) A handy reference book is strongly advised.

(2) Patients most affected are those on anticoagulants, antiepileptics or sedatives, antidiabetics and cardiac drugs.

(3) Risk increases with increase in number of drugs prescribed.

References

Martindales Pharmacopeia Textbook of Adverse Reactions (Davies)

Meyler’s Side Effects of Drugs AMA Drug Evaluations - Highly recommended

Drug Interactions (Stockley)

Drugs and the Foetus

Anticancer drugs may impair all stages of spermatogenesis and full recovery is said to require at least one and possibly two years. Antimalarials and nitrofurantoin have also been implicated. Whether offspring of patients treated with any of these drugs have increased evidence of congenital anomalies is not known.

Much has been written but little known with certainty about drug toxicity in the foetus. Alcohol is certainly teratogenic while the penicillins are certainly the safest antibiotics. The following table lists the main drugs to be avoided in pregnancy.
44 Drugs and Breast Feeding

<table>
<thead>
<tr>
<th>CNS Drug</th>
<th>Possible Fetal Effect</th>
<th>Antibiotics</th>
<th>Possible Fetal Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>Birth defects</td>
<td>Tetracyclines</td>
<td>Abnormal</td>
</tr>
<tr>
<td>Narcotics</td>
<td>Neonatal depression and withdrawal</td>
<td>Sulphonamides</td>
<td>Kernicterus; haemolytic anaemia in</td>
</tr>
<tr>
<td></td>
<td>symptoms</td>
<td></td>
<td>those with G-6-PD deficiency</td>
</tr>
<tr>
<td>Salicylates</td>
<td>Coagulation defects (transient)</td>
<td>Chloramphenicol</td>
<td>Grey baby syndrome (CV collapse)</td>
</tr>
<tr>
<td>Phenytoin</td>
<td>Slight increased risk of congenital</td>
<td>Nitrofurantoin</td>
<td>Haemolytic anaemia in those with G-6-PD</td>
</tr>
<tr>
<td></td>
<td>anomalies</td>
<td></td>
<td>deficiency</td>
</tr>
<tr>
<td><strong>Endocrine Drugs</strong></td>
<td></td>
<td><strong>CVS Drugs</strong></td>
<td></td>
</tr>
<tr>
<td>Hypoglycaemic</td>
<td>Prolonged hypoglycaemia in the neonate</td>
<td>Betablockers</td>
<td>Bradydardia impaired response of</td>
</tr>
<tr>
<td>agents</td>
<td></td>
<td></td>
<td>neonate to stress</td>
</tr>
<tr>
<td>Antithyroid</td>
<td>Fetal goiter</td>
<td>Anticoagulants</td>
<td>Congenital abnormalities Fetal and</td>
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<tr>
<td>agents</td>
<td></td>
<td></td>
<td>neonatal hemorrhage</td>
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<td>Radioiodine</td>
<td>Fetal Hypothyroidism</td>
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<td>Corticosteroids</td>
<td>Growth retardation</td>
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<tr>
<td>Antibiotics</td>
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<tr>
<td>Aminoglycosides</td>
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</tr>
</tbody>
</table>

**Drugs and Breast Feeding**

Most drugs given to a lactating female are detectable in breast milk but only a few pose serious problems (see below).

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Effect on Infant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barbiturates</td>
<td>Drowsiness and failure to thrive</td>
</tr>
<tr>
<td>Hypnotics</td>
<td>&quot; &quot;</td>
</tr>
<tr>
<td>Tranquilisers</td>
<td>&quot; &quot;</td>
</tr>
</tbody>
</table>

**Cytotoxic Drugs**

Anticoagulants

Growth retardation

**Antibiotics**

Ototoxicity
Variation in Dose Response

Drugs

- Alcohol
- Primidone
- Lithium
- Narcotics
- Sulphonamides
- Tetracycline
- Chloramphenicol
- Antithyroid drugs
- Antidiabetic drugs

Effect on Infant

- Drowsiness and failure to thrive
- " "
- Vomiting, diarrhoea
- Withdrawal symptoms
- See Table Above
- " 
- Hypothyroidism
- Hypoglycaemia

Variation in Dose Response

Successful drug treatment depends not only on the use of the most appropriate drug but on the best dose regime for each patient. Failure of a drug treatment commonly results from too small a dose while toxicity results when too large a dose is indiscriminately prescribed or a patient is unusually sensitive.

Most doctors follow manufacturers’ guidelines and prescribe a “usual” adult dose. Unfortunately patient response varies widely, for many reasons. These include compliance, pharmaceutical and pharmacokinetic variables, and a number of disease states. Some variation is genetically determined but many environmental factors can also affect drug response. The main factors are discussed briefly here, with emphasis on those which doctors can take into account.
Compliance

Many patients do not comply with the doctor’s prescription, for a multitude of reasons. Studies in the U.K., Canada, and the U.S.A. indicate that compliance is worse with asymptomatic and chronic diseases than with symptomatic or acute illnesses. Other factors are more controversial, but a good doctor-patient relationship, patient satisfaction and simplicity of the drug regime all appear to be important, and all of these can be influenced by the doctor.

Little is known about methods of improving compliance in our society but it would be logical to try to improve these aspects of our relationship with patients. Simplicity of prescriptions and clear, precise instructions should be our constant goal.

Drug Formulation

Poorly formulated drugs may fail to disintegrate and dissolve. Enteric-coated (E.C.) preparations have been known to pass through the gastrointestinal tract intact. Usually such variations are minor compared to the other sources of variation. Problems are likely to occur with drugs with poor lipid solubility, e.g. digoxin, enteric-coatings, or critically narrow therapeutic/toxic margins (e.g. phenytoin). Such drugs require careful clinical monitoring and plasma level monitoring is important for anti-epileptics, anti-arrhythmics and a few others.

Physiologic and Pharmacokinetic variables

Body size or weight, and dehydration will affect drug distribution.
Variation in Dose Response

Of greatest importance is detoxification or drug metabolism, chiefly in the liver, which varies from four-fold (alcohol) to three-fold (tricyclics) between healthy individuals.

**Disease**

In liver disease and in old age metabolism is impaired and "standard" doses of drugs may accumulate to toxic levels.

Drugs which are excreted unchanged are eliminated chiefly by renal excretion, and will accumulate in renal failure. Prescribing in liver and renal disease has been discussed before.

**Environmental factors**

Cigarette smoking, marijuana, insecticides and a number of therapeutic agents induce liver enzyme activity and accelerate drug metabolism. Malnutrition delays, while high protein diets and other dietary constituents (charcoal cooked meat) accelerates drug metabolism.

**Summary**

The prescriber should no longer prescribe the "usual" recommended dose for every adult patient. Many of the factors mentioned above are relevant in our daily practice and should guide us in modifying our initial prescribed dose upwards or downwards.

If the initial dose does not produced the appropriate response, whether the drug is an expensive "innovator" brand name or a less costly "copycat" or "generic" preparation, the prescriber should:

1. Ensure the prescribed dose is being taken.
2. Check meal time and drug or alcohol interactions.
3. Increase the dose if appropriate.
The Special Benefit Service

The Special Benefit Service of the Barbados Drug Service is designed to provide prescribed Formulary drugs to certain categories of persons in the population. These drugs are provided to beneficiaries without charge. Please see information below relevant to the Special Benefit Service.

**Drug Service Act, 1980**

**Act 1980-58**

**The Drug Service (Special Benefit Service) Regulations, 1986**

The Minister in exercise of the powers conferred on him by section 9 of the Drug Service Act make the following regulations:

1. These regulations may be cited as the *Drug Service (Special Benefit Service) Regulations, 1986.*

2. In these regulations

   “beneficiary” means a person referred to as such under regulation 3(2);

   “formulary drugs” means the drugs and related items listed in the Formulary that are preceded by an asterisk (*) in the Formulary;

   “Government Pharmacy” means a pharmacy operated by

   (a) the government of Barbados; or
(b) a body corporate established by an Act of Parliament, that has been authorized by the Minister in writing to participate in the Special Benefit Service;

“medical practitioner” has the meaning assigned to it by the Medical Registration Act;

“private participating pharmacy” means a private pharmacy which has entered into an agreement with the Director of the Drug Service for the purpose of providing formulary drugs to the beneficiaries referred to in these regulations;

“Special Benefit Service” means the Service established under regulation 3(1).

3. (i) There is established a Special Benefit Service for the purpose of providing formulary drugs without charge to beneficiaries referred to in paragraph (2).

(ii) The following categories of persons are beneficiaries under these regulations:

(a) persons of 65 years of age and over,
(b) children under 16 years of age, and
(c) persons for whom a formulary drug is prescribed by a medical practitioner for the treatment of hypertension, diabetes, cancer, asthma or epilepsy who are residents of Barbados.

(iii) A beneficiary may obtain a formulary drug without charge from either a government pharmacy or a private participating pharmacy on presentation of:
50 Special Benefit Service

(a) a written prescription for the drug from a medical practitioner;

(b) in respect of the beneficiaries referred to in subparagraph (2)(a), appropriate identification; and

(c) in respect of the beneficiaries referred to in subparagraph (2)(b), such appropriate evidence establishing the age and identity of the beneficiary as the Minister determines.

4. (i) The costs incurred by government pharmacies in supplying the formulary drugs to beneficiaries under the Special Benefit Service shall be borne in full by the Drug Service.

(ii) The Drug Service shall, in accordance with the terms of agreement referred to in regulation 2, reimburse the private participating pharmacies the costs of the formulary drugs supplied by them to beneficiaries under the Special Benefit Service.

5. These regulations shall be deemed to have come into effect on the 1st April, 1986.

Doctor/Pharmacist/Patient Relationship

In order for the Special Benefit Service to function properly and for patients to receive maximum benefits, an increased level of communication must be established between the doctor, pharmacist and the patient. The use of more generic drugs makes it essential that prescriptions be properly labeled, and that pharmacists as well as doctors inform their patients of changes in the colour, shape and size of drugs being used.
BENEFIT DRUGS

Alphabetical Listing (Generic Name)
of Benefit Drugs in the Barbados National
Drug Formulary for Contract
Period April 1st, 2012 - March 31st, 2012

<table>
<thead>
<tr>
<th>GENERIC NAME</th>
<th>BRAND NAME/ MANUFACTURER</th>
<th>THERAPEUTIC CLASSIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACARBOSE 50MG TAB</td>
<td>GLUCAR (GLP)</td>
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<tr>
<td>AMILORIDE/HCTZ 5MG A/50MG H TAB</td>
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</tr>
<tr>
<td>AMLODIPINE 10MG TAB</td>
<td>AMLODIPINE (ALK)</td>
<td>5</td>
</tr>
<tr>
<td>AMLODIPINE 10MG TAB</td>
<td>AMLODIPINE (PFI)</td>
<td>5</td>
</tr>
<tr>
<td>AMLODIPINE 5MG TAB</td>
<td>AMLODIPINE (ALK)</td>
<td>5</td>
</tr>
<tr>
<td>AMLODIPINE 5MG TAB</td>
<td>AMLODIPINE (PFI)</td>
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</tr>
<tr>
<td>ATENOLOL 100MG TAB</td>
<td>ATENOLOL (HEA)</td>
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</tr>
<tr>
<td>ATENOLOL 100MG TAB</td>
<td>ATENOLOL (CPP)</td>
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</tr>
<tr>
<td>ATENOLOL 100MG TAB</td>
<td>ATENOLOL (CIP)</td>
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<tr>
<td>ATENOLOL 50MG TAB</td>
<td>ATENOLOL (CIP)</td>
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</tr>
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</table>

THERAPEUTIC CLASSIFICATION CODE
3. Anti-Neoplastic
4. Anti-Diabetic
5. Anti-Hypertensive
9. Anti-Asthmatic
10. Anti-Epileptic
<table>
<thead>
<tr>
<th>GENERIC NAME</th>
<th>BRAND NAME/MANUFACTURER</th>
<th>THERAPEUTIC CLASSIFICATION</th>
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</tr>
<tr>
<td>ATENOLOL 50MG TAB</td>
<td>ATENOLOL (CPP)</td>
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<td>ATENOLOL (HEA)</td>
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<td>APO-AZATHIOPRINE (APO)</td>
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<td>BEZIDE (CAR)</td>
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<td>NOVOLIN 70/30 (NOV)</td>
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<td>BIPHASIC ISOPHANE INJ</td>
<td>HUMULIN 70/30 (LIL)</td>
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<tr>
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<td>BUDESONIDE (HEA)</td>
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<tr>
<td>BUDESONIDE 200MCG INHR</td>
<td>PULMICORT TURBUHALER (AZN)</td>
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<td>BUDESONIDE 200MCG INHR</td>
<td>PULMICORT HFA (AZN)</td>
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<tr>
<td>GENERIC NAME</td>
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<td>THERAPEUTIC CLASSIFICATION</td>
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<td>CHLORAMBUCIL 2MG TAB</td>
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<td>SKY ERA  (TTC)</td>
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<td>GENERIC NAME</td>
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<tr>
<td>FLUTICASONE/SALMETEROL 250/50 INHR</td>
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<td>DIAMICRON MR (SER)</td>
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Drugs deleted from the Formulary

THE FOLLOWING DRUGS HAVE BEEN DELETED FROM THE BNDF, 30TH EDITION
1. Acipimox 250mg Cap.
2. Adrenaline 1%; 10ml Eye Drops.
3. Amlodipine/Valsartan 5mg/80mg; 5mg/160mg; 10mg/160mg; 10mg/320mg; 5mg/320mg Tab.
4. Atorvastatin/Amlodipine 5mg/10mg; 10mg/10mg; 5mg/20mg; 10mg/20mg Tab.
5. Bambuterol 10mg Tab.
6. Benfluorex 150mg & 300mg Tab.
8. Bezafibrate 200mg Tab.
9. Bisoprolol/HCTZ 2.5mg/6.25mg; 5mg/6.25mg; 10mg/6.25mg Tab.
10. Bumetanide 0.5mg/ml Inj & 1mg Tab.
11. Candesartan 8mg; 16mg; 32mg Tab.
12. Candesartan/HCTZ 16mg/12.5mg Tab.
13. Carbenicillin Sodium 382mg Tab.
15. Certirizine 10mg Tab & 1mg/ml Sry.
16. Chlorpheniramine-Pseudoephedrine 2mg/30mg Tab & 0.4mg/ml 6mg/ml Syr.
17. Chlorpropamide 250mg Tab.
18. Colesitol 1g Tab.
19. Desonide 0.05% Cream & Ointment.
20. Diflucortolone-Isoconazole-Neomycin Cream
21. Diflunisal 500mg Tab.
22. Dihydrocodeine 30mg Tab.
23. Diosmin-Hesperidin 500mg/50mg Tab.
24. Dipyridamole 25mg; 50mg; 75mg Tab.
25. Econazole 150mg Vaginal Ovule.
26. Enalapril/HCTZ 20mg/12.5mg Tab.
27. Felodipine 2.5mg; 5mg; 10mg Tab.
28. Fenofibrate 100mg; 200mg
29. Fenoterol Hydrobromide 0.1% Resp. Soln.
30. Fluocinolone Acetonide 0.025% Cream & Ointment.
31. Fluocinolone/Clotrimazole Ointment.
32. Fluocinolone/Neomycin 0.025% Ointment.
33. Flurbiprofen 50mg & 100mg Tab.
34. Fluvastatin 20mg & 40mg Cap.
35. Fosinopril 10mg & 20mg Tab.
36. Fosinopril/HCTZ 10mg/12.5mg & 20mg/12.5mg Tab.
37. Glipizide 5mg & 10mg Tab.
38. Glyburide 3mg & 6mg Tab.
40. Hexamine Hippurate 1g Tab.
41. Hydrocortisone/Miconazole Cream
42. Indomethacin 25mg & 75mg Tab.
43. Iodochlorhydroxyquinolone Ointment.
44. Irbesartan 150MG & 300MG Tab.
45. Irbesartan/HCTZ 150mg/12.5mg; 300mg/12.5mg; 30mg/25mg Tab.
46. Isoconazole 1% Vag Cream & 600mg Vag Ovule.
47. Isradipine 5mg Tab.
48. Ketoprofen 200mg Tab.
49. Ketaorolac Trometamol 15mg/ml & 30mg/ml.
50. Lisinopril/HCTZ 10mg/12.5mg ; 20mg/12.5mg Tab.
51. Loratadine/Pseudoephedrine 5mg/120mg Tab.
52. Losartan/HCTZ 50mg/12.5mg; 100mg/25mg; 100mg/12.5mg Tab.
53. Lovastatin 20mg & 40mg Tab.
54. Medrogestone 5mg Tab.
55. Mefenamic Acid.
56. Meloxicam 7.5mg, 15mg Tab & 10mg/ml Inj.
57. Mequitazine 5mg Tab & 0.5mg/ml Syr.
58. Metamizol 500mg Tab; 500mg/ml Drops & 500mg Inj.
59. Nadalol 80mg Tab.
<table>
<thead>
<tr>
<th>Number</th>
<th>Drug Name</th>
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<tbody>
<tr>
<td>60.</td>
<td>Nalidixic Acid 500mg Tab.</td>
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<td>61.</td>
<td>Nateglinide</td>
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<tr>
<td>62.</td>
<td>Nifedipine 10mg Cap &amp; 20mg Tab.</td>
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<tr>
<td>63.</td>
<td>Orphenadrine Citrate 100mg Tab &amp; 30mg/ml Inj.</td>
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<tr>
<td>64.</td>
<td>Orphenadrine Citrate/Paracetamol 35mg/450mg Tab.</td>
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<tr>
<td>65.</td>
<td>Perindopril 4mg &amp; 8mg Tab.</td>
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<tr>
<td>66.</td>
<td>Perindopril/Indapamide 2mg/0.625mg &amp; 4mg/1.25mg Tab.</td>
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<tr>
<td>67.</td>
<td>Pethidine HCL50mg Tab &amp; 50mg/ml Inj.</td>
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<tr>
<td>68.</td>
<td>Phenazopyridine HCL 100mg Tab.</td>
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<tr>
<td>69.</td>
<td>Pindolol 5mg Tab.</td>
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<td>70.</td>
<td>Pribedil 50mg Tab.</td>
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<tr>
<td>71.</td>
<td>Piroxicam 20mg Cap.</td>
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<td>72.</td>
<td>Quinapril 5mg; 10mg; 20mg Tab.</td>
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<tr>
<td>73.</td>
<td>Quinidine Sulphate 200mg Tab.</td>
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<tr>
<td>74.</td>
<td>Ramipril/HCTZ 2.5mg/12.5mg Tab.</td>
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<tr>
<td>75.</td>
<td>Rapaglinide</td>
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<tr>
<td>76.</td>
<td>Reserpine 0.25mg Tab.</td>
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<tr>
<td>77.</td>
<td>Reserpine-Bendrofluazide 0.15mg/5mg &amp; 0.15mg/2.5mg Tab.</td>
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<tr>
<td>78.</td>
<td>Reserpine-Clopamide-Dihydroergocristine 0.1mg/5mg/0.5mg Tab.</td>
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<tr>
<td>79.</td>
<td>Ropivacaine 2mg/ml; 7.5mg/ml &amp; 10mg/ml Inj.</td>
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<tr>
<td>80.</td>
<td>Rosuvastatin 5mg; 10mg &amp; 20mg Tab.</td>
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<tr>
<td>81.</td>
<td>Simvastatin/Ezetimibe 10mg/10mg; 10mg/20mg; 10mg/40mg &amp; 10mg/80mg Tab.</td>
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<tr>
<td>82.</td>
<td>Sulindac 20mg Cap.</td>
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<td>83.</td>
<td>Telmisartan/HCTZ 80mg/12.5mg Tab.</td>
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<td>84.</td>
<td>Tenoxicam 20mg Tab.</td>
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<tr>
<td>85.</td>
<td>Terbutaline 2.5mg/ml Resp. Soln. &amp; 0.5mg/ml Inj.</td>
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<tr>
<td>86.</td>
<td>Tiaprofenic Acid 300mg Tab.</td>
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<tr>
<td>87.</td>
<td>Tinzaparin 3500 &amp; 4500 Inj.</td>
</tr>
<tr>
<td>88.</td>
<td>Tolbutamide 500mg Tab.</td>
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68 Drugs deleted from the Formulary

89. Triamcinolone-Econazole 1% Cream.
90. Triamcinolone-Hydrocortisone 15g Cream
91. Triamterene-HCTZ 50mg/25mg Tab.
92. Tribenoside 400mg Cap.
93. Tripolidine-Pseudoephedrine 1.25mg/30mg Syr.
94. Valsartan/HCTZ 80mg/12.5mg; 160mg/12.5mg and 160mg/25mg Tab.
THE FOLLOWING DRUGS HAVE BEEN ADDED
TO THE BNDF, 30TH EDITION

1. Brimonidine 0.2% / Timolol 0.5% e.g. Combigan
### Abbreviations of Names

**Manufacturers and Local Distributors**

Index of the three-letter abbreviations appearing in brackets following each "brand name product" and of the Barbados-based Distributors designated by the respective manufacturers. Where two sets are shown, the latter indicates the tenderer.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>ABB</td>
<td>Abbott Laboratories Puerto Rico Inc., Puerto Rico</td>
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<td>ABD</td>
<td>Abbott Laboratories Diagnostic Division, Puerto Rico</td>
</tr>
<tr>
<td>ACC</td>
<td>Accure Labs, VT. Ltd, India</td>
</tr>
<tr>
<td>ADH</td>
<td>Adams Healthcare, Leeds, England</td>
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<tr>
<td>ALC</td>
<td>Alcon Laboratories Inc., Texas, U.S.A.</td>
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<td>ALH</td>
<td>Actavis UK Ltd, England</td>
</tr>
<tr>
<td>ALC</td>
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<td>APS</td>
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<td>ARM</td>
<td>Armstrong Agencies Ltd., St. Michael, Barbados</td>
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<td>ASL</td>
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<td>ATH</td>
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<td>Alpharma U.S. Pharmaceuticals, U.S.A.</td>
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<td>AVP</td>
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<td>Baxter Export Corporation, Florida, U.S.A.</td>
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<td>Biochemie G.M.B.H. Austria</td>
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<tr>
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<td>Beatson Clarke &amp; Co. Ltd., England</td>
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<td>BDC</td>
<td>Becton Dickinson &amp; Co. New Jersey, U.S.A.</td>
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<td>BEV</td>
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<tr>
<td>BLK</td>
<td>BioKal Limited, St. Michael, Barbados</td>
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<tr>
<td>BKP</td>
<td>Berry Kerr Prescription Packing, U.S.A.</td>
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<td>BLP</td>
<td>Bausch &amp; Lomb Pharmaceuticals Inc., U.S.A.</td>
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<td>C.H. Boehringer Sohn, West Germany</td>
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<td>BRA</td>
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<td>CCC</td>
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<td>CHW</td>
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<td>Cipla Ltd., India</td>
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<td>CLP</td>
<td>Coloplast A/S, Denmark</td>
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<td>COD</td>
<td>Codal - Synto Ltd., Cyprus</td>
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<td>Contract Pharmacal Corp., N.Y., U.S.A.</td>
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<td>CPP</td>
<td>Wockhardt UK Ltd., England</td>
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<td>LAF</td>
<td>Laboratories Alfa, Dominican Republic</td>
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<td>LAP</td>
<td>Lipha Pharmaceuticals, England</td>
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Manufacturers and Local Distributors
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<th>Code</th>
<th>Company Name</th>
<th>Location</th>
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<td>LAS</td>
<td>Lasco (Barbados) Ltd.</td>
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<td>LBH</td>
<td>Laboratorio Behrens, Caracas, Venezuela</td>
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<td>Minrad Inc</td>
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<td>R. S. Nicholls &amp; Sons Ltd</td>
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<td>NVS</td>
<td>Novartis Caribe SA, Republic Dominican</td>
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<td>P.A Benjamin Manufacturing Co Ltd, Jamaica</td>
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<td>Paines &amp; Byrne Ltd., England</td>
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<td>Pharma Danica A/S, Denmark</td>
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<td>Pfizer Corporation, Puerto Rico</td>
<td>SBI/STO</td>
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SECTION II

Classified Notes on Drugs and Preparations
### Pharmacologic - Therapeutic Classification of Drugs

The pharmacologic-therapeutic classification used in this Formulary is based on that used by the American Hospital Formulary Service. Permission to use this copyright system has been granted by the American Society of Hospital Pharmacists from which copies are available on subscription. The Society is not responsible for the accuracy of transpositions or excerpts from the original context.

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04:00 ANTIHISTAMINICS

There are a multitude of effective antihistamines, now more correctly classified as H₁-histamine antagonists. They differ little from each other except in duration of action and the degree of drowsiness, the commonest side effect.

General Indications

Nasal allergy (hay fever or allergic rhinitis), urticaria (prevention and treatment) and pruritus associated with skin disorders. In allergic emergencies chlorpheniramine maleate 10mg i.m., i.v. may be life saving. Dimenhydrinate is primarily an antiemetic (see p. 369).

Side Effects

All antihistamines cause sedation to some degree. Patients vary widely in their response and a single dose may produce severe sedation within minutes in some patients. This is potentiated by alcohol and other sedatives and patients MUST BE WARNED about this and not to drive until they are sure that sedation is not occurring. In some individuals, especially children and the elderly, and in overdose, bizarre Central Nervous System side effects can occur. Anti-cholinergic effects (dry mouth, blurred vision, urinary retention, constipation and palpitations) may be dose limiting.
04:00 ANTIHISTAMINICS

CHLORPHENIRAMINE MALEATE

Indications:
Hay fever, allergic rhinitis, urticaria (prevention and treatment) and pruritis associated with skin disorders; emergency treatment of anaphylactic reactions.

Caution/Side Effects:
Dryness of mouth. Injections may be irritating and may cause transient hypotension. May cause drowsiness, if affected do not drive or operate machinery; avoid alcohol.

Dose:
Tabs: 2-24mg in divided doses. Injection S.C or I.M: 10-20mg, repeated if required. Maximum: 40mg in 24 hours. Pediatric: Not recommended under 1 year, 1-2 years 1mg twice daily, 2-5 years 1mg every 4-6 hours, maximum of 6mg daily, 6-12 years 2mg every 4-6 hours. Maximum 12mg/day. See protocol pg. xiv section 12.

Preparations:
0.4mg/ml Elixir
*Histal (CAR/COL); 0.0078 per MI (100)

10mg/ml Injection
*Chlorpheniramine (PDN/PHA); 0.6462 per Amp

4mg Tablet
*Chlorpheniramine (GPC/STO); 0.0102 per Tab (84)
*Chlorpheniramine (PDN/PHA); 0.0122 per Tab (84)
*Histal (CAR/COL); 0.0172 per Tab (84)

5mg/ml Injection
*Chlorpheniramine (STP/COL); 0.619 per Amp
DIPHENHYDRAMINE

**Indications:**
Motion sickness, extrapyramidal symptoms; antitussive, severe allergic reactions

**Caution/Side Effects:**
See Chlorpheniramine Maleate.

**Dose:**
Adult: 10-50mg/dose every 2-8 hours as an antihistamine. Maximum dose is 400mg/day. 25mg every 4 hours as an antitussive. Maximum dose is 150mg/day. Pediatric: 5mg/kg/day to a maximum daily dose of 300mg. See protocol pg. xiv section 12.

**Preparations:**
No Offers to Supply (Contact BDS for Supplies)

04:08 SECOND GENERATION ANTIHISTAMINES
CLEMASTINE FUMARATE

**Indications:**
Allergic dermatosis, rhinitis

**Caution/Side Effects:**
See Chlorpheniramine Maleate

**Dose:**
Adult: 1-2 tablets once or twice daily, maximum dose 6mg daily. Pediatric: 1-3yrs- 0.25-0.5mg twice daily, 3-6 yrs- 0.5mg twice daily, 6-12yrs 0.5-1mg twice daily. See protocol pg. xiv section 12.

**Preparations:**
0.1mg/ml Syrup
*Tavegyl (NVS|COL); 0.0888 per MI (100)
### LORATADINE

**Indications:**
For the treatment of chronic idiopathic urticaria.

**Caution/Side Effects:**
The most common side effects are headache and nausea. Co-administration of loratadine with drugs that inhibit the cytochrome P450 system will result in an increase in plasma concentrations of loratadine. May still exhibit low incidence of sedation. Use cautiously in patients with glaucoma. Do not use with cimetidine.

**Dose:**
- **Adults and children 6 years and older:** 10mg once daily.
- **Pediatric: 2-5 years:** 5mg once daily. Dosage adjustment is necessary in patients with liver and renal insufficiency. *See protocol pg. xiv section 12.*

**Preparations:**
- 10mg Tablet
  - *Apo-Loratadine (APO(COL)); 0.0727 per Tab (14)
  - *Loratadine (HEA\ALA); 0.1050 per Tab (14)
- 1mg/ml Syrup
  - *Loratadine (CIP\BKL); 0.0467 per Ml (120)
08:00 ANTI-INFECTION AGENTS
08:12 Antibiotics

Drug Selection - General Principles

Choice of antibiotic for the treatment of bactericidal infections must be made with two factors in mind:

(i) The known or likely organism involved:

(ii) Patient factors.

(1) Rational treatment requires a diagnosis. In many cases there is only one microbic cause and antibiotic choice is easy. Many other diseases, e.g. pneumonia or urinary tract infection, are caused by any of a number of different bacteria and laboratory help is required.

In mild illness and where laboratory facilities are out of reach, treatment may be justifiably begun without such help. In severe illnesses e.g. meningitis, septicaemia, a bacteriologic diagnosis is mandatory.

The blind prescribing of antibiotics for unexpected fevers usually leads to greater difficulty in establishing a diagnosis and must be avoided. The casual prescribing of antibiotics for “flu-like” illness remains, as always, bad medical practice.

(2) The Patient

The patient’s history must be meticulously taken for drug allergies. The presence of liver or renal disease, age and immuno compromised status must be considered.
Rational therapy may be illustrated by the case of a woman with dysuria and nausea in early pregnancy. The causative organism is reported to be resistant to ampicillin but sensitive to nitrofurantoin (high risk of nausea), gentamicin (given i.m. and should be avoided in pregnancy), tetracycline and Co-trimoxazole (both should be avoided in pregnancy) and cephalexin. The Penicillins and cephalosporins are safest in pregnancy so cephalexin, although costly, is clearly the drug of choice in this case.

The following principles or rules should be observed when antibiotics are considered. Viral infections, in general, should not be treated with antibiotics.

*Local sensitivities* of common pathogens should be ascertained from the hospital microbiologist.

*The dose must be tailored* to the patient, as in (1) above.

*The route and times* in relation to meals must be considered.

*Broad Spectrum Antibiotics* should not, in general, be used if a narrow spectrum drug will do.

Costly antibiotic should not be used if an inexpensive one is equally suitable.
### Suggested Therapy: See Table

**TABLE 4:** Summary of Antibacterial (Ab) therapy

<table>
<thead>
<tr>
<th>Infection</th>
<th>Suggested Ab</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. G.I. System</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) Gastroenteritis</td>
<td>Not indicated</td>
<td>Frequently non-bacterial aetiology</td>
</tr>
<tr>
<td>(ii) Invasive salmonellosis</td>
<td>Co-trimoxazole, or ciprofloxacin</td>
<td>Includes severe infections which may be invasive</td>
</tr>
<tr>
<td>(iii) Typhoid fever</td>
<td>Ciprofloxacin, cefotaxime or chloramphenicol</td>
<td>Chloramphenicol is the drug of choice</td>
</tr>
<tr>
<td>(iv) Biliary tract infection</td>
<td>Gentamicin or a cephalosporin or fluroquinalone</td>
<td></td>
</tr>
<tr>
<td>(v) Shigellosis</td>
<td>Ciprofloxacin or cotrimoxazole</td>
<td>Ciprofloxacin recommended for resistant cases</td>
</tr>
<tr>
<td>(vi) Campylobacter enteritis</td>
<td>Erythromycin or ciprofloxacin</td>
<td></td>
</tr>
<tr>
<td>(vii) Antibiotic-associated colitis</td>
<td>Metronidazole (oral) or vancomycin oral</td>
<td>Metronidazole IV if oral inappropriate</td>
</tr>
<tr>
<td>(viii) Peritonitis</td>
<td>A cephalosporin (or gentamycin) + metronidazole (or clindamycin)</td>
<td></td>
</tr>
<tr>
<td>(ix) Peritoneal dialysis - associated peritonitis</td>
<td>Vancomycin + ceftazidime (added to dialysis fluid) or</td>
<td>Treat for 14 days or longer</td>
</tr>
</tbody>
</table>
Summary of Antibacterial Therapy

Infection | Suggested Ab | Comments
--- | --- | ---
vancomycin (added to dialysis fluid) + ciprofloxacin oral | | 
Helicobacter pylori infection | Clarithromycin + amoxicillin + proton pump inhibitor + peptobismol or levofloxacin alone | Substitute with metronidazole if allergic to penicillin

2. Cardiovascular System

(i) Endocarditis due to Strep viridans | Aqueous Penicillin G or ceftriaxone or gentamicin | Treat for four (4) weeks; gentamicin for 2 weeks

(ii) Endocarditis due to enterococci* - sensitivity must be done | Aqueous Penicillin G plus gentamicin or ampicillin plus gentamicin | Treat for four (4) weeks. Substitute vancomycin for penicillin if allergic to penicillin or penicillin-resistant

(iii) Endocarditis due to MSSE or MSSA | 1st Generation cephalosporin alone or plus gentamicin or cloxacillin alone or plus gentamicin | Treat for 4-6 weeks

(iv) Endocarditis due to MRSA or MRSE | Vancomycin plus rifampicin and gentamicin | Treat for six (6) weeks; gentamicin for 2 weeks
### Summary of Antibacterial Therapy

<table>
<thead>
<tr>
<th>Infection</th>
<th>Suggested Ab</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Respiratory System</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) Exacerbation</td>
<td>Tetracycline or Amoxycillin or trimetoprim</td>
<td>Reserve co-trimoxazole for non-responders * 15% H. influenzae strains resistant to amoxycillin</td>
</tr>
<tr>
<td>of chronic bronchitis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(ii) Community</td>
<td>Doxycycline or penicillin or a macrolide</td>
<td></td>
</tr>
<tr>
<td>acquired pneumonia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(iii) Severe community</td>
<td>Cefuroxime (or cefotaxime) + erythromycin.</td>
<td>Treat for 10 days. Treat for 14-21 days if staphylococci, legionella or gram-negative enteric bacilli suspected</td>
</tr>
<tr>
<td>acquired pneumonia of</td>
<td>Add flucloxacillin if staphylococci suspected or vancomycin if MRSA suspected</td>
<td></td>
</tr>
<tr>
<td>unknown aetiology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(iv) Epiglottis (Haemophilus influenzae)</td>
<td>2\textsuperscript{nd} generation cephalosporin/ Cefotaxime IV</td>
<td></td>
</tr>
<tr>
<td>(v) Hospital-</td>
<td>Fluoroquinolone or 3\textsuperscript{rd} generation cephalosporin or an antipseudomonal penicillin or an antipseudomonal beta-lactam</td>
<td>An aminoglycoside added in severe infections</td>
</tr>
<tr>
<td>acquired pneumonia</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 4. C.N.S

**Meningitis caused by:**

- (i) Meningococci  
  - Benzylpenicillin or cefotaxime  
  - Treat for 5 days. Substitute with chloramphenicol if hypersensitive
<table>
<thead>
<tr>
<th>Infection</th>
<th>Suggested Ab</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>to penicillin or cephalosporins. Add rifampicin for 2 days or chloramphenicol or penicillin to avoid nasopharyngeal carriage</td>
</tr>
<tr>
<td>(ii) Pneumococci</td>
<td>Cefotaxime</td>
<td>Treat for 10-14 days. Substitute benzylpenicillin if organism penicillin-sensitive. If highly penicillin and cephalosporin-resistant add vancomycin or rifampicin</td>
</tr>
<tr>
<td></td>
<td>Cefotaxime + dexamethasone</td>
<td>Treat for 10 days. Substitute with chloramphenicol if hyper-sensitive to penicillin or cephalosporins or organism resistant to cefotaxime. Consider adding dexamethasone before or with first dose 4 days before discharge</td>
</tr>
<tr>
<td>(iii) Listeria</td>
<td>Amoxycillin plus gentamycin</td>
<td>Treat for 10-14 days</td>
</tr>
<tr>
<td>Haemophilus influenzae Type B - add rifampicin</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Summary of Antibacterial Therapy

#### 5. U.T.I.

<table>
<thead>
<tr>
<th>Infection</th>
<th>Suggested Ab</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Acute uncomplicated bacterial cystitis.</td>
<td>Cotrimoxazole or oral cephalosporin/amoxicillin/nitrofurantoin</td>
<td>Treat for 7 days</td>
</tr>
<tr>
<td>“Lower”urinary-tract infection</td>
<td></td>
<td>* Short course of 3 days may be adequate for women</td>
</tr>
<tr>
<td>(a) Diabetes</td>
<td>Cotrimoxazole</td>
<td>Treat for 7 days</td>
</tr>
<tr>
<td>(b) Pregnant</td>
<td>Amoxycillin or nitrofurantoin</td>
<td>Treat for 7 days</td>
</tr>
<tr>
<td>(ii) Acute uncomplicated pyelonephritis</td>
<td>Cotrimoxazole or amoxicillin or a quinolone (if resistant to amoxicillin or cotrimixazole)</td>
<td>Treat for 14 days</td>
</tr>
<tr>
<td>(iii) Acute prostatitis</td>
<td>Cotrimoxazole or a quinolone</td>
<td>Treat for 28 days</td>
</tr>
<tr>
<td>(iv) Severe illness</td>
<td>3(^{rd}) generation cephalosporin plus gentamycin until fever is gone; then oral therapy for 14 days</td>
<td>Treat for 14 days</td>
</tr>
</tbody>
</table>

#### 6. Genital System

<table>
<thead>
<tr>
<th>Infection</th>
<th>Suggested Ab</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Syphilis</td>
<td>Procaine benzyl-penicillin (unlicensed use) or tetracycline or erythromycin</td>
<td>Treat early syphilis with Procaine benzyl-penicillin for 10-21 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Treat latent syphilis with Procaine benzyl-penicillin for 17 days or doxycycline for 28 days</td>
</tr>
</tbody>
</table>
Summary of Antibacterial Therapy

<table>
<thead>
<tr>
<th>Infection</th>
<th>Suggested Ab</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>(ii) Gonorrhoea</td>
<td>Amoxycillin with probenecid or a quinolone or spectinomycin or a cephalosporin inj. (Rocephin) if penicillin allergic</td>
<td>Single dose for uncomplicated infection. Pharyngeal infection requires treatment with ceftriaxone</td>
</tr>
<tr>
<td>(iii) Non-gonococcal urethritis</td>
<td>Doxycycline or azithromycin</td>
<td>Treat for 7 days with doxycycline or with azithromycin as a single dose or, treat with erythromycin for 14 days</td>
</tr>
<tr>
<td>(iv) Pelvic inflammatory disease</td>
<td>Doxycycline + metronidazole</td>
<td>Treat for 14 days along with IM ceftriaxone as a single dose</td>
</tr>
<tr>
<td>- Severely ill patients</td>
<td>Doxycycline and IV ceftriaxone (as a single dose), then oral treat-ment with doxycycline and metronidazole</td>
<td>Treat for 14 days total</td>
</tr>
</tbody>
</table>

7. Musculo-Skeletal System

(i) Osteomyelitis

Cloxacillin or clindamycin if penicillin-allergic or vancomycin if resistant Staphylococci epidermidis

Acute infection: Treat for 4-6 weeks.
Chronic infection: Treat for at least 12 weeks.
### Summary of Antibacterial Therapy

<table>
<thead>
<tr>
<th>Infection</th>
<th>Suggested Ab</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>or methicillin-resistant</td>
<td>Combine vancomycin with rifampicin if prostheses or if life-threatening</td>
<td></td>
</tr>
<tr>
<td>Prophylaxis:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>orthopedic surgery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(ii) Septic arthritis</td>
<td>Cephadine</td>
<td></td>
</tr>
<tr>
<td>Cloxacillin + fusidic acid or clindamycin alone if penicillin-allergic or vancomycin if resistant Staph. Epidermidis or MRSA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If caused by:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haemophilus influenzae</td>
<td>Ampicillin or cefuroxime</td>
<td></td>
</tr>
<tr>
<td>Under 5 years of age:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eye</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) Purulent conjunctivitis</td>
<td>Chloramphenicol or gentamycin eye drops</td>
<td></td>
</tr>
<tr>
<td>9. Ear, Nose, Throat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) Throat infections (Strep., diphtheria) - acute tonsillitis / pharyngitis</td>
<td>Phenoxymethyl-penicillin (erythromycin if penicillin allergic or an oral cephalosporin)</td>
<td>Majority viral. Avoid aggressive treatment in under five year olds</td>
</tr>
<tr>
<td>(ii) Otitis media (OM)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Acute OM</td>
<td>Amoxycillin or (erythromycin if penicillin allergic), Cotrimoxazole or clindamycin</td>
<td>Most infections are viral. Treat only if not better in 48-72 hours. Severe infection -</td>
</tr>
</tbody>
</table>
Summary of Antibacterial Therapy

<table>
<thead>
<tr>
<th>Infection</th>
<th>Suggested Ab</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>(c) Chronic suppurative OM</td>
<td>Doxycycline or clindamycin (quinolone - adults only)</td>
<td>use parenteral co-amoxicillin or ceftriaxone</td>
</tr>
<tr>
<td>(iii) Sinusitite</td>
<td>Amoxicillin/clavulanic acid or a quinolone</td>
<td></td>
</tr>
<tr>
<td>(a) Active</td>
<td>Doxycycline or erythromycin</td>
<td></td>
</tr>
<tr>
<td>(b) Chronic</td>
<td>Amoxicillin/clavulanic acid or a quinolone</td>
<td></td>
</tr>
<tr>
<td>(iv) Otitis externa</td>
<td>Locorten Vioform (topical), Sofradex or Ciprodex (topical)</td>
<td></td>
</tr>
<tr>
<td>(a) Bacterial</td>
<td>Batrafen Solution</td>
<td></td>
</tr>
<tr>
<td>(b) Fungal</td>
<td>Locorten Vioform (topical)</td>
<td></td>
</tr>
<tr>
<td>(c) Candida</td>
<td>Batrafen Solution</td>
<td></td>
</tr>
</tbody>
</table>

10. Skin

(i) Impetigo                   | Topical fusidic acid or mupirocin if MRSA or, oral cloxacillin or erythromycin if wide/spread | Treat for 7 days topical - maximum: 10 days                              |

(ii) Cellulitis and wound infections | Cloxacillin plus penicillin (erythromycin if penicillin allergic) | Swab if possible. Discontinue cloxacillin if Strep., confirmed. Substitute treatment with broad-spectrum antibacterials if gram-negative bacteria or anaerobes suspected |
### Summary of Antibacterial Therapy

<table>
<thead>
<tr>
<th>Infection</th>
<th>Suggested Ab</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>(iii) Acne</td>
<td>Tetracycline - low dose or erythromycin</td>
<td>Treat for 3-4 months. Can substitute with azithromycin</td>
</tr>
<tr>
<td>(iv) Erysipelas</td>
<td>Phenoxyethylpenicillin or (erythromycin if penicillin allergic)</td>
<td>Treat for at least 7 days. Add cloxacillin if Staph., suspected</td>
</tr>
<tr>
<td>(v) Animal and human bites</td>
<td>Amoxycillin + clavulanic acid (doxycycline + metronidazole if penicillin allergic)</td>
<td>For tetanus-prone wound, give human-tetanus immunoglobulin (with a tetanus containing vaccine if necessary). Consider rabies prophylaxis if warranted</td>
</tr>
</tbody>
</table>
Table 1
Antimicrobial Sensitivity Patterns of Microorganisms Isolated from Urine Specimens At The Queen Elizabeth Hospital 2003

<table>
<thead>
<tr>
<th>Organism</th>
<th>Percentage Susceptible to:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amox</td>
</tr>
<tr>
<td>Coliforms</td>
<td>60</td>
</tr>
<tr>
<td>Enterococci</td>
<td>100</td>
</tr>
<tr>
<td>Pseudomonas</td>
<td>80</td>
</tr>
</tbody>
</table>

*Cephradine is the class disc for the cephalosporins

Antimicrobial Sensitivity Patterns of Microorganisms Isolated from Urine Specimens In The Community (Winston Scott Polyclinic) 2003

<table>
<thead>
<tr>
<th>Organism</th>
<th>Percentage Susceptible to:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amox</td>
</tr>
<tr>
<td>S. saprophyticus</td>
<td>78</td>
</tr>
<tr>
<td>E. coli</td>
<td>42</td>
</tr>
<tr>
<td>Klebsiella</td>
<td>22</td>
</tr>
<tr>
<td>Enterococci</td>
<td>73</td>
</tr>
<tr>
<td>Enterobacter</td>
<td>22</td>
</tr>
</tbody>
</table>

Antimicrobial Sensitivity Patterns of the Commonest Microorganisms Isolated From Sputum Specimens at The Queen Elizabeth Hospital 2003

<table>
<thead>
<tr>
<th>Organism</th>
<th>Percentage Susceptible to:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amox</td>
</tr>
<tr>
<td>Coliforms15</td>
<td>95</td>
</tr>
<tr>
<td>Pseudomonas</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td>95</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Amox - amoxycillin, Co-trim - co-trimoxazole, Ceph - cephradine, Nal - nalidixic acid, Nitro-nitrofurantoin, Piper - Piperacillin, Norflox - Norfloxacinc, Gent - gentamicin, Cefra - Cefradoxil
### Table 2

**Antibiotic Sensitivity Patterns of the Commonest Gram-Negative Microorganisms Isolated from Blood Cultures at The Queen Elizabeth Hospital 2003**

<table>
<thead>
<tr>
<th>Organism</th>
<th>Percentage Susceptible to:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amox</td>
</tr>
<tr>
<td>E. coli</td>
<td>66</td>
</tr>
<tr>
<td>K. pneumonia</td>
<td>4</td>
</tr>
<tr>
<td>Enterobacter</td>
<td>45</td>
</tr>
<tr>
<td>Proteus</td>
<td>63</td>
</tr>
<tr>
<td>Acinetobacter</td>
<td>100</td>
</tr>
<tr>
<td>Gent</td>
<td>Gent</td>
</tr>
<tr>
<td>Pseudomonas</td>
<td>100</td>
</tr>
</tbody>
</table>

### Antibiotic Sensitivity Patterns of the Commonest Gram-Positive Microorganisms Isolated from Blood Cultures at The Queen Elizabeth Hospital 2003

<table>
<thead>
<tr>
<th>Organism</th>
<th>Percentage Susceptible to:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cloxa</td>
</tr>
<tr>
<td>Staph epidrimeris</td>
<td>83</td>
</tr>
<tr>
<td>Staph aureus</td>
<td>83</td>
</tr>
</tbody>
</table>

**NB:** MRSA (Methicillin-Resistant Staph aureus) 100% sensitive only to Vancomycin and Rifampicin. Resistant to all routinely used antibiotics including the carbapenems (Imipenem & Meropenem).

**Note:**
- Amox - amoxicillin
- Co-trim - co-trimoxazole
- Ceph - cephradine
- Gent - gentamicin
- Ceftriaxone - Ceftazidime
- Cipro - Ciprofloxacin
- Imip - Imipenem
- Mero - Meropenem
- Cloxa - Cloxacillin
- Eryth - Erythromycin
- Peni - Penicillin
- Cotri - Cotrimox
08:16 ANTITUBERCULARS

The treatment of tuberculosis can be divided into two phases, an initial phase where three drugs are used and a second or continuation phase where two drugs are used. The recommended regime is an initial phase of Isoniazid, Rifampicin and either Streptomycin or Ethambutol for two months and a continuation phase of Isoniazid and Rifampicin for seven months i.e. a total treatment time of nine months.

Isoniazid is still considered to be the primary drug for chemotherapy of tuberculosis.

Cautions/Side Effects

Patients on long term Isoniazid should be given Pyridoxine Hydrochloride prophylactically.

Rifampicin is a potent inducer of liver enzymes and may provide important interactions with other drugs. (see p. 42).
<table>
<thead>
<tr>
<th>NAME</th>
<th>BRAND/MANUFACTURER</th>
<th>DOSAGE</th>
<th>COST/7 DAYS</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>DOXYCYCLINE 100MG TAB</td>
<td>DOXYCYCLINE (HEA)</td>
<td>1 OD</td>
<td>5.00</td>
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<td>NAME</td>
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<td>DOSAGE</td>
<td>COST/7 DAYS</td>
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<td>DOXYCYCLINE 100MG CAP</td>
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<td>NORMAX (IPC)</td>
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<td>TETRACYCLINE 250MG TAB</td>
<td>TETRACYCLINE (WOC)</td>
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<td>NAME</td>
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<td>DOSAGE</td>
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<td>APO-OFLOX (APO)</td>
<td>1BD</td>
<td>8.05</td>
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</tbody>
</table>
08:00 ANTI-INFECTIVE AGENTS
08:08 ANTHELMINTICS

ALBENDAZOLE

Indications:
Threadworm, Whipworm, Roundworm, Strongyloides, Hookworm and Pinworm, neurocysticercosis.

Caution/Side Effects:
Gastrointestinal discomfort, headache. Do not use during pregnancy. Use an effective form of birth control while taking this medicine and for at least one month after your last dose. Patients being treated for neurocysticercosis should receive steroid and anticonvulsant therapy.

Dose:
Adult and Pediatrics over 2 years: 400mg as a single dose. Strongyloides: 400mg as a single dose for 3 consecutive days. Cutaneous Larva Migrans: 400mg daily for 3 days. Neurocysticercosis: 2 tablets twice daily for patients over 60kg. Under 60kg: 15mg/kg/day in two divided doses to a maximum of 800mg. Pediatrics under 2 years: 200mg as a single dose. Tablets may be swallowed whole, chewed or crushed and mixed with food. Suspension may be administered as is or mixed with a beverage.

Preparations:
20mg/ml Suspension
*Albendazole (ALK\PHA); 0.7500 per Bott (3)
400mg Tablet
*Albendazole (HEA\ALA); 0.3360 per Tab (3)
40mg/ml Suspension
*Albendazole (CIP\BKL); 1.0500 per Bott (3)
*Albendazole (HEA\ALA); 1.0500 per Bott (3)
*Albendazole (WOC\BKL); 1.0500 per Bott (3)
MEBENDAZOLE

Indications:
Threadworm, roundworm, hookworm and whipworm.

Caution/Side Effects:
Cramps and diarrhoea, rash, headache. Avoid in pregnancy and in infants. Pyrexia, constipation, headache, dizziness, itching, swelling of face or mouth. Tablets may be chewed, swallowed or crushed and mixed with food.

Dose:
Adult and children over 2 years: Threadworm 100mg as a single dose. Whipworm, roundworm, hookworm 10mg twice daily for 3 consecutive days. Repeat regimen in 3 weeks if necessary.

Preparations:
20mg/ml Suspension
*Mebendazole (CIP\BKL); 0.7500 per Bott (6)
*Mebendazole (HEA\ALA); 1.1600 per Bott (6)
Some antibiotics need to be taken on an empty stomach (1 hour before a meal or 2 hours after). The following is a list of antibiotics and their relationship to food.

<table>
<thead>
<tr>
<th>Drug</th>
<th>Effect</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amoxicillin</td>
<td>Peak concentrations may be delayed with food</td>
<td>OK with food</td>
</tr>
<tr>
<td>Ampicillin</td>
<td>↓ absorption with food</td>
<td>On empty stomach.</td>
</tr>
<tr>
<td>Azithromycin</td>
<td>↓ absorption with food</td>
<td>On empty stomach</td>
</tr>
<tr>
<td>Augmentin</td>
<td>Not affected by food</td>
<td>OK with food</td>
</tr>
<tr>
<td>Carbenicillin</td>
<td>Insufficient information on interaction with food</td>
<td>May cause gastric irritation; take with food</td>
</tr>
<tr>
<td>Cephalosporins</td>
<td>Delayed absorption with food</td>
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</tr>
<tr>
<td>Cefaclor</td>
<td>Absorption not affected by food</td>
<td>OK with food</td>
</tr>
<tr>
<td>Cephalexin</td>
<td>Absorption not affected by food</td>
<td>OK with food</td>
</tr>
<tr>
<td>Cefadroxil</td>
<td>Not affected by food</td>
<td>OK with food</td>
</tr>
<tr>
<td>Cefuroxime</td>
<td>Bioavailability ↑ with food</td>
<td>Take with food</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>Not affected by food</td>
<td>OK with food</td>
</tr>
<tr>
<td>Clarithromycin</td>
<td>↑ absorption with food</td>
<td>OK with food</td>
</tr>
<tr>
<td>Clindamycin</td>
<td>Peak concentration may be delayed with food</td>
<td>OK with food</td>
</tr>
<tr>
<td>Doxycycline</td>
<td>↓ absorption up to 20% with food</td>
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<tr>
<td>Erythromycin enteric coated ethylsuccinate base</td>
<td>Not affected by food</td>
<td>OK with food</td>
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<tr>
<td>Ethambutol</td>
<td>Not affected by food</td>
<td>OK with food</td>
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<tr>
<td>Griseofulvin</td>
<td>Enhanced absorption with high fat meals</td>
<td>May cause gastric irri-</td>
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<td>Isoniazid</td>
<td>↓ absorption with food</td>
<td>For enhanced absor-</td>
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<td>Metronidazole</td>
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<td>take with high fat meal</td>
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<tr>
<td>Minocycline</td>
<td>Absorption not affected by food</td>
<td>May cause gastric irri-</td>
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<tr>
<td></td>
<td></td>
<td>tation; take with food</td>
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OK with food
### ANTI-INFECTIVES-FOOD INTERACTIONS

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<th>Drug</th>
<th>Effect</th>
<th>Comment</th>
</tr>
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<tbody>
<tr>
<td>Nalidixic acid</td>
<td>Not affected by food</td>
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</tr>
<tr>
<td>Nitrofurantoin</td>
<td>Food ↑ bioavailability</td>
<td>Take with food; food also decreases gastric irritation</td>
</tr>
<tr>
<td>Penicillin VK</td>
<td>Peak concentration may be delayed with food</td>
<td>OK with food</td>
</tr>
<tr>
<td>Rifampin</td>
<td>Delayed absorption with food</td>
<td>On empty stomach</td>
</tr>
<tr>
<td>Sulfonamides</td>
<td>Delayed absorption with food</td>
<td>On empty stomach</td>
</tr>
<tr>
<td>Tetracycline</td>
<td>Food and dairy products reduce serum concentrations</td>
<td>On empty stomach</td>
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</table>
08:12 ANTIBIOTICS
08:12:02 AMINOGLYCOSIDES

GENTAMICIN SULPHATE

Indications:
Septicaemia and neonatal sepsis, biliary infections, intraabdominal and UTI, acute pyelonephritis. Severe gram-negative infections, primarily pseudomonas infections

Caution/Side Effects:
Increase dose interval in renal impairment in children and the elderly. Use nomogram (see renal disease guidelines p. 19-38) and check peak (1 hour) and trough (pre dose) levels. Nephrotoxicity or ototoxicity may occur. c.f. prescribing in renal disease p. 30.

Dose:
2-5mg/kg/day in divided doses at 8 hours, 12 hours (clearance 30-70 ml/min), 24 hours (clearance 10-30ml/min, 48 hours (clearance 5-10ml/min)

Preparations:
40mg/ml IV/Im Injection
*Gentamicin (CIPBKL); 0.3838 per Vial
*Gentamina (UNPCOL); 0.3633 per Vial

STREPTOMYCIN SULPHATE

Indications:
Tuberculosis, in combination with other drugs.

Caution/Side Effects:
As for gentamicin. c.f. prescribing in renal disease p. 37. Paresthesia of the face, rash, fever, urticaria, angioneurotic edema and eosinophilia.
Aminoglycosides

**Dose:**

**Adult:** 0.5 to 4g daily either given once daily or in divided doses (Less in small, elderly patients, or in renal disease). **Pediatric:** 10-40mg/kg day in 2-4 divided doses.

**Preparations:**

No Offers to Supply (Contact BDS for Supplies)

**TOBRAMYCIN**

**Indications:**

Septicaemia and neonatal sepsis, biliary infections, endocarditis, acute pyelonephritis. Tobramycin is slightly more effective for Pseudomonas aeruginosa than gentamicin, but shows less activity against certain other Gram-negative bacteria. Tobramycin is to be reserved for those cases where resistance to gentamicin occurs and patients who are more likely to develop toxicity. These patients who are more likely to receive prolonged and/or recurrent aminoglycoside therapy and those with renal failure. Resistance may occur to both gentamicin and tobramycin. In these cases amikacin should be used.

**Caution/Side Effects:**

Nephrotoxicity and ototoxicity occur with high concentrations. It is less toxic than gentamicin. The dose should be reduced in renal failure and in the elderly. c.f. prescribing in renal disease p. 38.

**Dose:**

**Adult:** 3 to 5 milligrams/kilogram/day divided every 8 to 12 hours based on renal function and serum tobramycin levels: or once-daily administration is 4 to 7 mg/kg/day; higher doses may be needed depending on the diagnosis. **Pediatric:** 2.5 mg.kg/dose every 8 hours. Doses for neonate depends on gestational age.

**Preparations:**

40mg/ml Injection

*Tobramycin (RIMPNA); 5.2500 per Vial*
08:12.06.04 FIRST GEN. CEPHALOSPORINS

CEFADROXIL

Indications:
See Cefaclor. Inactive against Pseudomonas and Bacteroides.

Caution/Side Effects:
Nausea and vomiting, hypersensitivity in about 10% of penicillin sensitive patients otherwise little toxicity. Note high cost of cephalosporins. Best used for specifically identified susceptible organisms resistant to cheaper agents. May interfere with oral contraceptives. c.f. prescribing in renal disease p. 25.

Dose:
Adult: Over 40kg 0.5-1g daily in a single or twice daily dosing.
Pediatric: Under 1 year: 25mg/kg in divided doses, 1-6 years 250mg twice daily. See protocol pg. vii section I.

Preparations:
25mg/ml Suspension
*Biodroxil (BCIRLAS); 0.0430 per ML (120)
*Cefadroxil (HEA\ALA); 0.0242 per ML (120)

500mg Capsule
*Biodroxil (BCIRLAS); 0.2691 per Cap (28)
*Cefadroxil (APL\STO); 0.4384 per Cap (28)
*Cefadroxil (HEA\ALA); 0.444 per Cap (28)

50mg/ml Suspension
*Biodroxil (BCIRLAS); 0.0507 per ML (120)

CEFAZOLIN

Indications:
Infections due to susceptible Gram-positive and Gram-negative bacteria.
Erythromycins

Caution/Side Effects:
See under Cefadroxil. *c.f. prescribing in renal disease p. 25.

Dose:
Adult: 500mg-1g every 8 hours with up to 1g every 6 hours in severe infections. Pediatric: 25-50mg/kg/day in 3-4 doses up to 100mg/kg/day.

Preparations:
1g Injection
*Cefazolin (CIP\BKL); 2.4200 per Vial
*Cefazolin (DIL\BKL); 2.5296 per Vial
*Cefazolin (RTM\PHA); 2.7500 per Vial

CEPHRADINE
Indications:
Treatment of susceptible organisms infecting soft tissue skin and respiratory tract. Used extensively for otitis media.

Caution/Side Effects:
See under Cefaclor. *c.f. prescribing in renal disease p. 25.

Dose:
Adult: 500mg-1g 4 times daily. Pediatric: 50-100mg/kg in 4 divided doses. (Dosage adjustment is necessary in renal failure).

Preparations:
*No Offers to Supply (Contact BDS for Supplies)

08:12.12.04 ERYTHROMYCINS

ERYTHROMYCIN

Indications:
Infections caused by most gram positive bacteria with limited usefulness in staphylococcal infections. Alternative to penicillin in hypertensive patients. Drug of choice for Legionnaires disease. Chlamydial infections in children, pregnant and nursing mothers.
**Erythromycins 113**

**Caution/Side Effects:**
Nausea, vomiting, abdominal cramps. *C.f prescribing on liver and renal disease. P. 13; 29*

**Dose:**
**Adult:** Stearate/Base: 250-500mg every 6 hours or 500mg every 12 hours to a maximum of 4g per day. May take with food to lessen stomach upset. Injection: 15-2mg /kg/day up to 4g/day. **Pediatric:** 1 month-2 years: 125mg four times a day, 2-8 years 250mg four times a day. Doses doubled for severe infections. 400mg ethylsuccinate is equivalent to 250mg base, estolate or stearate. *See protocol pg. vii section I.*

**Preparations:**
- Base-250mg Tablet
  - *Apo-Erythro (APO\COL); 0.1453 per Tab (56)*
  - *Erythromycin (ALK\PHA); 0.1435 per Tab (56)*
- Stearate-250mg Tablet
  - *Erythromycin (CIP\BKL); 0.1525 per Tab (56)*
  - *Erythromycin (CIP\LAS); 0.1184 per Tab (56)*
- Ethylsucinate- 40mg/ml Suspension
  - *Erythromycin (ALK\PHA); 0.0390 per Ml (300)*
- Lactobionate-500mg Injection
  - *Erythrocin (6365-02) (HOS\PHA); 26.700 per Vial*
  - 50mg/ml Suspension
  - *Erythromycin (BON\COL); 0.0673 per Ml (300)*
**AZITHROMYCIN**

**Indications:**
Skin and soft tissue infections; respiratory tract infections, otitis media, uncomplicated genital chlamydia infections and non-gonococcal urethritis due to Chlamydia. Azithromycin is also effective for primary prophylaxis and treatment of Mycobacterium avium complex infections in patients with HIV infection.

**Caution/Side Effects:**
Gastrointestinal (abdominal pain, diarrhea and nausea), particularly with higher doses. Do not use with antacids.

**Dose:**
- **Adult:** 500mg daily for 3 days. **Chancroid, Chlamydia:** 1g stat dose. **Gonorrhea, (Urethritis or Cervitis):** 2g stat dose. **Pediatric:** Sinusitis, Otitis media: 6 months and over: 30mg/kg/day stat dose or 10mg/kg/day for 3 days. **Tonsillitus:** 2 years and over: 12mg/kg/day for 5 days. See protocol pg. vii section 1.

**Preparations:**
- 250mg Tablet
  *Azithromycin (HEA\ALA); 0.8167 per Tab (14)
- 40mg/ml Suspension
  *Azithromycin (HEA\ALA); 0.1253 per Ml (30)
- 500mg Tablet
  *Azithromycin (BON\COL); 1.319 per Tab (7)
  *Azithromycin (PFI\STO); 1.5483 per Tab (7)

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**CLARITHROMYCIN**

**Indications:**
Clarithromycin is approved for use in Helicobacter pylori associated duodenal ulcers. Multiple-drug regimens have been used e.g. dual-drug (combination with omeprazole or ranitidine) or triple-drug
Other Macrolides

(Combination with lansoprazole/ amoxicillin or omeprazole/ amoxicillin). Upper and lower respiratory tract infections, skin infections and infections caused by Mycobacterium Avium Complex.

Caution/Side Effects:
Generally well tolerated. Diarrhoea, nausea, vomiting or abdominal pain. Use with caution in patients with marked hepatic or renal impairment. May be taken with food to lessen stomach upset. Inform doctor if patient is taking Tegretol or Theophylline.

Dose:
Adult: 250mg every 12 hours for 7 days, increased in severe infections to 500mg every 12 hours for up to 14 days. Pediatric: under 8kg, 7.5mg/kg twice daily; 8-11kg (1-2 years); 12.5mg twice daily, 12-19kg (3-6 years) 125mg twice daily; 20-29kg (7-9 years), 187.5mg twice daily: 30-40kg (10-12 years) 250mg twice daily.

Preparations:
250mg Tablet
*Apo-Clarithromycin (APOCOL); 0.3391 per Tab (14)
25mg/ml Suspension
*Klaricid (ABBPHA); 0.3235 per Ml (100)
500mg Tablet
*Acem (EMC\COL); 0.6997 per Tab (14)
*Apo-Clarithromycin (APOCOL); 0.6297 per Tab (14)
50mg/ml Suspension
*Clarithromycin Mk (BON\COL); 0.2557 per Ml (60)

ROXITHROMYCIN

Indications:
Nongonococcal urethritis, streptococcal pharyngitis, skin and soft tissue infections, upper and lower respiratory tract infections, otitis media.
Penicillins

Caution/Side Effects:
Nausea, diarrhea, abdominal cramps and anorexia. The serum half-life of roxithromycin may increase in the presence of severe renal or hepatic failure, and dosage modification may be required.

Dose:
Adult: 150mg twice a day or 300mg once daily. Pediatric: Usual doses are 2.5 to 5mg/kg every 12 hours. See protocol pg. vii section 1.

Preparations:
No Offers to Supply (Contact BDS for Supplies)

08:12:16 PENICILLINS

AMOXICILLIN

Indications:
Exacerbations of chronic bronchitis, urinary tract infections, otitis media; typhoid fever and endocarditis prophylaxis. Alternative after sensitivities for urinary infections.

Caution/Side Effects:
Rashes, especially in infectious mono-nucleosis. Shake susp. well before taking dose. Liquid may be mixed with formula, milk, fruit juice, water or ginger ale and taken immediately. Must be taken for full course of treatment. May reduce effectiveness of the contraceptive pill. c.f. prescribing in renal disease p. 22.

Dose:
Adult: 250mg - 500mg 3 times daily. Pediatric: 25-100mg/kg/day in divided doses every 8 hours. See protocol pg. vii section 1.

Preparations:
250mg Capsule
*Imox (IPC\BRY); 0.0446 per Cap (42)
25mg/ml Suspension
*Ospamox (BCIRLAS); 0.0231 per Ml (200)
500mg Capsule
*Imox (IPC\BRY); 0.0762 per Cap (21)
*Moxace (ALK\PHA); 0.0834 per Cap (21)

50mg/ml Suspension
*Ospamox (BCH\LAS); 0.0272 per Ml (200)

AMPICILLIN

Indications:
For infections caused by H. influenzae and Strep. pneumoniae and any other susceptible organisms. However, please note that the oral forms have been replaced by amoxicillin.

Caution/Side Effects:
As for amoxicillin. c.f. prescribing in renal disease p. 23.

Dose:
i.m. or i.v.; 500mg-1g every 4-6 hours. Pediatric: 25-400mg/kg/day in divided doses every 4-12 hours.

Preparations:
500mg Injection
*Alphapen (UNP\COL); 0.6782 per Vial
*Ampicillin (CIPBKL); 0.6924 per Vial
*Ampijet (ASO\COL); 0.2422 per Vial

CLOXACILLIN SODIUM

Indications:
Infections with penicillinase producing staphyloccci.

Caution/Side Effects:
As for penicillin G. Oral absorption is complete. Take on empty stomach.
118 Penicillins

**Dose:**
Adult: 250-500mg every 6 hours; i.m. or i.v., 0.25-1g every 4-6 hours.
Pediatric: 50-100mg/kg/day in 4 divided doses. See protocol pg. vii section 1.

**Preparations:**
250mg Capsule
*Apo-Cloxi (APO\(COL\)); 0.1090 per Cap (56)
25mg/ml Suspension
*Cloxacillin (ALK\(PHA\)); 0.0210 per Ml (300)
500mg Capsule
*Cloxacillin (CIP\(LAS\)); 0.0285 per Cap (28)
500mg Injection
*Cloxacillin (ALK\(PHA\)); 0.900 per Vial

**PENICILLIN G BENZATHINE**

**Indications:**
Streptococcal infections, neisseria meningitidis, clostridium tetani, corynebacterium diphtheriae, treponema pallidum, listeria monocytogenes.

**Caution/Side Effects:**
History of allergy, hypersensitivity. Urticaria, joint pains, fever, angioneurotic edema. Anaphylactic shock, hemolytic anemia, exfoliative dermatitis.

**Dose:**
300,000-1.2 million units/day divided every 3-4 hours.

**Preparations:**
2.4mu Injection
*Penicillin G Benzathine (PDN\(PHA\)); 1.301 per Vial
*Unicil L-A (UNP\(COL\)); 1.6400 per Vial
PENICILLIN G SODIUM (BENZYL PENICILLIN)

**Indications:**
Tonsillitis, otitis media, erysipelas, streptococcal endocarditis, meningococcal and pneumococcal meningitis. Prophylaxis in limb amputation.

**Caution/Side Effects:**

**Dose:**
i.m: 600mg (1 million units) 3-6 times daily. i.v: up to 14.4g (24 million units) daily.

**Preparations:**
1mu Injection
*Penicillin G Sodium (PDN\PHA); 0.400 per Vial
*Unicil (UNP\COL); 0.5400 per Vial
5mu Injection
*Penicillin G Sodium (PDN\PHA); 1.5060 per Vial

PENICILLIN V (PHENOXYMETHYL PENICILLIN)

**Indications:**
As for penicillin G where oral therapy is desired.

**Caution/Side Effects:**
As for penicillin G. May decrease the effectiveness of birth control pill.

**Dose:**
**Adult and children over 12 years:** 250-500mg every 6 hours. Up to 1g in severe infections. **Pediatric:** 1 month-1 year:62.5mg every 6. 1-6 years:125mg every 6 hours. 6-12 years 250mg every 6 hours. See protocol pg. vii section 1.
Quinolones

Preparations:
250mg Tablet
*Ospen (BCH/LAS); 0.0673 per Tab (56)
25mg/ml Suspension
*Ospen (BCH/LAS); 0.0269 per Ml (300)

08:12:18 QUINOLONES
CIPROFLOXACIN
Indications:
Ciprofloxacin is effective in a variety of infections due to gram-positive and gram-negative pathogens, including multi-resistant strains. It is also indicated for use in individuals exposed to inhalational, cutaneous and post exposure anthrax.

Caution/Side Effects:
Gastrointestinal disturbances; CNS side effects, including seizures. Increases in transaminases and in some cases severe and fatal hepatitis have developed. Hematuria and anaphylactic reactions have been described. Fluoroquinolones have been associated with an increased risk of tendonitis and tendon rupture.

Dose:
Adult: 250 to 500mg twice daily, depending on the infection and its severity. The adult oral dose for inhalational anthrax cutaneous and (post-exposure) is 500mg every 12 hours. Pediatric dose: for inhalational cutaneous and post exposure anthrax: 10-15mg/kg every 12 hours. See protocol pg. vii section 1.

Preparations:
250mg Tablet
*Ciprofloxacin (ALK/PHA); 0.0700 per Tab (14)
*Ciprofloxacin (CIP/BKL); 0.0581 per Tab (14)
NORFLOXACIN

Indications:
Urinary tract infections, uncomplicated gonorrhea, and prostatitis.

Caution/Side Effects:
Headache, depression, dizziness, nausea, vomiting, vaginal irritation and finger joint swelling. Take on an empty stomach with a large glass of water, drink several glasses of water during treatment. Avoid aluminium or magnesium containing antacids.

Dose:
Uncomplicated UTI due to E. Coli, K. pneumoniae, P. mirabilis: 400mg twice daily for 3 days; UTI due to other organisms 400mg twice daily for 7-10 days. Complicated UTI: 400mg twice daily for 10-21 days. Uncomplicated gonorrhea: 800mg as a single dose. Prostatitis: 400mg twice daily for 28 days. See protocol pg. vii section 1.

Preparations:
400mg Tablet
*Ciprofloxacin (CIP\BKL); 0.0850 per Tab (14)
*Ciprofloxacin (HEA\ALA); 0.1149 per Tab (14)

OFLOXACIN

Indications:
Treating acute bacterial exacerbations of chronic bronchitis, community - acquired pneumonia, uncomplicated skin and skin structure infections, acute, uncomplicated urethral and cervical gonorrhea, nongonococcal urethritis and cervicitis, mixed infections
Sulphonamides

of the urethra and cervix, acute pelvic inflammatory disease, uncomplicated cystitis, complicated urinary tract infections and prostatitis.

Caution/Side Effects:
Nausea, insomnia, headache, dizziness, diarrhea, vomiting, rash, and pruritus. The safety and efficacy of ofloxacin in pediatric patients and adolescents (under age 18 years), and pregnant and lactating women have not been established.

Dose:
The usual adult oral dose of ofloxacin is 200mg to 400mg twice daily. A single oral dose of 400mg is indicated for uncomplicated gonorrhea. See protocol pg. vii section 1.

Preparations:
200mg Tablet
*Apo-Oflox (APO\COL); 0.2180 per Tab (14)

400mg Tablet
*Apo-Oflox (APO\COL); 0.3633 per Tab (14)

08:12:20 SULPHONAMIDES

CO-TRIMOXAZOLE (TRIMETHOPRIM)

Indications:
Urinary tract infections; typhoid, invasive Salmonellosis; H. influenzae. Infections, exacerbations of chronic bronchitis.

Caution/Side Effects:
Discontinue if skin rash develops. Nausea, vomiting. Not recommended in children under 2 months of age. Take with a full glass of water and drink several glasses of water everyday during therapy. Sensitivity to sunlight increases while taking this medication. Use a sunscreen when outdoors. c.f. prescribing in renal disease p. 27.
Dose:
**Adult:** 1-2 tablets every 8-12 hours. **Pediatric:** 6 weeks - 5 months: ½ teaspoonful every 12 hours. 6 months - 5 years: 1 teaspoonful every 12 hours. 6 - 12 years: 2 teaspoonsful every 12 hours.

Preparations:
16mg/80mg Injection
*Bactrim (ROC\BKL); 6.728 per Amp
*Bactrim (ROC\LAS); 6.728 per Amp

80mg/400mg Tablet
*Co-Trimoxazole (ALK\PHA); 0.0436 per Tab (42)
*Co-Trimoxazole (CIP\BKL); 0.0309 per Tab (42)

8mg/40mg Suspension
*Primasulf (UNP\COL); 0.0116 per Ml (200)

**SULPHASALAZINE**

**Indications:**
Inflammatory bowel disease.

**Caution/Side Effects:**
Yellow-orange discoloration of skin, urine and other body fluids. Increased sensitivity to sunlight. Do not take if allergic to sulfa drugs, aspirin or other salicylates. Take with food to avoid stomach upset. Drink with a full glass of water. Drink several glasses of water everyday during therapy. *c.f. prescribing in renal disease p.37.*

**Dose:**
**Adult:** 1-2g 4 times daily. Maintenance: 500mg 4 times a day.
**Pediatric:** 2 years and older: 40-60mg/kg daily. Maintenance: 20-30mg/kg daily.
Preparations:
500mg Tablet
* Sulphasalazine (DNB\BKL); 0.4887 per Tab (240)
* Sulphasalazine (LST\SBI); 0.6028 per Tab (240)
* Sulphasalazine (LST\SBI); 0.6028 per Tab (240)

08:12:24 TETRACYCLINES

DOXYCYCLINE HYDROCHLORIDE

Indications:
Exacerbations of chronic bronchitis, brucella, chlamydial infections, mycoplasma, acne vulgaris (Low dose), rickettsia. Urinary tract infections (local alternative).

Caution/Side Effects:
See tetracycline, but it is less toxic in renal failure. Hepatic impairment. Avoid excess exposure to sunlight. c.f. prescribing in liver and renal disease p. 13; 28

Dose:
Adult: 200mg first day, then 100mg daily. Pediatric over 8yrs and under 45kg: 4.4mg/kg twice daily for first day followed by 2.2 mg/kg/day in one or two divided doses. See protocol pg. vii section I.

Preparations:
100mg Capsule
* Apo-Doxy (APO\COL); 0.0945 per Tab (14)

100mg Injection
* Doxycycline (BEV\BKL); 38.888 per Vial
* Doxycycline (DIL\BKL); 38.888 per Amp

100mg Tablet
* Doxine (MNZ\COL); 0.0803 per Tab (14)
* Doxycycline (HEA\ALA); 0.0872 per Tab (14)
MINOCYCLINE

Indications:
See Tetracycline. Meningococcal carriers. Active against N. Meningitidis, some Methicillin Resistant Staph & H. Influenzae. Urinary and respiratory tract infections, acne and skin and soft tissue infections.

Caution/Side Effects:
G.I upset, vestibular dysfunction, headache, localized pigmentary disturbances. Not to be used in children under 8 years. c.f. prescribing in liver and renal disease p. 15; 32.

Dose:
Adult: 200mg followed by 100mg every 12 hours. Do not exceed 400mg in 24 hours. Pediatric over 8 years: 4mg/kg initially then 2mg/kg/dose every 12 hours. See protocol pg. vii section 1.

Preparations:
100mg Tablet
*Apo-Minocycline (APO\COL); 0.5571 per Tab (14)
50mg Capsule
*Apo-Minocycline (APO\COL); 0.3149 per Cap (14)

TETRACYCLINE HYDROCHLORIDE

Indications:
Exacerbations of chronic bronchitis, urinary tract infections, prostatitis, travellers’ diarrhoea, brucella, chlamydia, mycoplasma, rickettsia, acne vulgaris (low dose). Pleural effusions due to malignancy or cirrhosis.

Caution/Side Effects:
Drug sensitivity, tooth discoloration, interactions with antacids, milk, oral iron (chelates and reduces absorption). Nausea, vomiting, epigastric burning, photosensitivity, vaginal candidiasis, diarrhoea.
Renal or hepatic impairment. Not recommended in children under 8 years old, pregnant or breast feeding females. May decrease effectiveness of birth control pills and may cause photosensitivity. *c.f. prescribing in liver and renal disease p. 18*

**Dose:**

- **Oral:** Adult: 250 - 1.5g every 6 hours. Pediatric over 8 years: 25-50mg/kg/day in 2-4 divided doses. *See protocol pg. vii section 1.*

**Preparations:**
250mg Tablet
*Tetracycline (WOC\BKL); 0.0510 per Tab (56)*

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**08:12:28 ANTIBACTERIALS, MISCELLANEOUS**

**CLINDAMYCIN HYDROCHLORIDE**

**Indications:**
Staphylococcal bone or joint sepsis, peritonitis (alternative to gentamicin and metronidazole). Effective against many anaerobes. Bacteroides fragilis. Gram-positive cocci including penicillin-resistant staphylococci.

**Caution/Side Effects:**
Diarrhoea, pseudomembranous colitis. This is the commonest antibiotic causing it (caused by toxin of clostridium difficile and responds to oral metronidazole or vancomycin). Report any excess diarrhoea, do not take anti-diarrhoeal drugs. *c.f. prescribing in liver disease p. 12.*

**Dose:**

- **Adult:** 150-450mg every 6 hours. **Pediatric:** 8-25mg/kg/day given in 3-4 divided doses. *See protocol pg. vii section 1.*

**Preparations:**
150mg Capsule
*Apo-Clindamycin (APO\COL); 0.2664 per Cap (28)*

15mg/ml Suspension
*Cleocin (PFI\STO); 0.2600 per Ml (300)*
300mg Capsule
*Apo-Clindamycin (APO\COL); 0.4844 per Cap (28)

CLINDAMYCIN PHOSPHATE

Indications:
See Clindamycin hydrochloride above.

Caution/Side Effects:
See Clindamycin hydrochloride above.

Dose:
0.6-2.7g daily in 2-4 divided doses or 15-40mg/kg/day in 2-4 divided doses. For serious infections may use up to 4.8g/day.

Preparations:
150mg/ml Injection
*Clindamycin Phosphate (BCH\LAS); 3.203 per Amp
*Clindamycin Phosphate (CIP\BKL); 2.75 per Amp
*Clindamycin Phosphate (HOS\PHA); 4.504 per Amp

SPECTINOMYCIN

Indications:
Gram negative organisms, including N. gonorrhoea. Sole Indications: is penicillin resistant gonorrhoea or in penicillin.

Caution/Side Effects:
G. I. upset, dizziness, urticaria and fever, injection site pain and rash.

Dose:
i.m: 2g in men. 4g in women.

Preparations:
No Offers to Supply (Contact BDS for Supplies)
128 Allyamines

VANCOMYCIN

Indications:

Caution/Side Effects:
Hypotension, flushing, erythema, urticaria, pruritus, nausea, fever, chills. c.f. prescribing in renal disease p. 38.

Dose:
Adult: 1g every 12 hours or 500mg every 6 hours. Pediatric: 1 month -18 years: 15mg/kg every 8 hours. Maximum dose 2g.

Preparations:
500mg Injection
*Vancomycin (AKIBKL); 11.855 per Vial
*Vancomycin (ALKPHA); 10.200 per Vial
*Vancomycin (CIPLAS); 10.7600 per Vial
*Vancomycin (HOSPHA); 10.095 per Vial
*Vancomycin (MNZCOL); 12.4900 per Vial

08:14 ANTIMYCOTICS

08:14:04 ALKYAMINES

TERBINAFE

Indications:
Onychomycosis.

Caution/Side Effects:
Liver failure.

Dose:
250mg daily for 6 weeks for fingernails. 12 weeks for toenails.
**Preparations:**
250mg Tablet
*Terbinafine (CIP\BKL); 0.6614 per Tab (30)
*Terbinafine (HEA\ALA); 0.6729 per Tab (28)

**08:14:08 AZOLES**

**CLOTRIMAZOLE**

**Indications:**
Vaginal and vulval candidiasis.

**Caution/Side Effects:**
Local irritation and contact dermatitis may occur.

**Dose:**
Insert one applicatorful nightly of 1% cream for 7-14 nights, 2% cream for 3 nights, 10% cream stat dose or 200mg ovules into the vagina for 3 consecutive nights or 100mg ovule for 6 nights. Continue use during menstrual period.

**Preparations:**
1% Vag Cream
*Clotrimazole (HEA\ALA); 2.4200 per Tube (1)
100mg
*Clotrimazole (CIP\BKL); 2.9900 per Pack (1)
2% Vag Cream
*Clotrimazole (CIP\BKL); 3.2000 per Pack (1)
200mg Ovule
*Candid (GLP\ARM); 5.3800 per Pack (1)
FLUCONAZOLE

Indications:
Treatment of oropharyngeal and esophageal candidiasis, systemic candidal infections, vaginal candidiasis, urinary tract infections, pneumonia, and peritonitis. Also, acquired immunodeficiency syndrome patients with cryptococcal meningitis, as suppressive therapy and for acute treatment.

Caution/Side Effects:
Nausea, vomiting, diarrhoea, elevations in liver functions tests and alopecia. Low dose does not appear to increase risk of congenital abnormalities in the first trimester. Drug interactions: Clindamycin, Calcium channel blockers, Phenothiazines and Tricyclic antidepressants - increased risk of cardiotoxicity. Simvastatin and Cerivastatin - increased risk of Rhabdomyolysis. Amlodipine - increases amlodipine toxicity.

Dose:
Oropharyngeal and esophageal candidiasis: 200mg on day 1 then 100mg PO/IV daily for at least 2 weeks. Systemic candidiasis: 400mg PO/IV once daily for 4 weeks and for at least 2 weeks orally after resolution of symptoms. Vaginal candidiasis: 150mg orally as a single dose. Onychomycosis: 150mg once weekly for 3-6 months.

Preparations:
150mg Tablet
*Fluconazole (HET\BMI); 0.200 per Tab (60)
200mg Capsule
*Fluconazole (CPP\COL); 0.6500 per Cap (60)
200mg Injection
*Fluconazole (CIP\BKL); 42.3300 per Vial
KETOCONAZOLE

Indications:
Vaginal candidiasis; prophylaxis of mycoses in immunosuppressed patients; systemic mycoses. To be used only in those patients who are resistant to fluconazole or terbinafine.

Caution/Side Effects:
Local irritation. Use with caution in patients with impaired hepatic function or adrenal reserve; blood dyscrasias, headache, dizziness, nausea, skin rash. The oral form may be taken with food or milk to avoid stomach upset.

Dose:
Insert one ovule into the vagina at bedtime for 3 consecutive nights. Adult: Oral candidiasis 200-800mg daily. In HIV positive patients permanent maintenance therapy is recommended. Vaginal candidiasis: initially 200mg/day increased to 400mg once daily if necessary for a minimum of 1-2 weeks. Tinea Versicolor: 200mg/day for 5 days. Resistant cases may require longer treatment. Pediatric 2 years and up: 3.3-6.6mg/kg/day.

Preparations:
2% Shampoo
*Ketoconazole (CIP\BKL); 4.900 per Bott (1)
200mg Tablet
*Ketoconazole (HEA\ALA); 0.1437 per Tab (60)
400mg Ovule
*Nizoral (JAC\STO); 14.1300 per Pack (1)

MICONAZOLE

Indications:
Vaginal candidiasis.

Caution/Side Effects:
Vaginal burning, irritation, contact dermatitis.
132 Polyenes

Dose:
One applicatorful at bedtime for 7 days.

Preparations:
2% Vag Cream
*Micospec (CAR\COL); 6.0600 per Tube (1)

400mg Ovule
*Gyno-Daktarin (JAC\STO); 11.3000 per Pack (1)

08:14:28 POLYENES

AMPHOTERICIN B

Indications:
Reserve for life threatening systemic fungal infections.

Caution/Side Effects:
Anemia, thrombocytopenia, CHF, anaphylaxis, fever, gastrointestinal upset, nephrotoxicity (reduce with i.v. infusion of mannitol), tinnitus. Monitor Kidney Function. c.f. prescribing in renal disease pg. 22.

Dose:
Adult and Pediatric: i.v. 0.25mg/kg/day as a single dose, with increments every other day to a maximum of 1.5 mg/kg/day.

Preparations:
50mg Injection
*Amphotericin B (CIP\BKL); 10.0900 per Vial
*Amphotericin B (CIP\LAS); 14.800 per Vial

NYSTATIN

Indications:
For yeast infections; treatment of oral and vaginal candidiasis, and prophylaxis of intestinal candidiasis.
Caution/Side Effects:
Nausea, vomiting, diarrhoea (tablets), vaginal irritation.

Dose:
**Adult:** 500,000-1 million units 3-5 times daily. Pessary/Cream: Insert/apply twice daily for 14 days. Suspension: 4-6mls 4 times daily.

**Pediatric:** Premature and low birth weight infants 100,000 units 4 times daily; 200,000-600,000 units 4 times daily in older children. Retain suspension around in mouth for as long as possible, then swallow. Take after food.

Preparations:
100,000u/ml Suspension
*Nystatin (HEA\ALA); 0.1173 per Ml (180)*

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**08:14:92 ANTIFUNGALS, MISCELLANEOUS**

**CICLOPIROX OLAmine**

Indications:
Treatment of fungal infections, especially candidiasis.

Caution/Side Effects:
Burning or pruritus.

Dose:
Insert one applicatorful into the vagina at night, for 6 consecutive nights.

Preparations:
1% Vag Cream
*Batrafen (SFA\COL); 16.090 per Tube (1)*
134 Antifungals, Miscellaneous

GRISEOFULVIN

**Indications:**
Severe tinea infections. Not effective against candida albicans.

**Caution/Side Effects:**
Headache, gastro-intestinal upset, rash, dry mouth, photosensitivity. Affects warfarin metabolism. Avoid in pregnancy, liver failure.

**Dose:**
- **Adult:** 500mg-1g daily as a single dose or in divided doses (1g is for difficult to treat fungal infections) after meals for 30 days or more.
- **Pediatric:** 5-10mg/kg daily in 2 divided doses or as a single dose after meals. The oral suspension is reserved for children under 12 years old. The BDS will not reimburse if given to patients over 12 years.

**Preparations:**
- 125mg Tablet
  - *Griseofulvin (PD\NPHA)*; 0.0857 per Tab (60)
- 25mg/ml Suspension
  - *Griseofulvin (PFPSBI)*; 0.14900 per Ml (500)
- 500mg Tablet
  - *Griseofulvin (CIP\BKL)*; 0.1951 per Tab (60)

METRONIDAZOLE/MICONAZOLE

**Indications:**
Bacterial Vaginosis, Trichomonal Vaginitis, Vaginal Candidiasis

**Caution/Side Effects:**
Vaginal burning, irritation. Not to be used during pregnancy particularly the first 3 months. Avoid alcohol during and for at least 24-48 hours after treatment.

**Dose:**
One ovule inserted vaginally at night for 7 nights.
Preparations:
Ovule
*Gynotran (BSP\BKL); 12 per Pack (1)
*Gynotran (BSP\COL); 12 per Pack (1)
*Gynotran (BSP\LAS); 12 per Pack (1)

Vag Cream
*Gynotran (BSP\BKL); 11.4600 per Tube (1)
*Gynotran (BSP\COL); 11.4600 per Tube (1)
*Gynotran (BSP\LAS); 11.4600 per Tube (1)

08:16 ANTIMYCOBACTERIALS
08:16:04 ANTITUBERCULOSIS AGENTS
ETHAMBUTOL HYDROCHLORIDE

Indications:
Tuberculosis, in combination with other drugs.

Caution/Side Effects:

Dose:
Adult: 15 mg/kg/day as a single dose, alternatively, three times weekly (25 to 30 mg/kg/dose) or twice weekly (50 mg/kg/dose) dosing has been given; patients with renal insufficiency require dosage adjustment. Pediatric: 15-20mg/kg/day.

Preparations:
400mg Tablet
*Ethambutol (CIP\BKL); 0.0955 per Tab (150)
ISONIAZID

Indications:
Tuberculosis, in combination with other drugs.

Caution/Side Effects:
Peripheral neuritis (treat with 50-100mg pyridoxine daily). Hepatitis (like viral hepatitis) convulsions, optic neuritis with atrophy. Monitor SGOT, SGPT, (if symptomatic) Albumin phosphatase. Avoid concurrent use with antacids, wait at least one hour. Foods such as cheese or tuna may cause headache, pounding heartbeat, dizziness, sweating, chills or diarrhoea. If you have these symptoms call your doctor. c.f. prescribing in liver and renal disease p. 14, 31.

Dose:
Adult: 300mg (5mg/kg/day) daily in a single dose. May also be given as 900mg (15mg/kg) twice weekly as a single dose. Pediatric: 10mg/kg daily. Take on empty stomach. May be taken with food to avoid upset stomach.

Preparations:
100mg Tablet
"isoniazid (STP/COL); 0.0323 per Tab (30)

PYRAZINAMIDE

Indications:
Tuberculosis as a second line drug in combination with other drugs.

Caution/Side Effects:
Hyperuricemia, acute gout, hepatotoxicity, G.I. upset. Diabetes mellitus becomes more difficult to manage. Monitor SGOT, SGPT and uric acid levels. Give intermittently to avoid hypercalcaemia. Take with food to avoid G.I. upset.

Dose:
15 to 30 mg/kg/day up to a maximum of 2 g daily; or 50 to 70 mg/kg two or three times weekly. When treating tuberculosis in AIDS
patients, doses of 20 to 30 mg/kg/day have been successful. Dosage reduction is recommended in patients with endstage renal disease.

Preparations:
500mg Tablet
*Pyrazinamide (STP\COL); 0.1076 per Tab (120)

RIFAMPICIN

Indications:
Tuberculosis, in combination with other drugs.

Caution/Side Effects:
Orange coloured urine, tears and saliva. Flu-like syndrome, hepatitis, thrombocytopenia, hemolysis, renal failure. Monitor SGOT, SGPT levels and discontinue if levels are more than twice normal. Check platelet count if suspected. May reduce effectiveness of the contraceptive pill. Avoid alcohol while taking this medication. Take medication on an empty stomach. Soft contact lenses may be permanently stained by Rifampicin. Do not wear while taking this medication. c.f. prescribing in liver disease p. 17.

Dose:
Adult: 600mg/day. Pediatric: 10-20mg/kg/day, up to a maximum of 600 mg/day. The duration of therapy varies with the infection or condition being treated. Dosage adjustments should be considered in patients with liver disease. Take at least 30 minutes before meals.

Preparations:
150mg Capsule
*Rifampicin (BCH\LAS); 0.1728 per Cap (120)

300mg Capsule
*Rifampicin (BCH\LAS); 0.2613 per Cap (60)
08:16:92 ANTIMYCOBACTERIALS, MISCELLANEOUS
CLOFAZIMINE
Indications:
Leprosy.

Caution/Side Effects:
Skin discoloration may occur.

Dose:
100mg daily with food.

Preparations:
No Offers to Supply (Contact BDS for Supplies)

DAPSONE
Indications:
Leprosy.

Caution/Side Effects:
Hemolytic anemia, methemo-globinemia, aplastic anemia, psychotic episodes, hepatotoxicity, nephrotic syndrome. May cause dizziness. Exercise caution when driving or operating machinery.

Dose:
100mg once daily.

Preparations:
100mg Tablet
*Dapsone (CIP\BKL); 0.1882 per Tab (90)
08:18:08 ANTIRETROVIRAL

ANTIRETROVIRALS

General Indications
Used in the treatment of Human Immuno Deficiency Virus (HIV) infection, prevention of mother to child transmission of the HIV virus and occupational post exposure prophylaxis.

HIV Life Cycle
In order for viruses to reproduce, they must infect a cell. HIV's genes are carried in two strands of RNA, while the genetic material of human cells is found in DNA. In order for the virus to infect the cell, a viral enzyme called reverse transcriptase makes a DNA copy of the virus's RNA in a process called "reverse transcription". Without reverse transcriptase, the viral genome cannot become incorporated into the host cell, and cannot reproduce.

Once the viral RNA has been reverse-transcribed into a strand of DNA, the DNA can then be inserted into the DNA of the lymphocyte. The viral enzyme called "integrase" facilitates incorporation of the viral DNA into the host cells DNA. This new DNA is called "proviral DNA".

Activation of the host cells results in the transcription of viral DNA into messenger RNA (mRNA), which is then translated into viral proteins. The new viral RNA forms the genetic material of the next generation of viruses.

The polypeptide sequence which mRNA produces is assembled in a long chain that includes several individual proteins (reverse transcriptase, protease, integrase). Before these enzymes become functional, they must be cut from the longer polypeptide chain. Viral protease cuts the long chain into its individual enzyme components and processes other HIV proteins into their functional forms that facilitate the production of new viruses.
Reverse Transcriptase Inhibitors
Reverse transcriptase inhibitors are divided into two classes—nucleoside analogues and non-nucleoside reverse transcriptase inhibitors based on their structure and how they inhibit reverse transcriptase. Nucleoside analogues, the first class of HIV drugs to be developed, work by incorporating themselves into the virus' DNA, making the DNA incomplete and therefore unable to create a new virus. Non-nucleoside inhibitors work at the same stage as nucleoside analogues, but attach themselves to reverse transcriptase and prevent the enzyme from converting RNA to DNA.

Nucleoside Analogues
• abacavir (Ziagen®)
• AZT, ZDV, zidovudine (Retrovir®)
• lamivudine (3TC ®)
• zidovudine/lamivudine (Combivir®)
• d4T stavudine (Zerit®)
• ddI didanosine (Videx®)

Non-nucleoside inhibitors
• nevirapine (Viramune®)
• delavirdine (Rescriptor®)
• efavirenz (Stocrin™)

Protease Inhibitors
HIV protease is required for HIV replication and formation of mature, infectious viral particles. This processing function is inhibited by protease inhibitors, resulting in production of noninfectious viral particles:
• ritonavir (Norvir®)
• indinavir (Crixivan®)
• nelfinavir (Viracept®)

FIRST-LINE THERAPY
Regimens should be chosen on the basis of their potency, tolerability, reported adverse effects and potential reactions with other drugs, convenience, and likelihood of patient compliance. Also to be considered are possible alternative treatments if the first regimen fails.

The initial regimen should include two nucleoside reverse transcriptase inhibitors (nRTIs) and one or two
protease inhibitors (PIs) or two nRTIs and a nonnucleoside reverse transcriptase inhibitor. Combinations of agents from all three classes, considered an aggressive regimen, may be appropriate for patients at high, short-term risk of disease progression.

**Drug Interactions**
Protease inhibitors and non-nucleoside reverse transcriptase inhibitors are metabolized by the CP450 system and cause many drug interactions, which include:

- Imidazole antifundals
- Some macrolide antibiotics e.g. clarithromycin
- Cimetidine
- ‘Statin’ antilipemics
- Phenytion, carbamazepine
08:18 ANTIVIRALS
08:18:08 HIV PROTEASE INHIBITORS

ATAZANAVIR

Indications:
HIV-1 infection in treatment-naïve and treatment-experienced adults and pediatric patients 6 years of age or older.

Caution/Side Effects:
Rash, abdominal pain, diarrhoea, nausea, unconjugated hyperbilirubinemia, headache, lactic acidosis

Dose:
Adult: Atazanavir 300mg/ ritonavir 100mg once daily with food.

Preparations:
300mg Tablet
*Atazanavir (MATHIM) 1.8703 per Tab

LOPINAVIR/RITONAVIR

Indications:
In combination with other antiretrovirals for the treatment of HIV-infection.

Caution/Side Effects:
Headache, fatigue, diarrhoea and nausea. Increased blood lipids and infrequent cases of pancreatitis have been reported. As with other protease inhibitors, lipodystrophy syndrome (i.e., increased blood glucose, redistribution of body fat) is possible. Store solution at room temperature but refrigerate capsules.

Dose:
Adults and Pediatric 12 years and older: Lopinavir 400/100 milligrams (mg) (lopinavir/ritonavir, respectively) twice daily taken with food. A dose increase to 533/133 mg twice daily is recommended when lopinavir/ritonavir is taken concomitantly with efavirenz, nevirapine, amprenavir, or nelfinavir. The recommended dose for children 7 to 14 kilograms (kg) is 12/3 mg/kg (lopinavir/ritonavir,
respectively) twice daily. The recommended dose for children 15 to 40 kg is 10/2.5 mg/kg. A dose increase to 13/3.25 mg/kg (7 to 14 kg), 11/2.75 mg/kg (15 to 45 kg), and 533/133 mg (over 45 kg) is recommended when lopinavir/ritonavir is taken concomitantly with efavirenz, nevirapine, or amprenavir.

**Preparations**

200mg L/50mg R Tablet
- *Kaletra (ABB\PHA)*; 5.5242 per Tab
- *Lopinavir/Ritonavir (APL\BRY)*; 0.8724 per Tab
- *Ritocom (HET\BMI)*; 0.8784 per Tab

200mg/50mg Tablet
- *Lopinavir/Ritonavir (MAT\BMI)*; 0.8219 per Tab

80mg L/20mg R Soln
- *Kaletra (ABB\PHA)*; 2.9225 per Ml
- *Lopinavir/Ritonavir (CIP\BKL)*; 1.8016 per Ml

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**SAQUINAVIR**

**Indications:**
Treatment of HIV infection in combination with ritonavir and other antiretroviral agents.

**Caution/Side Effects:**
Diarrhea, abdominal discomfort.

**Dose:**
- Adults and children (16 yrs of age and older): 1g twice daily with ritonavir 100mg twice daily, or with lopinavir 400mg/ritonavir 100mg twice daily. Administer within 2 hours after a meal.

**Preparations:**

500mg Tablet
- *Invirase (ROC\BKL)*; 5.4946 per Tab
- *Invirase (ROC\LAS)*; 5.4946 per Tab
- *Saquinavir (CIP\BKL)*; 4.0700 per Tab
08:18.08.16 NON-NUCLEOSIDE REVERSE TRANSCRIPTASE INHIBITORS

EFAVIRENZ

Indications:
In combination with other antiretrovirals for the treatment of HIV-1 infection

Caution/Side Effects:
Psychiatric disorders, rash, increases in liver enzymes.

Dose:
Adult: 600mg once daily on an empty stomach preferably at bedtime.
Pediatric 3 years and older and weighing between 10-40kg: 200mg-600mg once daily.

Preparations:
600mg Tablet
*Efavir (HEA\ALA): 1.358 per Tab
*Efavirenz (MAT\BMI): 0.4933 per Tab
*Stocrin (MSD\STO): 4.871 per Tab

NEVIRAPINE

Indications:
For use in combination with other antiretroviral agents for the treatment of HIV-1 infection. Nevirapine reduces maternal to fetal HIV transmission.

Caution/Side Effects:
Nevirapine is generally well-tolerated. The primary adverse effects are fever, nausea, and headache. However severe and life-threatening skin reactions, toxic epidermal necrolysis and Stevens-Johnson syndrome have been reported. Women appear to be at higher risk for hepatic events.
Nucleoside Reverse Transcriptase Inhibitors

**Dose:**
200mg once daily for 14 days, then increased to 200mg twice daily, in combination with a nucleoside analogue antiretroviral agent. **Pediatric:** 2 months to 8 years: 4mg/kg/day for the first 14 days followed by 7mg/kg twice daily. 8 years and older: 4mg/kg once daily for 14 days followed by 4mg/kg twice a day in combination with a nucleoside analogue antiretroviral agent. A single dose of 200mg orally at onset of labour and then 2mg/kg oral dose to newborn within 2-3 days of birth reduced the risk of HIV-

**Preparations:**
10mg/ml Soln
*Nevirapine (CIP\BKL);* 0.2775 per Ml
10mg/ml Suspension
*Viramune (BOE\STO);* 0.4861 per Ml
200mg Tablet
*Nevirapine (APL\BRY);* 0.1852 per Tab
*Nevirapine (MAT\BMI);* 0.1547 per Tab
*Nevirapine (RBX\BKL);* 0.1875 per Tab
*Viramune (BOE\STO);* 1.6147 per Tab

08:18.08.20 NUCLEOSIDE REVERSE TRANSCRIP-TASE INHIBITORS

**ABACAVIR**

**Indications:**
Indicated in combination with other anti-HIV medications for the treatment of HIV-1 for adults and children.

**Caution/Side Effects:**
Nausea, vomiting, fatigue, headache, diarrhoea and loss of appetite. Fatal lactic acidosis and severe hepatomegaly with steatosis have been reported. Fatal hypersensitivity reactions include skin rash, fever, fatigue, nausea, vomiting, diarrhoea, abdominal pain, pharyngitis,
dyspnea or cough. Re-introduction of abacavir after an interruption in therapy can cause a severe or fatal hypersensitivity reaction, even in patients without a history of hypersensitivity to abacavir during the previous course(s) of therapy.

**Dose:**
- **Adult:** Recommended dosing is 300mg orally twice daily with or without food.
- **Pediatric:** 3 months - 16 years of age is 8mg/kg orally twice daily (up to a maximum of 300mg twice daily). Abacavir should be used in combination with other antiretrovirals.

**Preparations:**
- 20mg/ml Soln
- *Abacavir (APL\BRY); 0.1783 per ML
- *Ziagen (GSK\COL); 0.8246 per ML

- 300mg Tablet
- *Abacavir (CIP\BKL); 1.1375 per Tab
- *Abacavir (MAT\BMI); 0.7607 per Tab
- *Ziagen (GSK\COL); 11.3995 per Tab

**DIDANOSINE**

**Indications:**
A first-line component of a combination antiretroviral therapy regimen for HIV-1 infected patients

**Caution/Side Effects:**
Diarrhoea, neuropathy, chills or fever, rash, abdominal pain, weakness, headache and nausea/vomiting. Serious toxicities have included pancreatitis and lactic acidosis (which may be fatal), severe hepatomegaly with steatosis, retinal changes and optic neuritis and peripheral neuropathy. Concurrent use with hydroxyurea or stavudine may cause fatal pancreatitis, hepatotoxicity and neurotoxicity. Use with caution if imidazole antifungals, fluoroquinolone antimicrobials or ganciclovir are co-administered. Doses should be decreased with impaired renal function. Administer on an empty stomach.
**Nucleoside Reverse Transcriptase Inhibitors**

**Dose:**
- **Adult:** weighing greater than 60kg, 200mg twice daily. Weighing less than or equal to 60kg, 125mg twice daily. **Pediatric 8 months and older:** 120mg/square meter twice daily. 2 weeks - 8 months: 100mg/square meter twice daily.

**Preparations:**
- 250mg Capsule
  - *Didanosine D.R (APL)BRY; 1.2560 per Cap*
- 250mg Tablet
  - *Didanosine ER (CIP)BKL; 0.9710 per Tab*
- 400mg Tablet
  - *Didanosine D.R (APL)BRY; 1.884 per Tab*
  - *Didanosine ER (CIP)BKL; 0.971 per Tab*

**LAMIVUDINE**

**Indications:**
A combination of oral lamivudine and oral zidovudine has produced significant and sustained increases in CD4+ counts and decreases in viral load in HIV-infected patients. Lamivudine is indicated for the treatment of chronic hepatitis B associated with evidence of hepatitis B viral replication and active liver inflammation.

**Caution/Side Effects:**
Diarrhoea, headache, fatigue, insomnia, arthralgias, myalgias, neuropathy, nasal signs and symptoms, elevated liver enzymes, skin rash, fever or chills, ear, nose and throat infections. Concurrent use with co-trimoxazole may result in increased adverse effects from lamivudine. Dose adjustment of lamivudine may be necessary.

**Dose:**
- **Adult:** 150mg orally twice daily, or 300mg once daily. **Pediatric 3 months - 16 years:** 4mg/kg twice daily (up to a maximum dose of 150mg twice a day). **Chronic hepatitis B:** 100mg orally daily for adults.
and 3mg/kg once daily (maximum daily dose = 100mg) for pediatrics. Dosage adjustment is necessary in patients with renal impairment. The drug may be taken without regards to meals. For reduction of perinatal HIV transmission in women who have had no prior antiretroviral therapy, zidovudine 600 mg orally and lamivudine 150 mg orally to the mother at labor onset is recommended. This is followed by zidovudine 300 mg orally every 3 hours and lamivudine 150 mg orally every 12 hours, until delivery. Postpartum, the neonate should receive zidovudine 4 mg/kg and lamivudine 2 mg/kg every 12 hours orally for 7 days. Dosage adjustment is necessary in patients with renal impairment.

**Preparations:**
10mg/ml Soln
*3TC (GSK\COL); 0.5652 per Mi
*Lamivudine (CIP\BKL); 0.2226 per Mi

150mg Tablet
*3TC (GSK\COL); 3.5345 per Tab
*Heptavir (HET\BMI); 0.1212 per Tab
*Lamivudine (MAT\BMI); 0.1318 per Tab

**LAMIVUDINE/ZIDOVUDINE**

**Indications:**
Indicated in combination with other antiretroviral agents for the treatment of HIV infection.

**Caution/Side Effects:**
Headache, fatigue, nausea, vomiting, diarrhoea, neutropenia, anemia, neuropathy, insomnia, nasal symptoms and musculoskeletal pain.

**Dose:**
**Adult and Pediatric 12 years and older:** One tablet twice daily (150mg lamivudine/ 300mg zidovudine per tablet). Not recommended in children under 12 years.
**Preparations:**
150mg L/300mg Z Soln
* Lamivudine/zidovudine (ZUVPHA); 0.6134 per Ml
150mg L/300mg Z Tablet
* Combidir (GSKCOL); 8.7465 per Tab
* Lamivudine/Zidovudine (CPLAS); 0.4933 per Tab
* Lamivudine/Zidovudine (HEALA); 0.6647 per Tab
* Lamivudine/Zidovudine (MATBMI); 0.4373 per Tab

**STAVUDINE**
**Indications:**
In combination with other antiretrovirals is indicated for human immunodeficiency virus-1 infection.

**Caution/Side Effects:**
Peripheral neuropathy, serum transaminase elevations, lactic acidosis and severe hepatomegaly with steatosis including fatal cases have been reported. Concurrent administration of stavudine and hydroxyurea or didanosine can result in fatal pancreatitis and hepatotoxicity. St. John’s wort causes decreased stavudine concentration which may lead to antiviral resistance.

**Dose:**
*Adult*: greater than 60kg: 40mg every 12 hours. Less than 60kg: 30mg every 12 hours. *Pediatric*: birth to 13 days: 0.5 mg/kg every 12 hours. 14 days and older: 1 mg/kg every 12 hours and weighing less than 30 kg. May be taken without regard to meals.

**Preparations:**
1mg/ml Soln
* Stavudine (CIP\BKL); 0.2379 per Ml
30mg Tablet
* Stavudine (CIP\BKL); 0.2198 per Tab
ZIDOVUDINE

Indications:
In combination with other antiretroviral agents for the treatment of HIV infection. Zidovudine is also indicated for the prevention of maternal to fetal HIV transmission during gestation, labor and to the neonate after birth.

Caution/Side Effects:
Bone marrow suppression (anemia and/or neutropenia), nausea, vomiting, anorexia, headache, malaise, asthenia and insomnia occur. Concurrent use of zidovudine and alpha-interferon, dapsone, vincristine, doxorubicin, ganciclovir or vinblastine may result in life threatening hematologic toxicities e.g. anemia and neutropenia. Use with caution in patients taking interferon-Beta, valproic acid, paracetamol, stavudine or rifabutin.

Dose:
Adult: 600mg daily in divided doses in combination with other antiretroviral agents. Pediatric: 6 weeks to 12 years: 160mg/square meter orally every 8 hours (maximum dose, 200 mg every 8 hours) in combination with other antiretroviral agents. To prevent perinatal HIV transmission, the recommended adult dose is 100 mg orally 5 times a day (or 200 mg 3 times a day or 300 mg twice a day), initiated at 14 through 34 weeks gestation, until the start of labor; during labor and delivery, 2 mg/kilogram (kg) over 1 hour intravenously followed by continuous infusion of 1 mg/kg per hour until cord clamping. Full-term neonatal dosing is 2 mg/kg orally or 1.5 mg/kg intravenously every 6 hours starting 8 to 12 hours after birth and until 6 weeks of age. If greater than 30 weeks gestation at birth, advance dose to every 8 hours at 4 weeks of age. Dose adjustments are necessary if anemia and/or neutropenia occurs, in patients on dialysis, and dose adjustments may be necessary in patients with hepatic impairment.

Preparations:
10mg/ml Injection
*Retrovir (GSK\COL); 93.1380 per Vial
10mg/ml Soln
*Zidovudine (APL\BRY); 0.1122 per Ml
ACYCLOVIR

**Indications:**
Effective in treating initial or recurrent herpes simplex virus, herpes zoster and varicella zoster virus infections.

**Caution/Side Effects:**
Acyclovir is generally well tolerated. GI disturbances, renal failure, local reactions at the injection site, headache and rash may occur. A finger cot or rubber glove should be utilized for application to prevent auto-inoculation of other body sites.

**Dose:**
Adult: For the treatment of initial genital herpes: 200mg orally 5 times daily for 7-10 days. For the treatment of herpes zoster: 800mg orally 5 times daily. For chronic suppressive therapy for recurrent diseases 400mg twice daily (or 200mg 3-5 times daily); and for intermittent therapy: 200mg every 4 hours. Chicken pox: 800mg 4 times daily for 5 days. Pediatric: 2 years and older: For the treatment of chicken pox: 20mg/kg four times daily, up to a maximum of 80mg/kg. Initiate treatment within 24 hours of onset of rash. Little if any benefit is apparent if treatment is delayed after 48 hours of onset of rash. Topical treatment ranges between 4-6 times daily.

**Preparations:**
200mg Tablet
*Acyclovir (CPP\COL); 0.1164 per Tab (50)
400mg Tablet
*Acyclovir (HEA\ALA); 0.2286 per Tab (50)
*Acyclovir (RBX\BKL); 0.2202 per Tab (50)
5% Cream
*Acyclovir (CIP\BKL); 1.400 per Tube (2)
*Acyclovir (CIP\LAS); 1.3500 per Tube (2)
*Acyclovir (HEA\ALA); 1.5800 per Tube (2)
5% Oint
*Acyclovir (RBX\BKL); 1.400 per Tube (2)
800mg Tablet
*Acyclovir (HEA\ALA); 0.2250 per Tab (50)

08:18:92 ANTIVIRALS, MISCELLANEOUS

EFAVIRENZ/TENOFOVIR/EMTRICITABINE

Indications:
HIV infection

Caution/Side Effects:
Lactic acidosis and severe hepatomegaly with steatosis, including fatal cases, have been reported with the use of nucleoside analogues in combination with other antiretrovirals.

Dose:
1 tablet once daily on an empty stomach; not recommended for pediatric patients younger than 18 years.

Preparations:
600/300/200mg Tablet
*Atripla (MSD\STO); 7.6430 per Tab
*Efavirenz/Tenofovir/Emtricitabine (MAT\BMI); 1.8703 per Tab
*Efavirenz/Tenofovir/Emtricitabine (HEA\ALA); 2.6890 per Tab
EMTRICITABINE/TENOFOVIR

Indications:
HIV infection.

Caution/Side Effects:
Lactic acidosis and severe hepatomegaly with steatosis, including fatal cases, have been reported with the use of nucleoside analogues in combination with other antiretrovirals. Emtricitabine/tenofovir should not be used as part of a triple nucleoside regimen. Emtricitabine/tenofovir should not be coadministered with its individual components (i.e., emtricitabine or tenofovir) or with drugs containing lamivudine.

Dose:
1 tablet once daily with or without food; not recommended for pediatric patients younger than 18 years.

Preparations:
200mg/300mg Tablet
*Emtricitabine/Tenofovir (APL\BRY); 1.1213 per Tab

08:30 ANTIPROTOZOALS

08:30:08 ANTIMALARIALS

CHLOROQUINE SULPHATE/PHOSPHATE

Indications:
Acute and prophylactic treatment of malaria.

Cautions/Side Effects:
For prophylaxis, drug should be taken on the same day each week. Nausea, vomiting, abdominal cramps, blurred vision. c.f. prescribing in renal disease p. 25.

Dose:
1g to start, 500mg in 6 hours and 500mg daily for 2 days. Prophylaxis: 500mg/week, 2 weeks before exposure and continue for 8 weeks after an exposure. Warn patients re: drinking alcohol while taking Chloroquine.
Antimalarials

**Preparations:**
Tablet, 250mg
250mg Tablet
*Chloroquine Phosphate (CIP\BKL); 0.0529 per Tab (60)
*Chloroquine Phosphate (WOC/BKL) 0.0529 per Tab (60)

**HYDROXYCHLOROQUINE**

**Indications:**
Used in both the treatment and suppression of malaria, as well for the treatment of rheumatoid arthritis and systemic lupus erythematosus.

**Cautions/Side Effects:**
Adverse effects following short-term therapy include rash, vertigo, transient headache and gastrointestinal complaints such as nausea, vomiting, diarrhea and abdominal cramps. Ocular toxicity such as retinopathy, hair bleaching, alopecia, pruritus, changes in skin pigmentation and anaemia has been observed with long-term therapy or high dosages. Take with food or milk.

**Dose:**
Lupus: Initially, 400mg 1-2 times daily until remission. Maintenance: 200-400mg daily.

**Preparations:**
Tablet, 200mg
*Hcqs (IPC\BRY); 0.3230 per Tab (120)

**MEFLOQUINE HCL**

**Indications:**
Mefloquine is indicated for the prophylaxis and the treatment of mild to moderate malaria caused by Plasmodium vivax and susceptible strains of Plasmodium falciparum.

**Caution/Side Effects:**
Anorexia, vomiting, nausea, diarrhoea, dizziness, sleep disturbance, panic attacks, sudden on set of anxiety, restlessness, irritability, confusion, persistently abnormal heartbeat, palpitations, bad dreams,
Antimalarials

Depression sometimes profound, hallucinations and occasionally overt psychosis. Photosensitization has not been demonstrated. Take Mefloquine with food and a full glass of water. If medication is to be taken once

**Dose:**

**Acute disease:** 5 tablets (1250mg) should be given as a single oral dose or 750mg initially followed by 500mg given 12 hours later.

**Prophylaxis:** 250mg per week prior to departure (commence 1-2 weeks prior to travel), during period in endemic area and 4 weeks after return. Alternatively: 250mg for 3 days followed by 250mg weekly (in cases where a loading dose is required). (NB: 250mg Mefloquine HCL = 228mg of the base).

**Preparations:**

250mg Tablet
*Apo-Mefloquine (APO\(\text{COL}\)); 2.4225 per Tab (8)

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**PRIMAQUINE PHOSPHATE**

**Indications:**

Malaria. Used with chloroquine.

**Caution/Side Effects:**

Take with meals to decrease G.I. side effects. Monitor for hematological effects.

**Dose:**

15mg (base) daily for 14 days. May be used for up to 21 days.

**Preparations:**

Tablet
*Primaquine Phosphate (STP\(\text{COL}\)); 0.0942 per Tab (30)
QUININE SULPHATE

Indications:
Malaria.

Caution/Side Effects:
Phototoxicity, ototoxicity, drug fever.

Dose:
Adult: 600mg every 8 hours for 7 days. Pediatric: 10mg/kg 3 times daily for 7 days.

Preparations:
300mg Capsule
*Apo-Quinine Sulphate (APO\COL); 0.2907 per Cap (42)
300mg/ml Injection
*Quinine Dihydrochloride (WOC\BKL); 4.8400 per Vial

METRONIDAZOLE

Indications:
Trichomonas vaginalis. Giardia lambia, Entamoeba histolytica. Active against anaerobic bacteria and protozoa. Surgical and gynaecological sepsis especially B. fragilis.

Caution/Side Effects:
Avoid alcohol while taking this drug. All medication must be taken. May be taken with food or milk to avoid stomach upset. May turn urine a reddish-brown colour. c.f. prescribing in liver disease p.15

Dose:
Adult: 200mg 3 times daily for 7 days; 800mg in the morning and 1.2g at night; or a single 2g dose; i.v. 400mg every 8 hours; Pediatric: 7.5mg/kg every 8 hours. Vaginal gel: One applicatorful twice daily for 5 days.
**Preparations:**

- 0.5% Injection
  - *Metronidazole + Hangers (CIP\BKL)*; 1.3500 per Bott
  - *Metronidazole Bag (ALK\PHA)*; 1.3500 per Bott
  - *Metronidazole With Hangers (DIL\BKL)*; 1.3500 per Bott

- 2% Vag Cream
  - *Metrogel (PMA\ARM)*; 25.9600 per Tube (1)

- 200mg Tablet
  - *Metronidazole (STP\COL)*; 0.0350 per Tab (90)

**TINIDAZOLE**

**Indications:**
Anaerobic bacterial and protozoal infections

**Caution/Side Effects:**
See Metronidazole.

**Dose:**
2g (4 tabs) at one time. Same dose for partner. Take with food. Avoid alcohol while taking this drug.

**Preparations:**

- 500mg Tablet
  - *Tinidazole (BON\COL)*; 0.3867 per Tab (8)

**08:36 URINARY ANTI-INFECTIVES**

**NITROFURANTOIN**

**Indications:**
Urinary tract infections.

**Caution/Side Effects:**
Nausea, vomiting. Avoid during pregnancy and lactation. Take with food or milk. Avoid antacids. *c.f. prescribing in liver and renal disease p. 15; 33.*
Dose:
50-100mg daily in divided doses every 6-8 hours for 7 days, or 50-100mg at night for long term suppressive therapy.

Preparations:
100mg Tablet
*Apo-Nitrofurantoin (APO(COL)); 0.0727 per Tab (56)
Body Surface Nomogram

A line connecting the height with the weight intersects the middle line at the corresponding surface area.
10:00 ANTINEOPLASTICS

Cytotoxic drugs and corticosteroids are used as therapy for malignant diseases and as immunosuppressants. Because of the potential toxicity of cytotoxic drugs and the complexity of most dose regimes used in treating malignant diseases, advice on indications and dosage is not given, but should be sought from detailed specialist literature and/or appropriate consultation. Their use should be undertaken or supervised by clinicians experienced in their use.

It must be emphasised that:

(i) all tumours are not sensitive to chemotherapy and inappropriate and futile drug administration is to be deprecated as it can only increase morbidity;
(ii) Dosages must be individualised with even more care than usual, with respect to age, weight, liver and renal disease etc.
(iii) Chemotherapy has to be administered by doctors/nurses trained/experienced in its usage.
(iv) Extravasation of the injected drug has to be avoided by taking appropriate precautions. Any such accidental event has to be instituted to reduce/minimize the sequelae of such extravasation. An algorithm of management of extravasation should be visibly displayed in the chemotherapy administration area. When in doubt, DO NOT INJECT.
(iii) Flow charts of blood counts and other parameters have to be meticulously maintained.
(iv) Reasons for dose reduction, if any, have to be clearly mentioned.
(v) Patients should be counseled about the side effects of chemotherapy before administering the first dose. It should be administered only after obtaining informed consent from the patient.
(vi) Follow the manufacturer’s recommendations while reconstituting the drug with diluent.
(vii) Adequate antinausea drugs should be prescribed for the patient.
(viii) Colony stimulating factors may have to be considered in some patients.
Notes are given for those drugs used also as immunosuppressants.

10:00 ANTINEOPLASTICS

ACTINOMYCIN D (B)

Therapeutic Category:
Antineoplastic agent.

Cautions/Side Effects:
Anorexia, nausea and vomiting, diarrhoea, stomatitis, cheilitis, glossitis, thrombocytopenia - often seen first, leukopenia may be dose limiting. Actinomycin - D forms a stable complex with DNA producing inhibition of DNA - dependent RNA synthesis.

Preparations:
Inj. pdr for reconstitution, 500mcg vial
*Actinomycin D (BEVBKL); 66.8500 per Vial

AZATHIOPRINE (B)

Therapeutic Category:
Immunosuppressant drug.

Indications:
Usually as an adjunct to corticosteroids, in autoimmune disorders, e.g. SLE and rheumatoid arthritis. c.f. prescribing in liver and renal disease p. 11; 23.

Dose:
1-3mg/kg daily, usually 100-200mg daily. Take with food.

Preparations:
Tablet, 50mg
*Apo-Azathioprine (APO\COL); 0.2907 per Tab (180)
162  Antineoplastics

BLEOMYCIN SULPHATE (B)

Therapeutic Category:
Antibiotic, antineoplastic agent.

Special Instructions:
It is mandatory to perform Pulmonary function tests prior to the administration. Repeat these at 90mg, 180mg and 270mg of drug. 
Please do not exceed 400mg cumulative dose in any circumstance. Pulmonary fibrosis due to Bleomycin is irreversible. It has to be prevented.

Cautions/Side Effects:
Nausea, vomiting and anorexia, stomatitis, fever and chills, alopecia, pulmonary fibrosis.

Preparations:
Inj. pdr for reconstitution, 15mg vial
*Bleomycin Sulphate (CIP\BKL); 59.9100 per Vial
*Bleomycin Sulphate (DIL\BKL); 59.9100 per Vial

BUSULPHAN (B)

Therapeutic Category:
Antineoplastic Alkylating agent.

Cautions/Side Effects:
Leukopenia, thrombocytopenia, anaemia, amenorrhoea, (occasional), skin hyperpigmentation (occasional), gynecomastia (occasional)
Adisonian - like wasting syndrome, pulmonary fibrosis (rare).
Maintain ample fluid intake.

Dose:
4-8mg daily. Maintenance: 1-3mg daily.

Preparations:
Tablet, 2mg
*Myleran (GSK\COL); 0.0420 per Tab (120)
CHLORAMBUCIL (B)

**Therapeutic Category:**
Antineoplastic Alkylating agent.

**Indications:**
Chronic lymphocytic leukemia, certain non-Hodgkin lymphomas.

**Cautions/Side Effects:**
Anorexia, nausea, leukopenia, throm-bocytopenia, anaemia. **Drink 6-8 glasses of liquid everyday. Avoid aspirin or medication containing aspirin.**

**Dose:**
0.1-0.2mg/kg/day.

**Preparations:**
Tablet, 2mg

*Leukeran (GSK/COL); 4.1984 per Tab. (240)

CYCLOPHOSPHAMIDE (B)

**Therapeutic Category:**
Antineoplastic Alkylating agent.

**Cautions/Side Effects:**
Anorexia, nausea and vomiting, stomatitis, leukopenia, sterile haemorrhagic cystitis, alopecia is common. **High fluid intake will help to prevent haemorrhagic cystitis (3-4 litres/day). c.f. prescribing in renal disease p. 27.**

**Dose:**
1-5mg/kg/day.

**Preparations:**
Tablet, 50mg

*Cyclophosphamide (CIP\BKL); 18.4900 per Vial
*Cyclophosphamide (DIL\BKL); 18.1100 per Vial
*Zuviphos (ZUV\PHA); 12.700 per Vial
200mg Injection
*Cyclophosphamide (CIP\BKL); 5.7300 per Vial
*Cyclophosphamide (DIL\BKL); 5.6800 per Vial
*Zuviphos (ZUV\PHA); 4.2000 per Vial

50mg Tablet
*Endoxan (ASM\COL); 0.6190 per Tab (240)

CYPROTERONE (B)

Therapeutic Category:
An antiandrogen with progestogenic activity.

Indications:
Advanced prostatic carcinoma.

Cautions/Side Effects:
Impotence, inhibition of spermatogenesis, headache, gynecomastia, galactorrhea, weight gain, lipid abnormalities, gastrointestinal disturbances and anemia. Several cases of hepato-toxicity, fluid retention, venous thromboembolism, myocardial ischemia, breathlessness and cerebrovascular accidents has occurred in 10% of prostate cancer patients treated with the drug.

Dose:
Usual oral doses in advanced prostate cancer have been 200 to 300mg daily. Take after meals.

Preparations:
Tablet, 50mg
*Androcur (BSP\BKL); 1.7403 per Tab (90)
*Androcur (BSP\COL); 1.7403 per Tab (90)

50mg Tablet
*Androcur (BSP\BKL); 0.7428 per Tab (90)
*Androcur (BSP\COL); 0.7428 per Tab (90)
*Androcur (BSP\LAS); 0.7428 per Tab (90)
CYTARABINE (B)

**Therapeutic Category:**
Antimetabolite, antineoplastic agent.

**Preparations:**
Inj. pdr for reconstitution, 100mg vial
- Cytarabine (DIL\BKL); 10.79 per Vial
- Cytarabine (EBA\COL); 7.27 per Vial
- Cytosar - U (PFI\STO); 12.00 per Vial

1g Injection
- Cytarabine (DIL\BKL); 45.24 per Vial
- Cytarabine (EBA\COL); 51.13 per Vial
- Cytosar - U (PFI\STO); 51.99 per Vial

DAUNORUBICIN HCL (B)

**Therapeutic Category:**
Anthracycline antineoplastic agent.

**Cautions/Side Effects:**
Dose related myelosuppression; cardiotoxicity; gastrointestinal effects; alopecia; urine discoloration; extravasation.

**Preparations:**
Inj. 1mg/ml; 20ml vial
- Daunorubicin (PFI\STO); 195.01 per Vial

DOXORUBICIN (B)

**Therapeutic Category:**
An antibiotic antineoplastic.

**Cautions/Side Effects:**
Cardiotoxicity and myelosuppression, reversible alopecia, acute nausea and vomiting.
**Antineoplastics**

**Dose:**
60 to 75mg/M(2) IV given as a single injection every 3 weeks

**Preparations:**
- Inj. 50mg
  - Doxorubicin (DILABKL); 26.00 per Vial
  - Doxorubicin (EBACOL); 26.91 per Vial
  - Doxorubicin (GGS/COL); 33.64 per Vial

**EPIRUBICIN** (B)

**Therapeutic Category:**
Anthracycline derivative of doxorubicin.

**Cautions/Side Effects:**
Leukopenia, nausea and vomiting, diarrhoea, thrombocytopenia, EKG changes, congestive cardiac failure secondary to a diffuse cardiomyopathy, alopecia. *c.f. prescribing in liver disease p. 13.*

**Preparations:**
- Inj. pdr. for reconstitution 10mg vial
  - Epirubicin (DILABKL); 77.99 per Vial
- Inj. pdr. for reconstitution 50mg vial
  - Epirubicin (DILABKL); 77.99 per Vial

**FLUOROURACIL** (5-F) (B)

**Therapeutic Category:**
Fluorinated pyrimidine antimetabolite.

**Cautions/Side Effects:**
Anorexia, nausea and vomiting, stomatitis, diarrhoea, thrombocytopenia, alopecia, dermatitis, skin hyperpigmentation.
Preparations:

25mg/ml Injection
*Fluorouracil (DIL\BKL); 4.33 per Vial
*Fluorouracil (ZUV\PHA); 1.96 per Amp

50mg/ml Injection
*Fluorouracil (DIL\BKL); 4.90 per Vial
*Fluorouracil (EBA\COL); 3.23 per Vial
*Fluorouracil (EBA\COL); 3.90 per Vial
*Fluorouracil (ZUV\PHA); 2.93 per Vial

FLUTAMIDE (B)

Therapeutic Category:
A nonsteroidal nonhormonal antiandrogenic.

Indications:
Treating prostate cancer.

Cautions/Side Effects:
Gynecomastia and galactorrhea are the most frequently reported adverse effects and occur in up to 42% of patients. Other adverse effects include diarrhoea, nausea, vomiting and transient serum transaminase elevations.

Dose:
The usual dosage of flutamide is 250mg 3 times daily.

Preparations:
Tablet, 250mg
*Apo-Flutamide (APO\COL); 0.2301 per Tab (180)

HYDROXYUREA (B)

Therapeutic Category:
Pyrimidine antagonist agent.

Indications:
Chronic myeloid leukemia.
Cautions/Side Effects:
Anorexia, nausea and vomiting, stomatitis, leukopenia, thrombocytopenia and anemia-less marked than leukopenia, megaloblastosis, alopecia is rare. Directly inhibits DNA synthesis primarily by inhibition of ribonucleoside diphosphate reductase.
Take on an empty stomach. Maintain ample fluid intake. Avoid alcohol.

Dose:
20-30mg/kg/day administered as a single dose.

Preparations:
Capsule, 500mg
*Hydroxyurea (CIP\LAS); 0.2557 per Cap (150)

MELPHALAN (B)
Therapeutic Category:
Alkylating agent.
Cautions/Side Effects:
Anorexia, nausea and vomiting, leukopenia, thrombocytopenia and anemia.

Dose:
150mcg/kg daily in divided doses for 4 days repeated at 6 weeks intervals. Multiple Myeloma: 6mg daily for 2-3 weeks with 4 weeks off.

Preparations:
Tablet, 2mg
*Alkeran (GSK/COL); 4.0908 Per Tab (150)
*Melphalan (CIP/BKL) 0.7226 per Tab (150)

MERCAPTOPURINE (B)
Therapeutic Category:
Cell altering antimetabolite.
Indications:
Acute Lymphocytic Leukemia.
Cautions/Side Effects:
Nausea, vomiting and anorexia, leukopenia, thrombocytopenia. An antimetabolite. *c.f. prescribing in renal disease p. 32.*

Dose:
2.5mg/kg/day maintain at 1.5-2.5mg/kg/day.

Preparations:
Tablet, 50mg
*Mercaptopurine (ROL\BKL); 4.7948 per Tab (120)*

METHOTREXATE (B)

Therapeutic Category:
Antimetabolite, antineoplastic agent.

Indications:
Rheumatoid arthritis, malignant disease, psoriasis.

Cautions/Side Effects:
Stomatitis, diarrhoea, hepatic dysfunction, thrombocytopenia, renal tubular necrosis. An antimetabolite. Pulmonary toxicity: Special problem in rheumatoid arthritis (patient to contact doctor immediately if dyspnoea or cough occurs). *c.f. prescribing in liver and renal disease p. 15; 32.*

Dose:
Rheumatoid Arthritis: Initial dose is 7.5mg/week orally or 2.5mg every 12 hours for 3 doses once weekly. Maximum total weekly dose 20mg.

Preparations:
Tablet, 2.5mg
100mg/ml Injection
*Methotrexate (BEV\BKL); 38.003 per Vial
*Methotrexate (EBA\COL); 48.44 per Vial

10mg/ml Injection
*Methotrexate (BEV\BKL); 40.13 per Vial
*Methotrexate (EBA\COL); 5.65 per Vial
Antineoplastics

Methotrexate (CIP\BKL); 0.0899 per Tab (32)
Methotrexate (EBA\COL); 0.1884 per Tab (32)

25mg/ml Injection
Methotrexate (BEV\BKL); 40.113 per Vial

MITOMYCIN (B)
Therapeutic Category:
Antineoplastic antibiotic.

Cautions/Side Effects:
Nausea, vomiting and anorexia, stomatitis, leukopenia, thrombocytopenia, alopecia. Probably an alkylating agent.

Preparations:
Inj. pdr for reconstitution, 5mg vial
*Mitomycin (BEV/BKL); 155.1200 per vial.
Inj. pdr for reconstitution, 20mg vial
*Mitomycin (BEV/BKL); 305.1300 per vial.

TAMOXIFEN (B)
Therapeutic Category:
Non-steroidal antiestrogenic agent.

Cautions/Side Effects:
Hot flashes, vaginal bleeding, pruritis vulvae, tumor flare, rarely fluid retention, cataracts, retinopathy, visual disturbances, venous thrombosis, thrombocytopenia rarely. An anti-estrogen. WADA Status: Banned in and out of competition.

Dose:
20-40mg daily.

Preparations:
Tablet, 20mg
*Nolvadex-D (AZN/BRY); 0.4063 per Tab. (60)
VINBLASTINE (B)

Therapeutic Category:
Cell cycle specific chemotherapeutic agent.

Cautions/Side Effects:
Nausea and vomiting, stomatitis, constipation or diarrhoea, leukopenia. Mechanism of action is reversible mitotic arrest.

Preparations:
Inj. pdr for reconstitution, 10mg vial
*Vinblastine (Bev/Bkl); 27.9300 per Vial
*Vinblastine (Cip/Bkl); 16.9500 PER Vial

VINCRISTINE SULPHATE (B)

Therapeutic Category:
Cell cycle specific chemotherapeutic agent.

Cautions/Side Effects:
Leukopenia, nausea and vomiting, stomach or diarrhoea, leukopenia. Mechanism of action is reversible mitotic arrest.

Preparations:
Inj. pdr for reconstitution, 1mg vial
*Vincristine (CIP\BKL); 9.90 per Vial
*Vincristine (HOS\PHA); 10.90 per Vial
*Vincristine (ZUV\PHA); 8.80 per Vial

Inj. pdr for reconstitution, 5mg vial
Consult the BDS for Supplies. (No Offers to Supply).

12:00 AUTONOMIC DRUGS

12:04 PARASYMPATHOMIMETIC (CHOLINERGIC) AGENTS

BETHANECHOL CHLORIDE

Indications:
Urinary retention, post-operative dystension due to paralytic ileus.
Parasympathomimetic (Cholinergic) Agents

Cautions/Side Effects:
Take on empty stomach. May cause dizziness or drowsiness. See neostigmine.

Dose:
Adult: 10-50mg 3-4 times daily. Inj. 5mg s.c. and repeat (double if necessary, according to individual response).

Preparations:
Tablet, 25mg
*Bethanechol (WOC\BKL); 2.1506 per Tab (240)
Inj. 5mg/ml; 1ml Amp.
Consult the BDS for Supplies. (No Offers to Supply).

NEOSTIGMINE

Indications:
Treatment of myasthenia gravis but very short acting. (Half-life may be less than 1 hour).

Cautions/Side Effects:
Prototype anticholinesterase, para-sympathomimetic. Nausea, vomiting, abdominal cramps, salivation, diarrhoea, sweating, miosis, bradycardia, hypotension, agitation and dreaming. Weakness with overdose, may lead to paralysis. c.f. prescribing in renal disease p. 33.

Dose:
Adult: 15-60mg every 2-4 hours as necessary. Inj. 1-2.5mg i.m. in emergencies.

Preparations:
Tablet, 15mg
Consult the BDS for Supplies. (No Offers to Supply).
Inj. 2.5mg/ml; 5ml Amp.
*Neostigmine Im/iv/sc (ANT\COL); 3.229 per Amp
PYRIDOSTIGMINE BROMIDE

Indications:
Myasthenia gravis. Preferable to neostigmine because of longer half-life (1-3 hours). Delayed format is available.

Cautions/Side Effects:
As for neostigmine; note 'Cholinergic Crises' or paralysis due to over medication (abdominal cramps most useful warning). c.f. prescribing in renal disease p. 36.

Dose:
Adult: 60-180mg every 3-6 hours, carefully titrated for optimal effects.

Preparations:
Tablet, 60mg
*Mestinon (VCL\COL); 1.4802 per Tab (120)
*Pyridostigmine Bromide (LCS\STO); 0.673 per Tab (180)

Tablet, Sustained Release, 180mg
Consult the BDS for Supplies. (No Offers to Supply).

12:08 CHOLINERGIC BLOCKING AGENTS

ATROPINE SULPHATE

Indications:
Most commonly used premedication agent to dry bronchial and salivary secretions. Also drug of choice for immediate treatment of excessive bradycardia.

Cautions/Side Effects:
Glaucoma, dry mouth, paralytic ileus, excessive tachycardia, urinary retention and constipation.
Dose:
* i.v. 0.3 - 0.6mg immediately before induction of anaesthesia or reversal of bradycardia i.m. 0.3 - 0.6mg, repeat if necessary.

Preparations:
* Atropine Sulphate (STP\COL); 0.6997 per Amp
  0.6mg/ml Injection
  * Atropine Sulphate (MTP\COL); 0.686 per Amp

HYOSCINE BUTYLBROMIDE

Indications:
Aid in peptic ulcer and spastic colon.

Dose:
Adult: 10-30mg 2-4 times daily as necessary. Pediatric 6-12 years: 10mg 3 times daily as necessary.

Preparations:
* Hyoscine Butylbromide (STP\COL); 0.0536 per Tab (120)
  20mg/ml Injection
  * Hyoscine Butylbromide (RTM\PHA); 0.5425 per Amp

HYOSCINE BUTYLBROMIDE - PARACETAMOL

Indications:
Peptic ulcer, oesophageal and pylorospasm, spastic colon.

Cautions/Side Effects:
As for Atropine.

Dose:
Adults and Pediatrics over 6: 1-2 tablets or 4-8mg i.m. or i.v. - Not recommended for chronic use.
Beta Adrenergic Agonist

**Preparations:**
Tablet, 10mg HB/500mg P
*Buscopan Plus (BOE/STO); 0.5045 per Tab (30)*

**OXYBUTYNIN** (Cross Reference p. 412)

12:12:04 **ALPHA ADRENERGIC AGONIST**

**PHENYLEPHRINE**

**Indications:**
Treatment of hypotension during spinal anaesthesia, shock or hypersensitivity reactions. Hemorrhoids.

**Caution/Side Effects:**
Restlessness, anxiety, nervousness, weakness and dizziness.

**Dose:**
- **Adult:** Hypotension 2-5mg when necessary to a maximum of 10mg daily. Arrhythmias 5mg **Pediatric:** Hypotension 0.5-1mg per 25lbs body weight.

**Preparations:**
*No Offers to Supply (Contact BDS for Supplies)*

12:12:08 **BETA ADRENERGIC AGONIST**

**DOPAMINE HYDROCHLORIDE**

**Indications:**
Cardiogenic shock in myocardial infarction.

**Cautions/Side Effects:**
Correct hypovolemia, CVP monitoring advisable. Extravasation, may cause necrosis. It is therefore recommended that a large central vein be used for infusion. May cause nausea, peripheral vasoconstriction, tachycardia.
Centrally Acting Skeletal Muscle Relaxants

Dose:
By carefully monitored i.v. infusion, 2-5mcg/kg/minute IV initially, increasing if necessary.

Preparations:
Inj. 40mg/ml; 5ml vial
*Dopamine (HOSPHA); 1.138 per Vial
*Dopamine (MTPCOL); 2.288 per Vial

12:12:12 ALPHA & BETA ADRENERGIC AGONIST
ADRENALINE TARTRATE

Indications:
Acute bronchospasm. Emergency treatment of asthma and anaphylaxis, cardiac arrest.

Caution/Side Effects:
Cardiac arrhythmias, tachycardia, tremor, anxiety. Avoid in the elderly and patients with heart disease.

Dose:
0.5-1mg s.c. or i.m.

Preparations:
1mg/ml Injection
*Adrenaline Tart (LPHPHA); 0.4900 per Amp
*Adrenaline Tart (PDNPHA); 0.4860 per Amp

12:20 SKELETAL MUSCLE RELAXANTS
12:20:04 CENTRALLY ACTING SKELETAL MUSCLE RELAXANTS

CYCLOBENZAPRINE

Indications:
Acute muscle spasm of local origin.
GABA Derived Skeletal Muscle Relaxants 177

Caution/Side Effects:
Drowsiness, dizziness, insomnia, anxiety, restlessness, confusion, extrapyramidal symptoms, anticholinergic effects, allergic skin reactions.

Dose:
10mg three times daily. Maximum dose is 60mg daily. See protocol pg. xv section 17.

Preparations:
10mg Tablet
*Cyclobenzaprine (MUP\BK); 0.7256 per Tab (21)

12:20:12 GABA DERIVED SKELETAL MUSCLE RELAXANTS

BACLOFEN

Indications:
Muscle spasm due to multiple sclerosis, spinal cord lesions, and tardive dyskinesia.

Caution/Side Effects:
Postural hypotension, sedation, dizziness, drowsiness, depression, hallucinations, G.I. disturbances, blurred vision, allergic reactions, muscular weakness. Take with food or milk. Avoid alcohol. c.f. prescribing in renal disease p. 23.

Dose:
½ - 2 tablets three times daily.

Preparations:
10mg Tablet
*Apo-Baclofen (APO\COL); 0.0606 per Tab (180)
12:20:20  NEUROMUSCULAR BLOCKING AGENTS

PANCURONIUM BROMIDE

**Indications:**
Usual drug of choice for major surgery and for use with long term ventilation of intensive care patients.

**Caution/Side Effects:**
Caution in hepatic and renal impairment. *c.f. prescribing in renal disease p. 34.*

**Dose:**
i.v. 0.05-0.1mg/kg, then 0.01-0.02mg/kg as required.

**Preparations:**
2mg/ml Injection
*Pancuronium Bromide (RTM\PHA); 1.72 per Amp
*Pavulon (ORG\STO); 4.037 per Amp

SUXAMETHONIUM CHLORIDE

**Indications:**
Depolarising muscle relaxant of short duration (about 5 mins). Useful for endotracheal intubation.

**Caution/Side Effects:**
Tachycardia, apnoea, flushing.

**Dose:**
i.v. 0.5-2mg/kg depending on degree of relaxation required. *c.f. prescribing in liver disease p. 18.*

**Preparations:**
20mg/ml Injection
*Quelicin (HOSP\HA); 9.288 per Vial
TIZANIDINE

*Indications:* Spasticity associated with multiple sclerosis and cerebrovascular or spinal cord disorders.

*Cautions/Side Effects:* Drowsiness, muscle weakness, dry mouth, fatigue, insomnia, G.I. disturbances, dizziness.

*Dose Range:* **Adult:** 2-4mg three times daily. Maximum dose is 36mg daily. Safety has not been determined in children. See protocol pg. xv section 17.

*Preparations:*
Tablet, 4mg
*Tizanidina (LSTSTO); 0.296 per Tab (21)
20:00 BLOOD FORMATION AND COAGULATION

20:04 ANTIANAEMIC DRUGS

Before treatment is commenced the cause of blood loss must be diagnosed. Iron may be given orally or parenterally. The rate of haemoglobin response is not faster when iron is given parenterally and therefore the rapid cure of the anaemia is not met. Iron dextran can be given as a course of intramuscular injections or in selected cases as a total dose infusion given intravenously over 6 - 8 hours.

Indications for parenteral therapy:

1. Malabsorption
2. Genuine intolerance to oral therapy
3. Uncooperative patient

Oral iron therapy involves use of simple iron salts which are the most economical and contain the highest dosages of iron. Maximum iron absorption occurs in the duodenum and prolonged release preparations often deliver iron to parts of the small intestine where absorption is poor. These preparations have no therapeutic advantage to justify their cost. Iron should be prescribed three (3) times daily after meals to (avoid gastric intolerance). The need is to supply 150 - 200 mg of elemental iron daily.

20:12 ANTITHROMOTIC AGENTS

These are used to prevent thrombus formation or the extension of an existing thrombus. Heparin combines with antithrombin and is an immediate acting inhibitor of
the thrombin/fibrinogen reaction. Heparin can be given s.c. (prophylaxis), i.m. (not recommended) or i.v. Effects are short lived and therefore continuous i.v. infusion seems to be associated with better results and fewer complications, under carefully controlled conditions, e.g. in an Intensive Care Unit or with an infusion pump. Hemorrhage can be treated with protamine sulphate. One mg neutralizes 100 units of heparin.

Oral anticoagulants act by inhibiting the hepatic synthesis of the vitamin K dependent clotting factors. It makes 36 - 48 hours for the anticoagulant effect to develop and so if immediate effect is required then heparin must be started simultaneously and given 2 - 5 days. Laboratory control of prothrombin time is essential.

Drugs such as phenylbutazone, indomethacin, salicylates and clofibrate increase the effect of oral anticoagulants while barbiturates diminish its effect.

Hemorrhage should be treated by omission of the drug (if mild) or with i.m. or i.v. vitamin K.

Sensitivity is rare with warfarin but more common with phenindione.

**Dose Range**

Loading doses are no longer recommended. Start patient on expected daily dose or as a compromise give four (4) times expected daily dose on day one and the daily dose on each subsequent day (the latter regime takes into account the half-time of warfarin). The daily dose varies depending on body weight, sex, age, diseases and other drugs. Thus a 90 kg six foot tall man of fifty may require 12.5 mg per day while a five foot, 50 kg elderly lady may require only 2 mg.
20:04 ANTIANAEMIC DRUGS

20:04:04 IRON PREPARATIONS
FERROUS FUMARATE/ SULPHATE/ FOLIC ACID

Indications:
Prophylaxis of iron and folic acid deficiencies in pregnancy.

Caution/Side Effects:
Do not take within two hours of oral tetracyclines.

Dose:
1-3 tabs daily.

Preparations:
200mg F/.2mg Fa Tablet
*Ferrous Sulph/folic Acid (PDN\PHA); 0.0225 per Tab (90)

200mg/0.4mg Tablet
*Ferrous Sulph/folic Acid (LRL\COL); 0.0167 per Tab (90)
*Ifa (CAR\COL); 0.0638 per Tab (90)

40mg Fac/ 0.04mg Fa Syrup
*Ifa (CAR\COL); 0.0638 per MI (375)

FERROUS FUMARATE/SULPHATE

Indications:
Iron deficiency, anaemia.

Cautions/Side Effects:
May cause black stools, constipation or diarrhoea. Mild G.I. symptoms. Do not take within two hours of oral tetracyclines. Liquid may be taken in water or juice to prevent staining of teeth. Antacids decrease absorption. Take with food.
Iron Preparations

**Dose:**
- **Adult:** 200mg (65mg elemental iron) 3 times daily.
- **Pediatric:** Syrup 27.6mg (9mg elemented iron).

**Preparations:**
- Tablet, 200mg
- 200mg Tablet
  - *Ferrous Fumarate IIv (FED\ALA): 0.0465 per Tab (90)
  - *Ferrous Sulphate (PDN\PHA): 0.0139 per Tab (90)
- 300mg Tablet
  - *Apo-Ferrous Sulphate (APO\COL): 0.046 per Tab (90)
- 44mg/ml Syrup
  - *Ferrous Fumarate (WOC\BKL): 0.0581 per Ml (300)

**FERROUS FUMARATE/SULPHATE/FOLIC ACID**

**Indications:**
Prophylaxis of iron and folic acid deficiencies in pregnancy.

**Cautions/Side Effects:**
Do not take within two hours of oral tetracyclines.

**Dose:**
1-3 tabs daily.

**Preparations:**
- 200mg F/.2mg Fa Tablet
  - *Ferrous Sulph/Folic Acid (PDN\PHA): 0.0225 per Tab (90)
- 200mg/0.4mg Tablet
  - *Ferrous Sulph/Folic Acid (LRL\COL): 0.0167 per Tab (90)
  - *Ifa (CAR\COL): 0.0638 per Tab (90)
- 40mg Fa/ 0.04mg Fa Syrup
  - *Ifa (CAR\COL): 0.0638 per Ml (375)
IRON 3 HYDROXY POLYMALTOSE

Indications:
Iron deficiency anemia.

Cautions/Side Effects:
Occasional G.I. upset.

Dose:
One tablet, 10ml syrup or 2ml drops contains 100mg elemental iron.
Syrup: Infants: 2.5ml-5ml daily, Pediatric: 5ml 1-2 times daily. Adult: 5ml 2-3 times daily. Tablet: One tablet 1-3 times daily.
Drops: Infants: As a supplement 2mg/kg/day; as a therapeutic dose 6mg/kg/day.

Preparations:
Syrup
*Hemafed (FED\ALA); 0.0439 per ml
50mg/ml
*Hemafed Paed (FED\ALA); 5.2 per Bott
50mg/ml Syrup
*Orofer (EMC\COL); 3.5 per Bott (1)

IRON 3 HYDROXY POLYMALTOSE/FOLIC ACID

Indications:
Prophylaxis of iron and folic acid deficiencies.

Cautions/Side Effects:
Occasional G.I. upset.

Dose:
One tablet daily.

Preparations:
100mg/350mcg Tablet
*Orofer Chewable (EMC\COL); 0.13 per Tab (30)
100mg/550mcg Capsule
*Orofer (EMC \ COL); 0.1615 per Cap (30)

20:12:04:08 COUMARIN DERIVATIVES

WARFARIN SODIUM (PRODUCTS ARE NOT INTERCHANGEABLE).

Indications:
Prophylaxis and treatment of venous thrombus and its extension. Also see information on anticoagulants on p. 181.

Caution/Side Effects:
Haemorrhage. Prothrombin times should be determined daily at start of therapy. The following drugs may delay coagulation or increase prothrombin time. Aspirin, phenylbutazone, tamoxifen, indomethacin, dipyridamole, clofibrate and barbiturates. Avoid use with Gingko Biloba, garlic, St. John’s Wort and Papaya, green leafy vegetables, soya products.

Dose:
2-10mg daily for maintenance.

Preparations:
1mg Tablet
*Warfarin (TAR \ BRY); 0.0826 per Tab (60)

2mg Tablet
*Warfarin (TAR \ BRY); 0.0842 per Tab (60)

3mg Tablet
*Warfarin (TAR \ BRY); 0.0845 per Tab (60)

4mg Tablet
*Warfarin (TAR \ BRY); 0.0872 per Tab (60)

5mg Tablet
*Warfarin (TAR \ BRY); 0.0893 per Tab (60)
20:12:04:16 HEPARINS

DALTEPARIN

Indications:
Prophylaxis of ischemic complications and deep vein thrombosis.

Caution/Side Effects:
See Heparin Sodium.

Dose:
Thromboprophylaxis in abdominal surgery: 2500-5000 iu s.c. 1-2 hours before surgery then once daily for 5-10 days after surgery.
Unstable Angina: 120 iu/kg to a maximum of 10,000 iu s.c. every 12 hours given with 75-165mg Aspirin daily for 5-8 days.

Preparations:
10000iu Injection *Fragmin (PFI STO); 16.769 per Syrn
2500iu Injection *Fragmin (PFI STO); 6.515 per Syrn
5000iu Injection *Fragmin (PFI STO); 8.617 per Syrn

ENOXAPARIN SODIUM

Indications:
Prevention of DVT in orthopedic, abdominal and gynaecologic surgical procedures. May also be used in DVT and pulmonary embolism.

Caution/Side Effects:

Dose:
Unstable Angina: 1mg/kg s.c. every 12 hours for 2-12 days in conjunction with aspirin therapy (100-325mg once a day) DVT
**Heparins**

**Prophylaxis:** 20-40mg s.c. 2 hours prior to surgery and then every 24 hours or 30mg every 12 hours for 7-10 days. **DVT Treatment:** 1.5mg/kg every 24 hours for at least 5 days.

**Preparations:**

- **20mg Injection**
  - *Clexane (SFA\COL); 8.745 per Syrn*
  - *Enoxaparin Prefill Syrn (CIP\BKL); 5.035 per Syrn*

- **40mg Injection**
  - *Clexane (SFA\COL); 10.765 per Syrn*
  - *Enoxaparin (CIP\BKL); 6.605 per Syrn*

- **60mg Injection**
  - *Clexane (SFA\COL); 15.88 per Syrn*
  - *Enoxaparin (CIP\BKL); 10.805 per Syrn*

- **80mg Injection**
  - *Clexane (SFA\COL); 19.645 per Syrn*
  - *Enoxaparin (CIP\BKL); 12.205 per Syrn*

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**HEPARIN SODIUM**

**Indications:**

Used to prevent thrombus formation or the extension of existing thrombus.

**Caution/Side Effects:**

Exercise caution in the elderly and patients with history of peptic ulcer. Since heparin is derived from animal tissue use with caution in patients with history of asthma, or allergy. Haemorrhage, thrombocytopenia, osteoporosis, alopecia. *c.f. prescribing in liver and renal disease p. 14; 30.*

**Dose:**

- i.v. 5000 units loading dose followed by 25 units/kg/hr given continuously or divided into 4 hourly bolus. s.c. 5000 units 2 hours before surgery followed by 5000 units every 8-12 hours or until patient is ambulant.
Preparations:
1000u Injection
*Heparin (CPP(COL)); 3.2990 per Vial
5000u/ml Injection
*Heparin (BRA(COL)); 9.0200 per Vial
*Heparin (CPP(COL)); 9.2040 per Vial
*Heparin (DIL(BKL)); 8.2104 per Vial

20:12:18 PLATELET AGGREGATION INHIBITORS
CLOPIDOGREL

Indications:
Arteriosclerotic vascular disease, cerebrovascular accident, yocardial infarction, peripheral arterial occlusive disease.

Caution/Side Effects:
The combination of aspirin and clopidogrel in patients with recent stroke who are at risk for recurrent ischemic events has not been shown to be more effective than clopidogrel alone; the combination has been shown to increase major bleeding. Clopidogrel should be discontinued 5 days prior to elective surgery if antiplatelet effect is not desired. Chest pain, hypertension, purpuric disorder, rash, hypercholesterolemia, abdominal pain, constipation, diarrhea, gastritis, indigestion, epistaxis, purpura, arthralgia, backache, headache, acute myocardial infarction, rebound effect, atrial fibrillation, congestive heart failure, erythema multiforme, gastrointestinal hemorrhage, gastrointestinal ulcer, agranulocytosis, thrombotic thrombocytopenic purpura, hepatitis, abnormal liver function tests, anaphylaxis, epidural hematoma, intracranial hemorrhage, intraocular hemorrhage, abnormal renal function, acute renal failure, non-cardiogenic pulmonary edema.

Dose:
75mg once daily. Dosage adjustment is not necessary in moderate renal disease, liver disease or in geriatric patients. Use with caution in severe hepatic or renal impairment.
Preparations:
75mg Tablet
*Antiplar (EMC\COL); 0.2993 per Tab (30)
*Clopidogrel (BCHLAS); 0.3514 per Tab (30)
*Clopidogrel (HEA\ALA); 0.32 per Tab (30)

20:12:20 THROMBOLYTIC AGENTS
ALTEPLASE

Indications:
Intravenous alteplase is effective in producing recanalization of occluded coronary arteries following acute myocardial infarction. Also effective in the treatment of acute massive pulmonary embolism and stroke and may have utility in other vascular disorders such as deep vein thrombosis. Administration of alteplase into occluded central venous access devices is effective for restoration of catheter function.

Caution/Side Effects:
Bleeding complications, reperfusion arrhythmias and reinfarction are the primary concerns of therapy.

Dose:
The recommended dose to produce recanalization following myocardial infarction is 100mg given as a “front-loaded”\binfusion.

Preparations:
50mg Injection
*Actilyse (BOE\STO); 2556.6600 per Vial

20:24 HEMORRHEOLOGICS
PENTOXIFYLLINE

Indications:
Peripheral vascular disease. Pentoxifylline is indicated as an adjunct to surgery for treatment of intermittent claudication related to chronic occlusive arterial disease of the limbs.
Caution/Side Effects:
May take 2-4 weeks to see onset of action. Hypotension, nausea, dizziness.

Dose:
400mg 2-3 times daily with meals.

Preparations:
400mg Tablet
*Apo-Pentoxifylline SR (APO\COL); 0.1381 per Tab (90)
*Pentoxifylline (CIP\BKL); 0.1311 per Tab (90)

20:28:08 ANTIHEPARIN
PROTAMINE SULPHATE

Indications:
Treatment of heparin overdose.

Caution/Side Effects:
Overdosage leads to anticoagulant effects. Flushing, hypotension, bradycardia.

Dose:
1mg neutralises 100 units of heparin when given within 15 minutes. Protamine is given I.V.

Preparations:
10mg/ml Injection
*Prosluf (CPP\COL); 5.845 per Amp

20:28:16 HEMOSTATICS

ABSORBABLE GELATIN SPONGE

Indications:
Hemostatic agent in surgical procedure.
Hemostatics

Caution/Side Effects:
Hypersensitivity reactions

Dose:
Can absorb many times its weight in blood.

Preparations:
80x50x10
*Absorbable Gelatin Sponge (VIBKBL); 65.2600 per Pack

AMINOCAPROIC ACID
Indications:
Increase Fibrinolysis.

Caution/Side Effects:
Allergic reactions, chills, fever.

Dose:
Initial priming dose 4-5g during the first hour, followed at 1 hour intervals of 1-1.25g.

Preparations:
250mg/ml Injection
*Aminocaproic Acid (HOSPHA); 3.4180 per Vial

FACTOR IX HUMAN HEAT TREATED (PURE)
Indications:
Treatment of Hemophilia B.

Caution/Side Effects:
Hypersensitivity reactions.

Dose:
Depends on the desired increase in plasma IX levels. To calculate dose take body weight in kg multiplied by 1iu/kg multiplied by the desired increase in plasma factor IX.
Preparations:
600iu Injection
*Factor IX Complex (BAX\BRY); 694.6600 per Vial
*Immunine (BAX\BRY); 694.6600 per Vial

FACTOR VIII, ANTIHEMOPHILIC, HUMAN;

Indications:
Treatment of Hemophilia A

Caution/Side Effects:
Some patients develop antibodies.

Dose:
The dosage of factor VIII should be determined for each patient and will vary with the circumstances involving bleeding.

Preparations:
250iu Injection
*Factor VIII (c904303) (BAX\BRY); 175.01 per Vial
*Factor VIII (CHW\LAS); 201.84 per Vial
*Koate D.V.I (TCB\COL); 183.94 per Vial

FIBRINOGEN HUMAN

Indications:
Acute bleeding episodes in patients with congenital fibrinogen deficiency.

Caution/Side Effects:
Hypersensitivity reactions.

Dose:
Dose is individually based on circumstances.

Preparations
No Offers to Supply (Contact BDS for Supplies)
Cardiac Glycosides

These have a positive inotropic effect and reduce the size of a failing dilated heart leading to increased cardiac output and increased efficiency. They increase myocardial excitability and automaticity, depress conducting tissue and increase vagal activity. Digoxin’s half-life is more than 24 hours. The therapeutic blood level is 0.8 to 2.0mg/ml.

General Indications
(Digoxin)

Cardiac failure, atrial fibrillation, atrial flutter, paroxysmal atrial tachycardia.

Cautions/Side Effects
(Digoxin)

These usually occur at toxic serum levels above 2.0 mg/ml, but may do so in the therapeutic range especially in the elderly. Fatigue, anorexia, nausea, visual disturbances, muscle weakness, psychic symptoms, abdominal pain, dizziness, vomiting, cardiac disturbance - heart block, cardiac arrhythmias. Toxicity most likely with hypokalemia. Treat digoxin - induced heart block with atropine; PVC's and ventricular tachycardia with i.v. phenytoin. These drugs must be used with caution:

(1) following acute myocardial infarction;
(2) within 14 days of previous treatment with cardiac glycosides;
(3) in the presence of Quinidine treatment;
(4) in the presence of severe potassium imbalance;
(5) in renal insufficiency and in the elderly (most of whom have some renal impairment).
Dose Range (Digoxin)

Loading dose 0.75 - 1.5mg in first day (e.g. 0.5mg initially and 0.25mg every 6 - 8 hours until desirable effect is reached or toxicity occurs). Maintenance dose 0.125 - 0.25mg.

Children - oral: 25 - 35 mcg/kg every 6 hours until digitalization, then 25 - 35% of loading dose for maintenance.

Anti-Arrhythmics

The physiology of arrhythmias is complex and the action of drugs used in their treatment equally so.

CLASS I - Membrane stabilizers
CLASS II - Drugs which reduce sympathetic activity
CLASS III - Drugs which prolong the effective refractory period and duration of the action potential

CLASS IV - Drugs which interfere with calcium transfer into the cell

24:06 ANTI-LIPEMIC AGENTS

24:08 HYPOTENSIVE AGENTS

These drugs may act at any combination of the following sites:

1. The vessel wall unrelated to nerve ending e.g. diazoxide, hydralazine, nitrates, nitrates.
2. The sympathetic receptor - Beta blockers, e.g. propranolol, metoprolol.
3. The post ganglionic sympathetic nerve endings e.g. guanethidine, reserpine.
4. Sympathetic autonomic ganglia.
5. The CNS (the brain stem) e.g. reserpine, methyl-dopa.
TREATMENT PROTOCOL

ANGIOTENSIN CONVERTING ENZYME INHIBITORS

Angiotensin-converting enzyme inhibitors inhibit the conversion of angiotensin I to angiotensin II therapy causing peripheral vasodilation. They also block the production of aldosterone resulting in sodium and water excretion and the retention of potassium.

They should be used when thiazides and beta-blockers are contraindicated or where they fail as first line therapy. ACEIs may cause a rapid fall in blood pressure in some patients on thiazides, therefore discontinue thiazides 3 days before starting therapy with an ACEI.

Even though ACEIs have greater activity in patients with high renin levels, low doses of ACEIs and thiazides produce a similar effect in patients with low renin levels.

ACEIs have been shown to reduce mortality in heart failure. May cause some regression of left ventricular hypertrophy. Use with caution in patients with renal disease as ACEIs may occasionally cause impairment of renal function.

ACEIs may cause fetal or neonatal death or injury when used during the second or third trimester of pregnancy. When pregnancy is detected discontinue the ACEI as soon as possible.

DRUG INTERACTIONS

1. Loop and Thiazide Diuretics: Postural hypotension.

2. Potassium Sparing Diuretics/Potassium Supplements/Trimethoprim: hyperkalemia. Monitor potassium level. Caution patients against use of potassium containing salt substitutes or diet supplements.
3. Allopurinol: Steven Johnson’s Syndrome, skin eruptions, anaphylactic coronary spasm. Monitor patients for hypersensitivity reactions e.g. pruritus, chest pain, hypotension or bronchospasm

CALCIUM CHANNEL BLOCKERS

Calcium Channel Blockers interfere with the inward displacement of calcium ions through the slow channels of active cell membranes. They influence the myocardial cells, the cells within the specialized conducting system of the heart, and the cells in vascular smooth muscle.

There are important differences between the types of calcium channel blockers available as exhibited by a phenylalkylamine (verapamil), the dihydropyridines (nifedipine, amlodipine, felodipine, lacidipine, isradipine) and benzothiazepine (diltiazem).

Verapamil is used for the treatment of angina, hypertension and arrhythmias. Nifedipine has more activity on the smooth muscles and blood vessels than on the myocardium. Hence it is used for angina and hypertension.

Isradipine has a similar action to nifedipine but is only indicated for mild to moderate hypertension.

Diltiazem 60mg is for the prophylaxis and treatment of angina.

Calcium Channel Blockers have greater activity in patients with low rennin levels. Verapamil should be used with extreme caution in combination with beta-blockers.

Though gingival hyperplasia is a rare side effect, patients on long term Calcium Channel Blockers should have a good dental hygiene program.

DIAZOXIDE: A thiazide without diuretic actions; potent antihypertensive which acts by decreasing arteriole peripheral resistance with little effect on
veins. Used chiefly to obtain immediate control of severe hypertension and must be given rapidly i.v. as it is so extensively bound to plasma proteins.

HYDRALAZINE: Used in severe hypertension and as a vasodilator afterload in intractable heart failure. It reduces peripheral resistance by relaxing arterioles with little effect on veins. The compensatory sympathetic discharge induced by the hypotension causes reflex tachycardia and increased cardiac output. It must therefore be used with a beta blocker and a diuretic in treating hypertension. This does not occur in the case of the failing heart.

CENTRALLY ACTING DRUGS

METHYLDOPA: Acts by production of a false transmitter which is more persistent than the true transmitter noradrenaline. This enhance the agonist effect on the CNS and receptors that mediate inhibition of the sympathetic outflow. The chief advantage is that it causes less postural hypotension than guanethidine.

VASODILATING AGENTS

NITRATES: Causes a generalized dilation of venules and to a much lesser extent arterioles. Used in the treatment of angina at the onset of the attack; and in some case for prophylaxis.
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AMIODARONE

Indications:
Effective for the treatment of life-threatening recurrent ventricular fibrillation and tachycardia that has been unresponsive to adequate doses of other antiarrhythmic agents. It is also effective for recurrent and/or refractory supraventricular arrhythmias.

Cautions/Side Effects:
Severe toxicity, exacerbation of arrhythmias, bradycardia, hypotension, congestive heart failure, cardiac arrest, pulmonary toxicity, hepatotoxicity, hypo- or hyperthyroidism, nausea, vomiting, constipation, anorexia, tremor, ataxia, fatigue, headache, sleep disturbances, peripheral neuropathy, skin discoloration, phototoxicity and corneal microdeposits. Avoid in pregnancy and breast feeding. Avoid excess exposure to sunlight. May cause a blue gray colouration of skin.

Dose Range:
Adult: 200mg 3 times a day for 1 week, then 200mg twice daily for 1 week, then a usual maintenance dose of 200mg or less daily. 
Supraventricular arrhythmias: 600-1200mg/day for 1-2 weeks, tapered to 400-600mg daily for 1-3 weeks, gradually tapered to the lowest possible maintenance dose 200mg daily. 
Pediatric: Initial oral pediatric dosing has varied widely from 2.7-34mg/day for 7-14 days followed by a maintenance dose of 2.5 - 10mg/kg/day.

Preparations:
Tablet, 200mg
*Amiodarone (BCHLAS); 0.3093 per Tab (90)
*Amiodarone (CIPLAS); 0.2423 per Tab (90)
*Apo-Amiodarone (APOCOL); 0.1938 per Tab (90)
PROCAINAMIDE

Indications:
Treatment of ventricular arrhythmias with less effect on atrial class I, III and anticholinergic effects.

Caution/Side Effects:
Hypotension, nausea, vomiting, diarrhoea, giddiness, mental depression. With long term use - SLE type syndrome, agranulocytosis(rarely). Regular antinucleofactor (ANF) testing should be done on patients on long term procainamide. Discontinuation of treatment should be considered in any patient develops a positive ANF titre. N.B. Parenteral treatment can cause severe hypotension. C.f prescribing in liver and renal disease.

Dose:
Oral: 500mg - 1g stat, then 250mg -1g every 6 hours. Inj: 1mg/min i.v to a maximum of 10mg. Approved for use in the Public Sector only.

Preparations:
100mg/ml Injection
*Procainamide (HOS\PHA);  12.25 per Vial

TRIMETAZIDINE

Indications:
Effective in the treatment of chronic stable angina pectoris (orally) and has demonstrated beneficial antistatic actions in patients undergoing percutaneous transluminal coronary angioplasty (intracoronary use) and coronary artery graft surgery (oral pretreatment and use in cardioplegia solutions).

Caution/Side Effects:
Gastric burning and other G.I. disturbances. Use with caution in renal or hepatic insufficiency, unstable angina and hypertension.
Dose:
20mg 3 times daily.

Preparations:
20mg Tablet
*Trimetazidine (HEA\ALA); 0.1249 per Tab (90)

24:04:08 CARDIOTONIC AGENTS
DIGOXIN

Indications:
Cardiac failure, atrial fibrillation, atrial flutter, paroxysmal tachycardia.

Caution/Side Effects:
Nausea, vomiting, arrhythmias, heart block. Also see information on cardiac glycosides on page 195. *c.f. prescribing in renal disease p. 28.

Dose:
Adult: Oral rapid digitalization: 1-1.5mg in divided doses over a 24 hour period. Less urgent digitalization: 0.25-0.5mg daily in divided doses at the higher end of the scale. Pediatric: 10-35mcg/kg every 6 hours until digitalization, then 25mcg/kg/day.

Preparations:
0.125mg Tablet
*Digoxin (HEA\ALA); 0.0875 per Tab (60)

0.25mg Tablet
*Digoxin (STP\COL); 0.0283 per Tab (60)

0.25mg/ml Injection
*Digoxin (STP\COL); 0.7266 per Amp
*Digoxin SDV (BAX\BRY); 2.7452 per Amp

50mcg/ml Soln
*Lanoxin (GSK\COL); 0.5315 per MI (120)
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24:06 ANTILIPEMIC AGENTS

24:06:04 BILE ACID SEQUESTRANTS

CHOLESTYRAMINE

Indications:
An effective bile acid sequesterant for use in treating type IIa hypercholesterolemia. The drug has also been used for diarrhoea, for the pruritus associated with bile acid accumulation in the skin and for binding toxicologic agents.

Caution/Side Effects:
Constipation, abdominal discomfort, nausea, flatulence, vomiting, diarrhoea, heartburn, anorexia and indigestion. Deficiency of fat soluble vitamins may occur.

Dose:
Adult: Recommended starting dose is 4g once or twice daily. Maintenance dose: 8-16g daily in two divided doses. Maximum recommended daily dose: 24 grams daily. Pediatric 6-12 years: Anhydrous cholestyramine: 80mg/kg 3 times a day.

Preparations:
Granules
*Cholestyramine (PDN\PHA); 2.4130 per Sach (60)

24:06:06 FIBRIC ACID DERIVATIVES

GEMFIBROZIL

Indications:
Types IV & V Hyperlipidemia. Type Iib patients WITHOUT history or symptoms of co-existing coronary heart disease.

Caution/Side Effects:
Diarrhoea, constipation, flatulence, epigastric pain and dry mouth. Use with caution in patients with diabetes or hypothyroidism. Colestipol
HMG-CoA Reductase decreases effectiveness of gemfibrozil. *c.f. prescribing in liver and renal disease p. 13; 30. There is an increased incidence of myopathy (Rhabdomyolysis) if the statins are given with a fibrate. *See protocol pg. x section 5.*

**Dose:**
**Adult:** 1200mg daily in 2 divided doses 30 minutes before morning and evening meals.

**Preparations:**
- 300mg Capsule
  - *Apo-Gemfibrozil (APO\COL); 0.1332 per Cap (60)*
- 600mg Tablet
  - *Apo-Gemfibrozil (APO\COL); 0.218 per Tab (60)*

24:06:08 HMG-CoA REDUCTASE
ATORVASTATIN

**Indications:**
Effective in the treatment of hyper-cholesterolemia and hypertriglyceridemia

**Caution/Side Effects:**
Headache, diarrhoea, flatulence and mild elevations in liver enzymes. The risk of myopathy and/or rhabdomyolysis is increased when atorvastatin is taken concomitantly with cyclosporine, gemfibrozil, niacin, erythromycin, azole antifungals or grapefruit

**Dose:**
**Adult:** Initial dose 10-20mg once daily. Usual dose 10-80mg daily. Maximum dose 80mg daily. *See protocol pg. x section 5.*

**Preparations:**
- 10mg Tablet
  - *Atorec (EMC\COL); 0.0493 per Tab (30)*
  - *Atorvastatin (RBX\BKL); 0.0503 per Tab (30)*
# Pravastatin

**Indications:**
Primary hypercholesterolemia and mixed dyslipidemia, atherosclerosis, hypertriglyceridemia.

**Caution/Side Effects:**
Gastrointestinal complaints, headache, dizziness and elevations in liver transaminases. See protocol pg. x section 5.

**Dose:**
**Adult:** The recommended starting dose is 40mg daily with or without food. The elderly and patients with significant renal or hepatic disease and patients receiving immuno-suppressive drugs should begin treatment with 10mg daily. Maintenance dose is 10 - 40mg/ day at bedtime. See protocol pg. x section 5.

**Preparations:**
- 10mg Tablet  
  *Apo-Pravastatin (APO\COL); 0.2059 per Tab (30)
- 20mg Tablet  
  *Apo-Pravastatin (APO\COL); 0.3149 per Tab (30)
- 40mg Tablet  
  *Pravastatin (DRL\BKL); 0.4934 per Tab (30)
  *Pravastatin (TLM\COL); 0.4904 per Tab (30)

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# Simvastatin

**Indications:**
An adjunct to diet to reduce elevated total cholesterol, low-density lipoprotein cholesterol, Apo-lipoprotein B, and triglyceride levels,
and to increase high-density lipoprotein cholesterol in patients with primary hypercholesterolemia. It is also indicated for patients with coronary heart disease and hypercholesterolemia to reduce the risk of coronary death, nonfatal myocardial infarction, myocardial revascularization procedures.

**Caution/Side Effects:**
Headache, gastrointestinal complaints. Avoid with grapefruit juice.
See protocol pg. x section 5.

**Dose:**
Adult: 5-80mg daily administered in the evening. Coronary heart disease usual starting dose: 40mg. Hyperlipidemia usual starting dose: 20-40mg daily. See protocol pg. x section 5.

**Preparations:**
10mg Tablet
*Simlo (IPC\BRY); 0.0683 per Tab (30)
*Simvastatin (CPP\COL); 0.0364 per Tab (30)

20mg Tablet
*Simvastatin (ALK\PHA); 0.084 per Tab (30)
*Simvastatin (CPP\COL); 0.05 per Tab (30)

40mg Tablet
*Simvastatin (ALK\PHA); 0.137 per Tab (30)
*Simvastatin (CPP\COL); 0.0886 per Tab (30)

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**24:08 HYPOTENSIVE AGENTS**

**24:08:16 CENTRAL ALPHA ANTAGONIST**

**METHYLDOPA (B)**

**Indications:**
Hypertension.

**Caution/Side Effects:**
Rarely: Positive response to direct Coombs tests. Haemolytic anaemia, leukopenia, thrombocytopenia, hepatitis, gynaecomastia and lactation.
212 Fibric Acid Derivatives

Safe in asthmatics and pregnancy. Dose dependent sedation, headaches, nightmares, drug induced depression (may be severe), lightheadedness, dizziness, postural hypotension, nasal congestion, dry mouth, ejaculatory problems and loss of libido. c.f. prescribing in liver and renal disease p. 15; 32.

**Dose:**
**Adult:** Initial dose: 250mg 2-3 times daily then 500-2000mg in 2-4 divided doses. Maximum dose: 3g. **Pediatric:** 10mg/kg in 2-4 divided doses initially, to a maximum of 65mg/kg or 3g whichever is less.

**Preparations:**
- 250mg Tablet
  *Aldomet (ASGSTO); 0.103 per Tab (180)
- 500mg Tablet
  *Aldomet (ASGSTO); 0.1857 per Tab (180)

24:08:20 DIRECT VASODILATOR
HYDRALLAZINE HYDROCHLORIDE

**Indications:**
Moderate to severe hypertension. As a vasodilator decreasing afterload in intractable heart failure. To be used with a diuretic and beta blocker.

**Caution/Side Effects:**
May cause angina in predisposed patients. Reversible SLE type syndrome with prolonged use of more than 200mg/day. Must be used with caution in patients on MAOI's or tricyclics. Severe headache, palpitations, vomiting, nausea, tachycardia and diarrhoea. c.f. prescribing in renal disease p. 30.

**Dose:**
**Oral:** 50-100mg daily in 2 divided doses. Inj: 5-10mg I.M. or I.V. by slow titration over 20 minutes or 200-300mcg/min by slow iv infusion.
**Preparations:**

20mg Injection
*Hydralazine (AKI\BK); 18.556 per Vial

20mg/ml Injection
*Hydralazine (RIM\PHA); 17.03 per Vial

25mg Tablet
*Apo-Hydralazine (APO\COL); 0.0727 per Tab (120)

50mg Tablet
*Apo-Hydralazine (APO\COL); 0.0969 per Tab (60)

**MINOXIDIL (B)**

**Indications:**
Severe hypertension. To be used with a diuretic and beta blocker.

**Caution/Side Effects:**
Potent vasodilator. May cause hirsutism and considerable oedema due to salt and water retention.

**Dose:**
Initially 5mg daily as a single dose or in 2 divided doses, then 10-40mg daily in 1-2 doses to a maximum of 100mg daily.

**Preparations:**

10mg Tablet
*Minoxidil (MUPBK); 1.0899 per Tab (120)

2.5mg Tablet
*Minoxidil (MUPBK); 0.5199 per Tab (120)

**RILMENIDINE (B)**

**Indications:**
Mild to moderate hypertension.
**Nitrates and Nitrites**

**Caution/Side Effects:**
Dizziness, drowsiness, headache, asthenia and dry mouth.

**Dose:**
1mg once or twice daily. Reduce dose in renal dysfunction. Renal clearance < 15ml/min: 1mg every other day.

**Preparations:**
1mg Tablet
*Hyperium (SER|STO); 0.7177 per Tab (60)

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### 24:12 VASODILATING AGENTS

#### 24:12:08 NITRATES AND NITRITES

**GLYCERYL TRINITRATE**

**Indications:**
Used in treatment of angina at the onset of the attack, and in some cases for prophylaxis.

**Caution/Side Effects:**
Over dosage: palpitations, dizziness, blurred vision, headache, flushing followed by pallor. Postural hypotension, bradycardia, lightheadedness, reflux esophagus, contact dermatitis.

**Dose:**
**Acute angina treatment:** Sublingual Tablets (0.15 -0.6mg) or spray (0.4mg) may be repeated every 5 minutes until relief occurs; or 3 doses have been taken. To be taken under the tongue. Patients are to be dispensed one full bottle every 2-3 months. BDS WILL NOT HONOUR ANY PRESCRIPTIONS FOR LESS THAN ONE BOTTLE PER 2-3 MONTHS PERIOD DUE TO THE LOSS OF POTENCY WHEN TAKEN FROM THE ORIGINAL CONTAINER.

**Preparations**
0.4mg Spray
*Nitrolingual (GPB\COL); 8.85 per Bott (1)
ISOSORBIDE DINITRATE

Indications:
Short acting nitrate which reduces frequency and severity of anginal attacks. Used in conjunction with G.T.N.

Caution/Side Effects:
Hypotension, dizziness, headache, peripheral edema and tolerance.

Dose:
Angina: Initially 5-20mg 2-3 times daily, then 10-40mg 2-3 times daily.  
Angina Prophylaxis: 5-10mg SL every 2-3 hours or 15 minutes before activity.  
CHF: 5-15mg SL every 2-3 hours or 30-160mg/day in divided doses to a maximum of 240mg/day.

Preparations:
10mg Tablet
*Apo-ISDN (APO/COL); 0.0363 per Tab (180)

30mg Tablet
*Apo-ISDN (APO/COL); 0.0484 per Tab (90)

5mg Tablet
*Apo-ISDN S/L (APO/COL); 0.0328 per Tab (120)

ISOSORBIDE MONONITRATE

Indications:
Prophylaxis and long term therapy of recurrent angina.

Caution/Side Effects:
Postural hypotension, dizziness, syncope and vascular headache.  
Avoid alcohol. Take on an empty stomach with a full glass of water.
Dose:
Regular release: 20mg in the morning and a second dose 7 hours later. Sustained released: 30-240mg once daily. Single oral doses of regular release greater than 20mg are not recommended, they show no additional benefit and increase the risk of developing tolerance. The 60mg extended release may be broken but not chewed or crushed.

Preparations:
10mg Tablet
*Isosorbide Mononitrate (CIP\BKL); 0.0812 per Tab (120)
20mg Tablet
*Isosorbide Mononitrate (CIP\BKL); 0.1532 per Tab
60mg Tablet
*Apo-ISMN (APO\COL); 0.1211 per Tab (120)
*Duride (MNZ\COL); 0.1489 per Tab (120)

24:20 ALPHA ADRENERGIC BLOCKING AGENTS
PRAZOSIN HYDROCHLORIDE (B)

Indications:
Hypertension (second line treatment).

Caution/Side Effects:
To reduce incidence of syncope on first dose patient should be given 1mg at bedtime for first few doses. Diuretic should be used concomitantly. Dry mouth, drowsiness and nasal congestion. Dizziness, headache, lack of energy, weakness, palpitations, nausea and lightheadedness. c.f. prescribing in renal disease p. 35.

Dose:
Hypertension: Initially 1mg at bedtime. Maintenance: 3-20mg in 2-3 divided doses.

Preparations:
1mg Tablet
*Apo-Prazo (APO\COL); 0.0969 per Tab (120)
beta adrenergic blocking agents

2mg Tablet
*Apo-Prazo (APO\COL); 0.1211 per Tab (120)

5mg Tablet
*Apo-Prazo (APO\COL); 0.1453 per Tab (120)

TERAZOSIN

Indications:
Benign prostatic hyperplasia.

Caution/Side Effects:
Dizziness, lethargy, edema, headache and fatigue. THE FIRST DOSE MUST BE TAKEN AT BEDTIME.

Dose:
BPH: 1-10mg daily up to a maximum of 20mg. See protocol pg. xvi section 15.

Preparations:
10mg Tablet
*Apo-Terazosin (APO\COL); 0.3875 per Tab (120)

1mg Tablet
*Apo-Terazosin (APO\COL); 0.2422 per Tab (60)

2mg Tablet
*Apo-Terazosin (APO\COL); 0.2907 per Tab (60)

5mg Tablet
*Apo-Terazosin (APO\COL); 0.3391 per Tab (60)

24:24 BETA ADRENERGIC BLOCKING AGENTS

ATENOLOL (B)

Indications:
Hypertension, angina, arrhythmias. Acute myocardial infarction. Alternative to metoprolol.
**Beta Adrenergic Blocking Agents**

**Caution/Side Effects:**
Bronchospasm, fatigue, nausea, skin rash, bradycardia and cold extremities. Adjust dosage in renal failure since atenolol is excreted via the kidneys. See propranolol hydrochloride p. 196. *c.f. prescribing in renal disease p. 23.*

**Dose:**
**Hypertension:** 50-100mg daily. Dosage above 100mg/day is unlikely to produce further benefit to patient. **Angina:** 50-100mg daily in 1-2 doses. **Arrhythmias:** 50-100mg daily.

**WADA Status:** Banned in competition in wrestling, sailing, gymnastics. Banned in and out of competition in shooting.

**Preparations:**
100mg Tablet
*Atenolol (CIP\BKL); 0.025 per Tab (30)
*Atenolol (CPP\COL); 0.0296 per Tab (30)
*Atenolol (HEA\ALA); 0.0292 per Tab (30)

50mg Tablet
*Atenolol (CIP\BKL); 0.0114 per Tab (45)
*Atenolol (CPP\COL); 0.0232 per Tab (45)
*Atenolol (HEA\ALA); 0.0175 per Tab (45)
*Tenolol (IPC\BRY); 0.0150 per Tab (45)

**BISOPROLOL**

**Indications:**
Angina pectoris, Congestive heart failure.

**Caution/Side Effects:**
Hypoglycemia, rash, acne, skin irritation, pruritus, diaphoresis, nausea, vomiting, constipation. WADA Status: See Atenolol.

**Dose:**
**Angina:** 5-20mg once daily. **CHF:** Initially 1.25mg once daily to 10mg daily. A 7.5MG DOSE CAN BE OBTAINED FROM THE 2.5 AND 5MG TABLETS.
Preparations:
10mg Tablet
* Bisoprolol (BCH\LAS); 0.74 per Tab (30)

2.5mg Tablet
*Concor (MEK\COL); 0.914 per Tab (30)

5mg Tablet
*Bisoprolol (APL\STO); 0.574 per Tab (30)

CARVEDILOL
Indications:
Angina, Congestive heart failure, impaired left ventricular function.

Caution/Side Effects:
Angina, oedema, hypertension, hypotension, palpitations. WADA Status: See Atenolol.

Dose:
Angina: 12.5mg twice daily increased after 2 days to 25mg. CHF: 3.125mg twice daily for two weeks titrated to 25mg twice daily for patients less than 85kg and 50mg twice daily for those over 85kg.

Preparations:
12.5mg Tablet
*Coreg (ROC\BKL); 0.5479 per Tab (60)
*Coreg (ROCLAS); 0.5768 per Tab (60)

25mg Tablet
*Coreg (ROC\BKL); 0.6364 per Tab (60)
*Coreg (ROCLAS); 0.6729 per Tab (60)

6.25mg Tablet
*Coreg (ROC\BKL); 0.4086 per Tab (60)
*Coreg (ROCLAS); 0.4325 per Tab (60)
LABETALOL (B)

Indications:
Hypertension.

Caution/Side Effects:
Avoid in patients with history of bronchial asthma or chronic obstructive pulmonary disease, conditions associated with severe and prolonged hypotension, second and third degree AV block, severe sinus bradycardia. Adverse effects include bronchospasm, hepatotoxicity (severe), hyperkalemia, ventricular arrhythmia. WADA Status: See Atenolol.

Dose:
Adult: Hypertension: Initial dose 100mg twice daily. Titration: may increase dose in increments of 100mg twice daily every 2-3 days. Maintenance: 200-400mg twice daily. Pediatric: Initial dose 1-3mg/kg/day in 2 divided doses: MAX: 10-12mg/kg/day up to 1200mg/day in 2 divided doses.

Preparations:
100mg Tablet
*Hybloc (MNZ\COL); 0.2624 per Tab (60)

200mg Tablet
*Hybloc (MNZ\COL); 0.4575 per Tab (120)

METOPROLOL (B)

Indications:
Hypertension, angina pectoris, CHF, reducing mortality after myocardial infarction.

Caution/Side Effects:
Severe hypotension, bradycardia, congestive heart failure, palpitations, headache, insomnia, tiredness, dizziness, and depression. See propranolol hydrochloride. WADA Status: See Atenolol p. 230. c.f. prescribing in liver and renal disease p. 15.
Dose:

**Hypertension**: 50-100mg in 1-2 doses initially, then 100-450mg in divided doses. **Angina**: 100mg divided in 2 doses then 100-400mg in divided doses. **Arrhythmias**: 25-100mg daily. **CHF**: 6.25mg twice daily increasing over 4-6 weeks to a maximum of 50mg twice daily. **Migraine Prevention**: 50-200mg daily.

**Preparations**:

100mg Tablet

*Metoprolol (APO COL); 0.0533 per Tab (120)

*Metoprolol (CIP BKL); 0.042 per Tab (120)

200mg Tablet

*Metoprolol (APO COL); 0.1453 per Tab (60)

50mg Tablet

*Metoprolol (APO COL); 0.0484 per Tab (240)

*Metoprolol (CIP BKL); 0.0379 per Tab (240)

**PROPRANOLOL (B)**

**Indications**:
Supraventricular and ventricular arrhythmia associated with Wolff-Parkinson-White (W.P.W.) Syndrome and digoxin induced arrhythmia. Hypertension, thyrotoxicosis and the prophylaxis of migraine headaches.

**Caution/Side Effects**:
Dose to beta blockade:- bronchoconstriction, cardiac failure, reduced capacity for vigorous exercise, hypoglycemia, decreased peripheral blood flow. Not due to beta blockade:- fatigue, depression, sleep disturbances, G.I. upset, skin rash. WADA Status: See Atenolol. c.f. prescribing in liver and renal disease p.17; 35.

**Dose**:

**Adult**: 10-80mg two or three times daily to 80-400mg in 2-3 divided doses. Inj. i.v. 1mg/min to a maximum of 10mg.
222 Beta Adrenergic Blocking Agents

**Preparations:**

10mg Tablet
*Apo-Propranolol (APO\COL); 0.0242 per Tab (90)

1mg/ml Injection
*Propranolol (BCH\LAS); 3.445 per Amp

40mg Tablet
*Propranolol (STP\COL); 0.0242 per Tab (180)

80mg Tablet
*Apo-Propranolol (APO\COL); 0.0727 per Tab (150)

**S-ATENOLOL (B)**

**Indications:**
See Atenolol.

**Caution/Side Effects:**
See Atenolol.

**Dose:**
Initial dose 12.5mg once a day gradually increased to 50mg once a day.

*Note: S-Atenolol is the s-enantiomer of Atenolol. It provides the beta-1 blocker (CARDIAC) component at half the racemate dose with fewer side effects. S-Atenolol 25mg is equivalent to Atenolol 50mg. S-Atenolol 50mg is equivalent to Atenolol 100mg.*

**Preparations**

25mg Tablet
*Atpure (EMC\COL); 0.0769 per Tab (45)

50mg Tablet
*Atpure (EMC\COL); 0.1009 per Tab (45)
S-METOPROLOL SUCCINATE (B)

**Indications:**
See Metoprolol.

**Caution/Side Effects:**
See Metoprolol

**Dose:**
25mg-100mg once a day.

**Note:** S-Metoprolol is the S-enantiomer of Metoprolol. It provides the beta-1 blocker component at half the racemate dose. Safer in poor metabolizers of CYP2D6. S-Metoprolol 23.75mg is equivalent to Metoprolol 50mg. S-Metoprolol 47.5mg is equivalent to Metoprolol 100mg.

**Preparations:**
23.75mg Tablet
*Metpure-xl (EMC\COL); 0.1211 per Tab (120)
47.5mg Tablet
*Metpure-xl (EMC\COL); 0.2172 per Tab (120)

SOTALOL

**Indications:**
Used in acute and prophylactic management of life threatening ventricular tachyarrhythmias as an alternative to amiodarone.

**Caution/Side Effects:**
New or worsening of ventricular arrhythmias, fatigue, bradycardia, dizziness. WADA Status: Banned in and out of competition. Banned in competition only in gymnastics, modern pentathlon, shooting, wrestling. *c.f. prescribing in renal disease p. 36.

**Dose:**
Arrhythmia: 80mg twice daily initially increasing by 40-80mg every 2-3 days to a maximum of 160-320mg.
24:28 CALCIUM CHANNEL BLOCKING AGENTS

24:28:08 DIHYDROPYRIDINES

AMLODIPINE (B)

**Indications:**
Hypertension, chronic stable angina, vasospastic angina.

**Caution/Side Effects:**
Headache, peripheral edema, dizziness, flushing, tender or bleeding gums, rash. Avoid grapefruit juice.

**Dose:**
2.5mg-10mg daily. Dose reductions may be indicated in the elderly or those with hepatic failure, but not necessary in renal failure.

**Preparations:**
10mg Tablet
* Amlodipine (PFI STO); 0.0757 per Tab (30)
* Amlodipine (ALK PHA); 0.0205 per Tab (30)

5mg Tablet
* Amlodipine (ALK PHA); 0.0175 per Tab (45)
* Amlodipine (PFI STO); 0.047 per Tab (45)

NIFEDIPINE (B)

**Indications:**
Angina pectoris, hypertension. Raynaud's disease.
Calcium Channel Blockers, Miscellaneous 225

Caution/Side Effects:
Avoid the use of diuretics. Headache, flushing, dizziness. Concurrent use with grapefruit juice may cause severe muscle tenderness and pain. c.f. prescribing in liver and renal p. 15; 33.

Dose:
30-90mg to a maximum of 120mg/day.

Preparations:
20mg Capsule
*Nifedipine SR (CIP\BKL); 0.0398 per Cap (180)
20mg Tablet
*Nifedipine SR (HEA\ALA); 0.0399 per Tab (180)

NIMODIPINE

Indications:
Subarachnoid hemorrhage.

Caution/Side Effects:
Weight loss, cardiac arrhythmias, headache, depression, tinnitus.

Dose:
60mg every four hours for twenty-one days. Approved for use in the public sector only. See protocol pg. xvi section 16

Preparations:
30mg Tablet
*Nimotop (BSP\BKL); 0.698 per Tab
*Nimotop (BSP\COL); 0.698 per Tab

24:28:92 CALCIUM CHANNEL BLOCKERS, MISCELLANEOUS

DILTIAZEM (B)

Indications:
Hypertension. Prophylaxis of angina.
Caution/Side Effects:
Avoid grapefruit juice. Concurrent use with Cisapride may increase risk of cardiotoxicity. *c.f. prescribing in liver and renal disease p. 13; 28.

Dose:
Hypertension: 60-120mg twice daily or 180-240mg (SR) once daily.
Angina: 60-120mg three times daily to a maximum of 360mg.
Retard: 180-360mg daily.

Preparations:
120mg Capsule
*Apo-Diltiaz CD (APO\COL); 0.1817 per Cap (60)
120mg Tablet
*Diltiazem CD (CIP\BKL); 0.183 per Tab (60)
180mg Capsule
*Apo-Diltiaz CD (APO\COL); 0.218 per Cap (60)
180mg Tablet
*Diltiazem CD (CIP\BKL); 0.2367 per Tab (60)
240mg Capsule
*Apo-Diltiaz CD (APO\COL); 0.2301 per Cap (60)
*Diltiazem CD (CIP\BKL); 0.2833 per Cap (60)
60mg Tablet
*Apo-Diltiaz (APO\COL); 0.0969 per Tab (60)
90mg Tablet
Dilzem Retard (PFI\STO); 0.5267 per Tab (60)

VERAPAMIL (B)

Indications:
Angina pectoris, supraventricular arrhythmias, hypertension.
**Caution/Side Effects:**
Do not combine with beta blockers. Nausea, vomiting, hypotension. Avoid grapefruit juice. Concurrent use with caffeine may result in enhanced CNS stimulation. *c.f. prescribing in liver disease p. 18.*

**Dose:**
- **Arrhythmias:** 40-120mg 3 times daily; Angina: 80-120mg 3 times daily or sustained release as 120-240mg once daily; **Hypertension:** up to 480mg daily in divided doses. Break 240mg to get 120mg

**Preparations:**
- 120mg Tablet
  - *Apo-Verap (APO\COL); 0.1695 per Tab (60)
- 2.5mg/ml Injection
  - *Verapamil (HOSP\PHI); 1.685 per Amp
- 240mg Tablet
  - *Apo-Verapamil SR (APO\COL); 0.1938 per Tab (60)
  - *Verapamil SR (MN\COL); 0.2476 per Tab (60)
- 40mg Tablet
  - *Verapamil (TEV\COL); 0.0824 per Tab (90)
- 80mg Tablet
  - *Verapamil (CIP\L\AS); 0.0807 per Tab (90)
  - *Verapamil (TEV\COL); 0.0824 per Tab (90)

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**24:32 RENIN ANGIOTENSIN ALDOSTERONE INHIBITORS**

**24:32:04 ACE INHIBITORS**

**CAPTOPRIL (B)**

**Indications:**
Essential hypertension, congestive heart failure, diabetic nephropathy in patients with type 1 diabetes mellitus with retinopathy.

**Caution/Side Effects:**
ACE Inhibitors

Dose:
**Hypertension:** start with 12.5mg twice daily to a usual maintenance dose of 25-50mg twice daily. Maximum of 50mg three times daily is rarely needed. **Diabetic nephropathy:** usual dose 25mg 3 times daily. **Congestive heart failure:** 6.25-12.5mg 2-3 times daily. See protocol pg. xii section 6.

**Preparations:**
12.5mg Tablet
* Captopril (CIP\LAS); 0.0269 per Tab (90)
25mg Tablet
* Captopril (HEA\ALA); 0.0377 per Tab (180)
50mg Tablet
* Captopril (WOC\BKL); 0.0554 per Tab (90)

**ENALAPRIL (B)**

**Indications:**
Congestive heart failure, essential hypertension.

**Caution/Side Effects:**
Headaches, dizziness and fatigue. See notes on page 200. c.f. prescribing in renal disease p. 28.

**Dose:**
**Hypertension:** start with 5mg when used alone or 2.5mg with a diuretic. Maintenance dose: 10-20mg daily. Maximum 40mg daily. **Congestive Heart Failure:** 2.5mg daily. Dosage may be taken with a meal. See protocol pg. vii section 6.

**Preparations:**
10mg Tablet
* Corvo (TAD\PHA); 0.0377 per Tab (60)
* Enalapril (HEA\ALA); 0.0242 per Tab (60)
Lisinopril (B)

**Indications:**

**Caution/Side Effects:**
notes on page 200. headache and dizziness. c.f. prescribing in renal disease p. 31.

**Dose:**
**Hypertension:** Initial dose: 5-10mg daily. Usual dose: 20-40mg once daily.
**CHF:** 2.5mg daily to 5 - 40mg daily. *Acute myocardial infarction.* Doses 5-10mg daily. *See protocol pg. xii section 6.*

**Preparations:**
10mg Tablet
- *Lisinopril (APL\STO); 0.0889 per Tab (120)*
- *Lisinopril (WOC\BKL); 0.0786 per Tab (120)*

20mg Tablet
- *Cirpril (UNP\COL); 0.1198 per Tab (60)*
- *Lisinopril (WOC\BKL); 0.1251 per Tab (60)*

5mg Tablet
- *Lisinopril (HEA\ALA); 0.0622 per Tab (60)*

Ramipril (B)

**Indications:**
Mild to moderate hypertension, congestive heart failure.
Caution/Side Effects:
Nausea, cough, asthenia, abdominal cramps, headache, dizziness. c.f. prescribing in renal disease p. 36.

Dose:
Hypertension: 2.5mg initially once daily then 2.5-20mg in 1 or 2 divided doses. CHF: 1.25mg-2.5mg twice daily initially then 5mg twice daily. Renal impairment: Start at 1.25 once daily to a maximum of 5mg if treating hypertension and 2.5 if treating CHF. The 1.25mg dose is obtained by breaking the 2.5mg tablet. See protocol pg. xii section 6.

Preparations:
10mg Capsule
*Ramcor (IPC\BRY); 0.1882 per Cap (30)
10mg Tablet
*Ramipril (ROL\BKL); 0.1451 per Tab (30)
2.5mg Tablet
*Ramipril (CIP\BKL); 0.0567 per Tab (45)
*Ramipril (HEA\ALA); 0.0511 per Tab (45)
5mg Capsule
*Ramcor (IPC\BRY); 0.1289 per Cap (45)
5mg Tablet
*Ramipril (CIP\BKL); 0.08 per Tab (45)
*Ramipril (ROL\BKL); 0.0867 per Tab (45)

24:32:08 ANGIOTENSIN II RECEPTOR ANTAGONIST
LOSARTAN (B)

Indications:
Losartan is approved for use as monotherapy or combination therapy with a diuretic in mild to moderate hypertension. Drug is approved for diabetic nephropathy. Antihypertensive efficacy has been comparable to enalapril in many studies; the drug is also being evaluated in congestive heart failure.
Caution/Side Effects:
Headache, upper respiratory infection, dizziness and cough. Cough, dizziness, edema and nausea, vomiting were significantly more frequent in patients aged 76 years and over.

Dose:
Adult: 25-100mg orally once or twice daily is effective as either monotherapy or in combination with other antihypertensives (diuretics in particular) in mild to moderate hypertension. See protocol pg. xii section 6.

Preparations:
100mg Tablet
*Losartan MK (BON\COL); 0.6603 per Tab (30)
50mg Tablet
*Losartan (HEA\ALA); 0.0557 per Tab (30)
*Nusar (EMC\COL); 0.0467 per Tab (30)

TELMISARTAN (B)

Therapeutic Category:
Angiotensin II receptor antagonist.

Indications:
For the treatment of hypertension. It may be used alone or in combination with other antihypertensive agents.

Caution/Side Effects:
Headache, fatigue and nausea. See protocol pg. xii section 6.

Dose Range:
20-80mg once daily.

Preparations:
Tablet, 80mg
*Micardis (BOE/STO); 1.1900 per Tab. (30)
VALSARTAN (B)

Indications:
Treating essential hypertension. Valsartan is indicated for the treatment of heart failure in patients who are intolerant of angiotensin-converting enzyme (ACE) inhibitors. The drug is being studied for use in left ventricular hypertrophy.

Caution/Side Effects:
Headache, dizziness, viral infection, upper respiratory tract infection, cough, diarrhea, drowsiness, rhinitis, sinusitis, backache, stomach ache, nausea, pharyngitis and joint pain. The drug is contraindicated in pregnancy.

Dose:
Hypertension: The recommended oral dose is 80mg once daily, with or without food. The dose may be increased to 160mg daily if initial response is insufficient. Maximum effect is observed after 4 weeks of therapy. CHF: Initially 40mg twice daily to 80-160mg twice daily to a maximum of 320mg. See protocol pg. xii section 6.

Preparations:
160mg Tablet
*Diovan (NVS/COL); 1.1493 per Tab (30)
320mg Tablet
*Diovan (NVS/COL); 1.1493 per Tab (30)
80mg Tablet
*Diovan (NVS/COL); 1.1493 per Tab (30)

24:32:20 ALDOSTERONE RECEPTOR ANTAGONIST
SPIRONOLACTONE

Indications:
Congestive Heart Failure (CHF).
Caution/Side Effects:
May cause hyperkalemia in renal failure; gynaecomastia, nausea, vomiting, drowsiness. WADA Status: Banned in and out of competition. c.f. prescribing in renal disease p. 36.

Dose:
**Adults and Children over 12yrs**: 100-200mg daily to a maximum of 400mg daily. **Pediatric 1mth-12yrs**: 1-3mg/kg in 1 or 2 divided doses.

Preparations:
100mg Tablet
*Spirostone* (MNZ\COL); 0.3752 per Tab (120)
25mg Tablet
*Spirotonolate* (CIP\LAS); 0.0484 per Tab (120)
*Spirostone* (MNZ\COL); 0.1138 per Tab (120)
28:00 CENTRAL NERVOUS SYSTEM DRUGS

General Principles

The non-narcotic analgesics, aspirin and paracetamol remain the first line drugs of choice for relief of musculoskeletal conditions, while the narcotics are much more specified for severe pain of visceral origin. Often in severe musculoskeletal pain a combination of non-narcotic with one of the milder narcotic (codeine or dihydrocodeine) combination of peripheral and central action. Best results are then obtained by writing the two separately rather than in the expensive fixed combination preparations.

Paracetamol remains the first choice with least side-effects in mild to moderate pain. Aspirin is more potent but produces more side-effects especially gastric irritation. There is rarely any justification for use of the expensive non-steroidal anti-inflammatory drugs (NSAIDs) in self limiting acute painful conditions. These are mainly used for rheumatic disease as a safer, longer acting alternative to aspirin.

The narcotic analgesics are indicated for the severe pain of terminal malignant disease, skeletal fractures, labour, surgical pain and sometimes sickle cell crises. They produce tolerance and dependence with repeated use but this does not contraindicate their use. Concurrent use of chlorpromazine or prochlorperazine (stemetil) prevents nausea or vomiting.

Dose Response

It must be emphasized that there is a wide variation in response to analgesics, both for pharmacokinetic and psychological reasons. Thus paracetamol and aspirin may completely fail to reach effective blood levels if taken after a meal. After surgery, it is particularly important to titrate the dose regimen of morphine or pethidine to the individual patient. Thus 50mg i.m. 6 hourly may be effective in a little old lady while a large young male after major surgery may require 100mg 3 hourly. It is best to write a large loading dose, to reassess the patient on more than one occasion and to write a FLEXIBLE REGIMEN e.g. 75 - 100mg 3 - 6 hourly.
28:04 GENERAL ANAESTHETICS

Inhalational Agents

General Comments
Gaseous anaesthetics are mainly used for maintenance anesthesia after induction with an intravenous agent.

DRUGS

(1) Ketamine Hydrochloride

Indications/Comments
Colourless liquid, light sensitive. Used as an intravenous or intramuscular anaesthesia. Used as induction agent in patients with low cardiac output states not due to primary myocardial failure.

Sole agent in patients in whom the upper airway may be relatively inaccessible i.e. severe burns or trauma. In very low doses as a highly potent supplement during general anaesthesia using other agents.

Cautions/Side Effects
Main side effect due to production of hallucinations as part of emergence phenomena. This may be reduced by the use of a powerful sedative e.g. diazepam. Momentarily rise in blood pressure problems in hypertensive patients. Use of drug is contraindicated (relative only) in patients with psychiatric history and patients with uncontrolled hypertension.

(2) Penthrane
(Methoxyflurane)

Indications/Comments
Colourless liquid with characteristic odour. General anaesthetic used as inhalational agent. Powerful analgesic useful in sub-anaesthetic doses for pain relief especially in obstetrics. Maintains cardio-vascular stability during general anaesthesia. Good muscle relaxant during general anaesthesia. Multiple anaesthetics using penthrane in periods of greater than one month intervals may be associated with the development of fever and jaundice. High dosage may produce high output renal failure - causing decline in its use.

28:12 ANTI-CONVULSANTS

There are far more anti-convulsants drugs available that the average physician can use effectively, and even Neurologists today use a very limited range. The aim is to suppress fits by an effective concentration of drug in plasma (and hence the brain) at all times. Careful dose-adjustment is necessary to
achieve this and best results can be achieved with a single drug in 90% of cases. The old idea of adding drug after drug is now known to be much less satisfactory.

The principle therefore is to start with an “average” dose, modified if the patient is very large, very small, has liver damage or any other features which would affect dose-response. The dose may then be increased until fits are controlled. The balance between control of fits and side effects of overdose, requires care on the physician’s part and cooperation and compliance on the patient’s part. The need for compliance must be emphasized repeatedly.

Dose Frequency and Compliance

Most anti-epileptics can be given twice daily or even as a single dose at night. Three times daily regime is usually unnecessary and results in poor compliance as middday doses are most often forgotten. Three times daily regime is usually only needed if large doses are causing transient side effects associated with high peak levels.

Therapeutic Drug Monitoring

Optional plasma levels are now well established, and drug monitoring is now possible at the Queen Elizabeth Hospital for phenytoin, phenobaritone and carbamazepine. Plasma measurements are usually needed in three situations:

(i) to check compliance, if poor compliance is suspected;

(ii) if fits are poorly controlled in spite of moderate to large doses;

(iii) if drug toxicity is suspected.

Therapeutic blood levels are:

Phenytoin
10 - 20mcg/ml

Phenobarbitone
15 - 40mcg/ml

Carbamazepine
4 - 10mcg/ml

Drug Interaction

Anti-epileptics are especially prone to interactions with other drugs e.g. through induction or inhibition of metabolism.
28:16 PSYCHOTHERAPEUTIC AGENTS

SERTRALINE

Therapeutic Category
Serotonin Reuptake Inhibitor Antidepressant.

Indications
Major depressive disorder, obsessive-compulsive disorder, panic disorder, posttraumatic stress disorder, premenstrual dysphoric disorder and social phobia.

Dosage
Adult: Major depressive disorder, Obsessive-compulsive disorder: 50mg/day ORALLY as a single dose in the morning or the evening; Panic disorder: 25mg/day for 1 week, then increase to 50mg/day. Dosage may be increased at intervals of at least 1 week to a MAX dosage of 200mg/day. Child: Obsessive-compulsive disorder: children 6-12 years, 25 mg/day, 13-17 years, 50mg/day ORALLY as a single dose in the morning or the evening; dosage may be increased at intervals of at least 1 week to a MAX dosage of 200mg/day. Lower or less frequent doses should be used in liver disease. In geriatrics clearance is reduced therefore use lower initial dosages and adjust dosages at 2-3 week intervals.

Cautions/Side Effects
Antidepressants increased the risk of suicidal thinking and behavior in children, adolescents, and young adults in short-term studies with major depressive disorder (MDD) and other psychiatric disorders. Short term studies did not show an increase in the risk of suicidality with antidepressants compared to placebo in adults beyond age 24. Common side effects include sweating, constipation, diarrhea, indigestion, loss of appetite, nausea, vomiting, xerostomia, myalgia, dizziness, headache, insomnia, somnolence, tremor, disorder of vision, agitation, abnormal ejaculation, reduced libido, yawning, fatigue. Serious side effects include abnormal bleeding, hyponatremia, seizure, worsening of depression, hypomania, mania suicidal thoughts, suicide

Pregnancy: Category C
Breast feeding: the risk to the infant is unknown but may be of concern.
238 Antidepressants

28:17 ANTIDEPRESSANTS

General Indications
Loss of energy and drive, guilt feelings and persistent feelings of sadness and depression.

General Side-Effects
Anticholinergic - dry mouth, blurred vision, urinary retention (especially in prostate hyper trophy), constipation and confusional states. Tachycardia and static hypotension is particularly troublesome in the elderly. Sexual dysfunction may take the form of decreased libido, impaired erection or ejaculation. Weight gain is often seen and many of these patients develop a high frequency tremor. The initial dosage for the elderly should be about one third that used for the young adult.

Interactions
The tricyclics antagonize the action of the adrenergic neurone blocking drugs, e.g. guanethidine, anti-hypertensive effects with sudden rise in blood pressure. They may induce or aggravate cardiac arrhythmias.

MONOAMINE - OXIDASE - INHIBITORS (MAOI’S)

General Comments
A drug free period of about 3 days is advised when changing from tricyclics to MAOI’s. When changing from MAOI’s to tricyclics 10 drug free days are recommended.

Interactions
May cause hypertensive reactions with tyramine containing foods e.g. cheese, broad beans, meat and vegetable extracts, yeast extracts and alcohol. Avoid simultaneous use of cough and cold remedies and nasal sprays because of interactions with the sympathomimetic i.e. adrenaline, ephedrine, neosynephrine. Hypotensive crises may also occur when used with narcotic analgesics.
28:18 TRAQUELLISERS

MAJOR
TRAQUELLISERS
(Neuroleptics)

General Indications
Used in all forms of psychoses especially schizophrenia. Used in controlling disturbed and paranoid behaviour during the acute phase and for maintenance in low doses.

General Side-Effects
The following side effects apply generally to all neuroleptics:
(a) Central Nervous System effects - extrapyramidal movement disorders, including dystonia and oculogyric crises, parkinsonism, alakathisia and tardive dyskinesia. Patients often complain of sluggishness and weight gain, and at higher doses drowsiness.
(b) Autonomic effects - dry mouth, blurred vision, constipation and urinary retention. Tachycardia and postural hypotension are often seen.
(c) Endocrine Menstrual irregularities and galactorrhoca (lactation) are seen in a significant percentage.
(d) Skin and eye - allergic skin reactions and phototoxicity are uncommon.

MINOR
TRAQUELLISERS

General Indications and Comments
For the relief of anxiety and tension in neuroses, as a muscle relaxant and as a hypnotic. Used in the treatment of delirium tremors and status epilepticus in the case of Diazepam.

Note Well
Nitrazepam, Chlordiazepoxide and Diazepam are all slowly metabolised and accumulate with repeated doses, particularly in the elderly, who can sometimes lapse into a semicomatose state on a normal adult dose: Lorazepam has a much shorter half-life (3-8 hours) and is preferable for night sedation.
28:04:04 BARBITURATES (ANAESTHETICS)
THIOPENTONE SODIUM

Indications:
Induction of general anaesthesia; anaesthesia of short duration.

Caution/Side Effects:
Induction: 50-100mg intermittently every 30-40 seconds or as a single dose 3-5 mg/kg injection.

Dose:
c.f. prescribing in liver disease p. 18.

Preparations:
1g Injection
*Thiopenal (RTM\PHA); 3.5 per Vial

28:04:16 INHALATION ANAESTHETICS
ISOFLURANE

Indications:
General Anaesthetic.

Caution/Side Effects:
Isoflurane potentiates all commonly used muscle relaxants; therefore less than usual amounts of such agents are recommended.

Dose:
1-2.5%

Preparations:
Soln
*Aerrane (BAX\BRY); 23.55 per Bott
*Terrell Isoflurane (MRD\COL); 28.26 per Bott
SEVOFLURANE

Indications:
Anaesthesia.

Caution/Side Effects:
Hypotension, liver failure, respiratory depression, seizure.

Dose:
Adult or Paediatric: 0.5-3% concentration with or without concomitant use of nitrous oxide.

Preparations:
*Sevoflurane (BAX\BRY); 403.87 per Bott
*Sevoflurane (PIR\COL); 309.49 per Bott
*Ultane (100-4456-067-105) (ABB\PHA); 390.2 per Bott
*Ultane (4456-02) (ABB\PHA); 390.2 per Bott

KETAMINE

Indications:
Anaesthetic and analgesic.

Caution/Side Effects:
See p. 264. induction of dissociative anesthesia.

Dose:
1-4.5mg/kg intravenously or 6.5-13mg/kg intramuscularly. Sedation and analgesia: 2-4mg/kg I.m or 0.2-0.75mg/kg IV.

Preparations:
50mg/ml Injection
*Ketamine (RTM\PHA); 2.506 per Vial
242  General Anaesthetics Miscellaneous

PROPOFOL

Indications:
Induction and maintenance of general anaesthesia.

Caution/Side Effects:
Pain at injection site; apnoea; hypotension and CNS effects.

Dose:
The usual adult induction dose is 2-2.5mg/kg. Maintenance: 6-12mg/kg/hour. Dose adjustments are required in the elderly.

Preparations:
1% Injection
*Propofol (BRA\COL); 3.3580 per Vial
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*N.B: See Protocol Section 2 p. (viii) BNDF, 30th Edition - ANALGESICS/ANTIPYRETIC AGENTS*
28:08:04:24 SALICYLATES

ASPIRIN

Indications:
Mild to moderate pain and fever, myocardial and stroke.

Caution/Side Effects:

Dose:
300-900mg every 4-6 hours as necessary. Usual maximum 4g daily. Not suitable for children under one year. Soluble or E.C. may be best for chronic use. *See protocol pg. viii section 2 (iii) and (iv) for maximum reimbursable quantities.

Preparations:
325mg Tablet
*Aspirin (RIMPHA); 0.0194 per Tab (240)
*Aspirin E.C. (RIMPHA); 0.0431 per Tab (240)
*Aspirin E.C. (CPCBKL); 0.0188 per Tab (240)

75mg Tablet
*Aspirin (CPCBKL); 0.0253 per Tab (60)

81mg Tablet
*Aspirin E.C. (HEAALA); 0.0156 per Tab (60)
*Aspirin E.C. (RIMPHA); 0.0149 per Tab (60)

28:08.04.92 OTHER NONSTEROIDAL ANTI-INFLAMMATORY AGENTS

DICLOFENAC POTASSIUM

Indications:
Short term treatment of mild to moderate pain where rapid onset of action is desired. Not supplied for chronic anti-inflammatory conditions.
Caution/Side Effects:
Under Diclofenac Sodium.

Dose:
**Pediatric:** 0.5-1 mg/kg 1 dose every 4-6 hrs po or sc (maximum of 3 mg/kg). Do not use IV in children under 2 yrs. **Susp:** 5-7 years 1 teaspoonful 3 times daily. 8-10 years 1 ½ teaspoonful 3 times daily. **Tabs:** Over 10 years 25-50mg three times daily. Usually no more than a 5 day supply is needed. Mild to moderate pain or primary dysmenorrhea: 100mg initially, then 50mg 3 times daily to a maximum of 150mg daily. *See protocol pg. ix section 3.*

Preparations:
1.5% Drops
*Cataflam (NVS\COL);  10.1700 per Bott (1)*

1.8mg/ml Suspension
*Cataflam (NVS\COL);  0.07440 per Ml (120)*

12.5mg Suppos
*Cataflam (NVS\COL);  1.0170 per Supp (10)*

25mg Tablet
*Cataflam (NVS\COL);  0.4695 per Tab (21)*

25mg/ml Inj
*Cataflam (NVS\COL);  3.3420 per Vial*

50mg Tablet
*Diclofenac Potassium (HEA\ALA);  0.0525 per Tab (21)*

DICLOFENAC SODIUM

Indications:
Pain and inflammation in rheumatic disorders in patients intolerant or resistant to aspirin and indomethacin.

Caution/Side Effects:
G.I. irritation; allergic disorders (as for aspirin) but less frequent. *c.f. prescribing in liver and renal disease p. 13; 28.* Take with food.
Dose:
Tabs: 25-50mg every 6-8 hours or 75-150 mg in divided doses; or 100mg daily as a single dose using the Retard preparation. Inj.: I.M. 25-50mg every 6-8 hours. Supp: 50mg at night or 50mg every 6-8 hours if tablets are not tolerated. See protocol pg. ix section 3.

Preparations:
100mg Tablet
*Diclofenac Sod SR (HEA\ALA); 0.0393 per Tab (14)
*Diclomove SR (EMC\COL); 0.0336 per Tab (14)

25mg Tablet
*Apo-Diclo (APO\COL); 0.0606 per Tab (100)

25mg/ml Iv/im Injection
*Diclofenac Sod (LPH\PHA); 0.4540 per Amp
*Diclofenac Sod (RTM\PHA); 0.4535 per Amp
*Diclofenac Sod (RTM\PHA); 0.4600 per Amp

50mg Suppos
*Voltaren (NVS\COL); 1.187 per Supp (10)

50mg Tablet
*Diclofenac Sod (HEA\ALA); 0.0215 per Tab (42)

75mg Tablet
*Diclofenac Sod SR (HEA\ALA); 0.0910 per Tab (28)

IBUPROFEN

Indications:
Mild to moderate pain. Alternative to aspirin or indomethacin, with less side effects.

Caution/Side Effects:
G.I. irritation; allergic disorders (as for aspirin) but less frequent. May administer with meals or milk if G.I. upset occurs. c.f. prescribing in liver and renal disease p. 14; 31.
Dose:
Adult: 400mg 3-4 times daily. Do not exceed 2400mg total daily dose. Pediatric: 4-10mg/kg every 6-8 hours to a maximum of 40mg/kg/day. See protocol pg. ix section 3.

Preparations:
20mg/ml Suspension
*Ibufen (CAR\COL); 0.0359 per Ml (125)
*Ibuprofen (CIP\BKL); 0.035 per Ml (120)

400mg Tablet
*Ibuprofen (ALK\PHA); 0.0338 per Tab (120)
*Ibuprofen (CIP\BKL); 0.0258 per Tab (120)
*Ibuprofen (HEA\ALA); 0.0404 per Tab (120)

INDOMETHACIN

Indications:
Pain and inflammation in rheumatic/musculo-skeletal disorders e.g. gout.

Caution/Side Effects:
G.I. upset, frontal headaches, dizziness, abdominal pain, constipation, diarrhea. Contraindicated in peptic ulcers, salicylate hypersensitivity. c.f. prescribing in liver and renal disease p. 14; 33.

Dose:
25-50mg 2-4 times daily, or 75mg as the sustained release capsule once daily. Take with milk, antacids or after meals for chronic use. See protocol pg. ix section 3.

Preparations:
100mg Suppos
*Arthrexin (MNZ\COL); 1.3923 per Supp (10)
Opiate Agonists

NAPROXEN

Indications:
Mild to moderate pain and inflammation in rheumatic and musculoskeletal disorders

Caution/Side Effects:
May cause gastrointestinal irritation. *c.f. prescribing in liver and renal disease p. 15; 33.*

Dose:
1 tablet twice daily. See protocol pg. ix section 3.

Preparations:
250mg Tablet
*Apo-Naproxen (APO\COL); 0.0789 per Tab (28)
*Naproxen (CPP\COL); 0.0682 per Tab (28)

500mg Tablet
*Apo-Naproxen (APO\COL); 0.1332 per Tab (28)
*Naproxen (CPP\COL); 0.1211 per Tab (28)

28:08:08 OPIATE AGONISTS

CODEINE PHOSPHATE (N)

Therapeutic Category:
Narcotic (Opioid) analgesic.

Indications:
Mild to moderate pain in patients intolerant of aspirin.

Caution/Side Effects:
Syncope, nausea, constipation, sedation, dependence. May cause drowsiness. Warn patients re driving: Avoid alcohol and other depressants. Avoid in children under 1 year old. If upset stomach occurs take with food or milk.
252  Opiate Agonists

Dose:
Oral: 15-60mg every 4-6 hours. Maximum 240mg daily. Reduce dose by 75% in moderate and 50% in severe renal failure. See protocol pg. ix section 3.

Preparations:
Tablet, 15mg
*Codeine Phosphate (CPP\COL); 0.1511 per Tab (112)
*Codeine Phosphate (TEV\COL); 0.2086 per Tab (112)

Tablet 30mg
*Codeine Phosphate (CPP\COL); 0.125 per Tab (112)
*Codeine Phosphate (TEV\COL); 0.2114 per Tab (112)

Inj. 30mg/ml  Consult BDS (No offers to supply)

Inj. 60mg/ml  Consult the BDS (No offers to supply)

FENTANYL CITRATE

Indications:
Used parenterally for anesthesia, post operative pain and as a premedicant.

Caution/Side Effects:
Respiratory depression and apnea. Hypotension, bradycardia, seizures and delirium have been reported

Dose:
50-150 mcg/kg IV for anesthesia in cardiac surgery. 50-100 mcg IM effective as a premedicant and adjunct to regional anaesthesia.

Preparations:
50mcg/ml Injection
*Fentanyl Citrate (MTP\COL); 1.0070 per Amp
*Fentanyl Citrate (RTM\PHA); 0.6650 per Amp
*Fentanyl Citrate (RTM\PHA); 2.1400 per Vial
MORPHINE SULPHATE / HYDROCHLORIDE

Indications:
Severe visceral pain, post operative pain, terminal malignancies or one pain, myocardial infarction.

Caution/Side Effects:
Drowsiness, nausea, vomiting, constipation, depression of respiration and cough. Urinary retention, tolerance and dependence. Advisable to use concurrent anti emetics and prophylaxis of constipation. WADA Status: Banned only in

Dose:
5-20mg every 4 hours. Loading dose may be required. See protocol pg. ix section 2 (vii).

Preparations:
10mg Tablet
*M.O.S (VCL\COL); 0.9688 per Tab (112)

10mg/ml Injection
*Morphine (MTP\COL); 0.834 per Amp

15mg/ml Injection
*Morphine (MTP\COL); 1.214 per Amp

30mg Tablet
*M.O.S. SR (VCL\COL); 1.6148 per Tab (84)

TRAMADOL

Indications:
Treatment of a variety of pain syndromes.

Caution/Side Effects:
Drowsiness, dizziness, headache, fatigue, restlessness, nausea, vomiting, constipation, dry mouth, diaphoresis
Analgesics and Pyretics Miscellaneous

Dose:
50-100mg every 4-6 hours, has been effective in treating a variety of pain syndromes; maximum daily dose is 400mg. Dose reductions are suggested in patients with renal or hepatic dysfunction. 100mg modify release twice daily is equivalent to 50mg immediate release 4 times daily.

Preparations:
100mg Capsule
*Adamon LP (ASM\COL); 1.951 per Cap (28)
100mg Injection
*Adamon (ASM\COL); 2.96 per Vial
150mg Capsule
*Adamon LP (ASM\COL); 2.691 per Cap (28)
50mg Capsule
*Tramadol 50mg Capsules (TLM\COL); 0.0807 per Cap (56)
50mg/ml
*Tramadol (RBX\BKL); 2.0003 per Amp

PARACETAMOL

Indications:
Mild to moderate pain, fever

Caution/Side Effects:
May develop liver damage in overdose or with prolonged very high dosage. Take on empty stomach.

Dose:
Oral: 0.5-1g to a maximum of 4g daily. Pediatric: 0-11 months 40-80mg, 1-5 years 120-240mg, 6-12 years 250-500mg. Dosage may be repeated every 4-6 hours. Rectal: Adult over 12 years 0.5-1g, Child 1-
5 years 125-250mg, 6-12 years 250-500mg. Dosage may be repeated every 4-6 hours. See protocol on pg. viii. Section 1 and 2.

Preparations:
125mg Suppos
*Paracetamol (PDNPHA); 0.3055 per Supp (10)

250mg Suppos
*Para-Denk (EDKCOL); 0.296 per Supp (10)

32mg/ml Syrup
*Aramol (CARCOL); 0.0312 per Ml (300)

500mg Tablet
*Pacimol (IPCBRY); 0.0188 per Tab (180)
*Paracetamol (ALKPHA); 0.0183 per Tab (180)
*Paracetamol (CCCPHA); 0.0186 per Tab (180)
*Paracetamol (HEAALA); 0.0187 per Tab (180)
*Paracetamol (RIMPHA); 0.0184 per Tab (180)
*
Paracetamol (SCNPHA); 0.0184 per Tab (180)

28:10 OPIATE ANTAGONISTS
NALOXONE

Indications:
Narcotic overdose.

Caution/Side Effects:
Beware physical dependence on narcotics. Has now replaced nalorphine as antagonist of choice.

Dose:
0.4-2mg every 2-3 minutes to a maximum of 10mg. Pediatric: 10mcg/kg to 100mcg/kg if no response.

Preparations:
0.4mg/ml Injection
*Naloxone (RTMPHA); 3.4800 per Amp
28:12 ANTICONVULSANTS

28:12:04 BARBITURATES (ANTICONVULSANTS)

CLONAZEPAM (B)

Indications:
All forms of epilepsy but particularly status epilepticus.

Caution/Side Effects:
Withdraw drug slowly. Patients should be warned not to use drug with alcohol. Warn patients re driving and operating heavy machinery. Drowsiness limits chronic use. Irritability and mental changes.

Dose:
0.5mg 3 times daily initially, increasing by 0.5-1mg every 3 days to a maximum of 20mg/day in divided doses.

Preparations:
0.5mg Tablet
*Apo-Clonazepam (APO\COL); 0.0969 per Tab (180)
*Clonazepam (CIP\BKL); 0.0961 per Tab (180)

2mg Tablet
*Apo-Clonazepam (APO\COL); 0.1695 per Tab (300)

PHENOBARBITONE (B)

Indications:
Grand mal and focal seizures. Less potent but easier to manage than phenytoin.

Caution/Side Effects:
Avoid sudden withdrawal. Drowsiness, paradoxical excitement and restlessness in children and the elderly. Skin rashes. *c.f. prescribing in liver and renal disease p. 16; 34.

Dose:
60 - 180mg at night in a single dose.
Barbiturates (Anticonvulsants) 257

Preparations:
15mg Tablet
*Phenobarbital (TEV\COL); 0.2268 per Tab (180)
200mg/ml Injection
*Phenobarbitone (MTP\COL); 3.889 per Amp
30mg Tablet
*Phenobarbitone (STP\COL); 0.0484 per Tab (180)
*Phenobarbital (TEV\COL); 0.1521per Tab (180)
60mg Tablet
*Phenobarbitone (HAL\COL); 0.0824 per Tab (180)

PRIMIDONE (B) (Products are not interchangeable)

Indications:
As for phenytoin, but no longer recommended except for patients already well controlled with it.

Caution/Side Effects:
Avoid sudden withdrawal. Drowsiness, ataxia, nausea, rashes and folate deficiency. May decrease effectiveness of pill, may cause drowsiness and loss of appetite. Avoid alcohol. *c.f. prescribing in liver and renal disease p. 16; 35.*

Dose:
Initially: 100-125mg orally at bedtime for 3 days increasing the dose by 100-125mg/day in divided doses every 3 days to reach a dose of 250mg 3 times a day. Maintenance 250mg 3-4 times a day (maximum dose 2g/day).

Preparations:
250mg Tablet
*Primidone (RIM\PHA); 0.542 per Tab (120)
28:12:12 HYDANTOINS

PHENYTOIN NOMOGRAM
PHENYTOIN NOMOGRAM

Given a single reliable serum concentration on a given daily dose of phenytoin, the dose required to achieve a desired serum concentration can be predicted. A line is drawn connecting the observed serum concentration (left-hand scale) with the dose administered (centre scale) and extended to intersect the right-hand vertical line. From this point of intersection, another line is drawn back to the desired serum level (left-hand scale). The dose required to produce this level can be read off the centre scale.

Note: This nomogram will give misleading predictions if the serum concentration measurement is inaccurate, if the patient's compliance is in doubt, or if a change in concurrent treatment has been made since measurement of the serum concentration. (Reproduced with permission from Rambeck et al., 1979).

PHENYTOIN SODIUM (B) (Products are not inter-changeable)

Indications:
Similar to carbamazepine, but may be less specific for psychomotor seizures. Prophylaxis after cerebral trauma or surgery.

Caution/Side Effects:

Dose:
150-300mg daily, rarely more than 400mg, in one (night time) or two doses daily to a maximum of 600mg daily as a single dose or as 2 divided doses. In status epilepticus loading doses of 10-20 mg/kg given by slow infusion according to body weight, followed by maintenance doses of 100mg every 6-8 hours. Child 1 mth-12 yrs:1.5-2.5mg-kg twice daily. Adjust according to response and plasma phenytoin level to 2.5-5mg/kg twice daily to a max of 300mg/day. Child 12-18 yrs: Initially 75-150mg twice daily. Adjust as necessary to 150-200mg twice daily. Max 300mg twice daily.
Anticonvulsants Miscellaneous

Preparations:

- Dilantin (PFI SBI): 0.4053 per Cap (180)
- Dilantin (PFI STO): 0.4053 per Cap (180)
- Dilantin (PFI SBI): 0.4053 per Cap (180)
- Dilantin (PFI STO): 0.4053 per Cap (180)

- Dilantin (PFI SBI): 0.2355 per Ml (600)
- Dilantin (PFI STO): 0.2356 per Ml (600)

- Phenytoin (BAX BRY): 6.9432 per Amp
- Phenytoin (LCS STO): 1.7764 per Amp

28:12:92 ANTICONVULSANTS MISCELLANEOUS

CARBAMAZEPINE (B)

Indications:
Grand mal (tonic clonic), partial (focal) and complex partial psychomotor or temporal lobe seizures. Drug of choice. Trigeminal neuralgia.

Caution/Side Effects:

Dose:
Epilepsy: Adult: 100-200mg 2 times daily, increasing as necessary to 800-1200 mg/day daily in divided doses with food. CNS side effects are dose limiting. Trigeminal Neuralgia: 100mg 2 times daily.
Child 1 month-12 yrs: Initially 5mg/kg at night or 2.5mg/kg twice daily. Increase as necessary by 2.5-5mg/kg every 3-7 days. Maintenance: dose 5mg/kg 2-3 times daily.

Child 12-18 yrs: Initially 100-200mg 1 to 2 times daily increase slowly to maintenance of 400-600mg 2-3 times daily. DO NOT CRUSH OR CHEW CR TABS. DO NOT TAKE SYRUP WITH OTHER LIQUIDS.

Preparations:
100mg Tablet
*Carbamazepine (TAR\BRY); 0.1421 per Tab (120)
200mg Tablet
*Te
gretol (NVS\COL); 0.3232 per Tab (240)
*Te
gretol CR (NVS\COL); 0.3526 per Tab (240)
20mg/ml Syrup
*Te
gretol (NVS\COL); 0.0724 per Ml (900)
400mg Tablet
*Te
gretol CR (NVS\COL); 0.7087 per Tab (120)

GABAPENTIN (B)

Indications:
Partial seizure adjunct postherpetic neuralgia, diabetic peripheral neuropathy, and neuropathic pain.

Caution/Side Effects:
Peripheral edema, myalgia, ataxia, dizziness, hyperactive behavior (1.8%), nystagmus, somnolence, tremor, disorder of form of thought (1.7%), hostile behavior (4.9%), mood swings (4.7%) fatigue, stevens-johnson syndrome (rare), seizure (infrequent). Abrupt discontinuation may precipitate status epilepticus.

Dose:
Adult: Diabetic peripheral neuropathy: 900 to 3600 mg/day in 3 divided doses. Partial seizure: Adjunct: 12 yr. and older, 300 mg 3 times a day; may increase up to 1800 mg/day (divided into 3 doses).
Dosages up to 2400 mg/day have been well tolerated. **Postherpetic neuralgia:** 300 mg on Day 1, 300 mg twice a day on Day 2, and 300 mg 3 times a day on Day 3; may increase dosage up to 1800 mg/day (divided into 3 doses). Child - Partial seizure: Adjunct: age 3 to 12 yr., initial, 10 to 15 mg/kg/day in 3 divided doses; 3 to 4 yr., maintenance, titrate upwards over 3 days to 40 mg/kg/day in 3 divided doses; 5 to 12 yr., maintenance, titrate upwards over 3 days to 25 to 35 mg/kg/day in 3 divided doses.

**Preparations:**
300mg Capsule
*Gabapentin (BCH\LAS);  0.269 per Cap (180)*
*Gabapentin (PF\STO);  0.2626 per Cap (180)*

**MAGNESIUM SULPHATE**

**Indications:**
Eclampsia, alcohol withdrawal syndromes.

**Caution/Side Effects:**
c.f. prescribing in liver and renal disease p. 15; 31.

**Dose:**
4-30g daily in divided doses.

**Preparations:**
50% Injection
*Magnesium Sulphate (HOSP\HA);  2.208 per Amp*
*Magnesium Sulphate (MTP\COL);  1.305 per Amp*

**OXCARBAZEPINE (B)**

**Indications:**
Monotherapy or adjunctive therapy in treatment of partial seizures in adults: adjunctive therapy in children.
Caution/Side Effects:
As for Carbamazepine. A lower incidence of skin rashes but more pronounced hyponatremia than with carbamazepine have been reported.

Dose:
Adult: 300mg initially gradually increase until optimum clinical effect is seen. Maintenance doses of 600-1200mg daily in 2-3 divided doses. Maximum daily dose 2400 mg/day. It is recommended that the dose be halved in patients with renal impairment. Child 6-12 yrs: Initially 4-5mg/kg twice daily increase according to response up to 5mg/kg twice daily in weekly intervals to a max of 23mg/kg twice daily. Child 12-18 yrs: Initially 4-5mg/kg twice daily increase according to response by 300mg twice daily weekly to max of 23mg/kg twice daily.

Preparations:
300mg Tablet
*Trileptal (NVS\COL); 1.152 per Tab (120)
600mg Tablet
*Trileptal (NVS\COL); 2.2875 per Tab (120)
60mg/ml Suspension
*Trileptal (NVS\COL); 0.2005 per Ml (60)

SODIUM VALPROATE (B)
Indications:
Grand mal, petit mal, myoclonic and temporal lobe seizures.

Caution/Side Effects:
Nausea, vomiting. Ataxia, increase in appetite and weight gain. Take with food or milk. c.f. prescribing in liver disease p. 17.

Dose:
400mg-2.5g daily in 2-3 divided doses. Child 1 mth -12 yrs: Initially 5-7.5mg/kg twice daily, maintain at 12.5-15mg/kg twice daily. Child 12-18 yrs: Initially 300mg twice daily increase in steps of 200mg
daily at 3 day intervals. Maintain at 500mg-1g twice daily to a max of 1.25g twice daily.

**Preparations:**
100mg/ml Injection  
*Sodium Valproate (BEVBKL); 33.086 per Vial
40mg/ml Syrup  
*Epilem (SFA\COL); 0.1211 per Ml (750)

**SODIUM VALPROATE/VALPROIC ACID**

**Indications:**
All types of epilepsy. Most suitable for patients needing high doses, on polytherapy or on multiple daily doses.

**Caution/Side Effects:**
As for EPILEM.

**Dose:**
**Adult:** Initially 600mg daily in two divided doses, increasing by 200mg daily at 3 day intervals until seizure control is achieved or a maximum of 2500mg/day. **Pediatric over 20kg:** Initially 400mg/day in divided doses increasing in steps to a maximum of 35mg/kg/day.

**Preparations:**
200mg Tablet  
*Epilem Chrono (SFA\COL); 0.3633 per Tab (150)
300mg Tablet  
*Epilem Chrono (SFA\COL); 0.3848 per Tab (150)
500mg Tablet  
*Epilem Chrono (SFA\COL); 0.6413 per Tab (150)

**TOPIRAMATE (B)**

**Indications:**
Lennox-Gastaut syndrome, migraine, prophylaxis, partial seizure and tonic-clonic seizure as adjunct or monotherapy.
Caution/Side Effects:
Anemia, increased body temperature, dyspnea, hepatitis, hypohidrosis, leucopenia, liver failure.

Dose:
**Migraine prophylaxis:** 100mg/day in two divided doses. **Seizures:** 25-50mg/day initially, may increase dosage by 25-50mg/day at one-week intervals to the usual maintenance dose of 200-400mg/day in two divided doses. Dosages above 1600mg/day have not been studied. Efficacy in seizures not established in children under 2 years of age.

**Pediatric 2-16:** Begin at 25mg or less (range of 1-3mg/kg/day) at bedtime for the first week, then increase dosage by 1-3mg/kg/day (in two divided doses) at 1-2 week intervals to the usual effective dosage of 5-9mg/kg/day.

Preparations:
- 100mg Tablet
- *Topiramate (BCHLAB); 1.098 per Tab (120)*
- 25mg Tablet
- *Topiramate (APLASTO); 0.3872 per Tab (90)*
- 50mg Tablet
- *Topiramate (BCHLAB); 1.098 per Tab (90)*

**VALPROIC ACID (B)**

**Indications:**
Grand mal, petit mal, myoclonic and temporal lobe seizures.

Caution/Side Effects:
Do not chew capsules, swallow whole to avoid irritation of mouth and throat. If G.I. upset occurs it may be taken with food. Transient hair loss, thrombocytopenia, impaired liver function.

Dose:
250mg 2-3 times daily to a maximum of 2-5g daily.
Selective Serotonin Reuptake Inhibitors

Preparations:
No offer to supply (Contact BDS for Supplies)

28:16 PSYCHOTHERAPEUTIC AGENTS

28:16.04.20 SELECTIVE SEROTONIN REUPTAKE INHIBITORS

FLUOXETINE

Indications:
Effective in the treatment of depression, obsessive compulsive disorder, bulimia nervosa, and premenstrual dysphoric disorder.

Caution/Side Effects:
The main side effect is nausea; other side effects are hypotension, CNS symptoms (headache, anxiety, nervousness, insomnia), dry mouth, anorexia and visual disturbances; weight loss (but not weight gain) has occurred during therapy. Not recommended in children 8 yrs and under.

Dose:
Usual effective dose for depression, obsessive compulsive disorder and premenstrual dysphoric disorder is 20mg/day in the morning; however, doses up to 80mg/day have been used.

Preparations:
20mg Tablet
*Fluoxetine (CIPLAS); 0.039 per Tab (120)
*Fluoxetine (HEAALA); 0.0404 per Tab (120)

SERTRALINE

Indications:
Major depressive disorder, obsessive-compulsive disorder, panic disorder, posttraumatic stress disorder, premenstrual dysphoric disorder and social phobia.


Caution/Side Effects:
Antidepressants increased the risk of suicidal thinking and behavior in children, adolescents, and young adults in short-term studies with major depressive disorder (MDD) and other psychiatric disorders. Short term studies did not show an increase in the risk of suicidality with antidepressants compared to placebo in adults beyond age 24. Common side effects include sweating, constipation, diarrhea, indigestion, loss of appetite, nausea, vomiting, xerostomia, myalgia, dizziness, headache, insomnia, somnolence, tremor, disorder of vision, agitation, abnormal ejaculation, reduced libido, yawning, fatigue. Serious side effects include abnormal bleeding, hyponatremia, seizure, worsening of depression, hypomania, mania suicidal thoughts, suicide.

Pregnancy: Category C

Dose:
Adult - Major depressive disorder, Obsessive-compulsive disorder 50mg/day orally as a single dose in the morning or the evening; 
Panic disorder: 25mg/day for 1 week, then increase to 50mg/day. Dosage may be increased at intervals of at least 1 week to a maximum dosage of 200 mg/day. Child - Obsessive-compulsive disorder: children 6-12 yr, 25mg/day, 13-17 yr, 50mg/day orally as a single dose in the morning or the evening; dosage may be increased at intervals of at least 1 week to a maximum dosage of 200mg/day. Lower or less frequent doses should be used in liver disease. In geriatrics clearance is reduced therefore use lower initial dosages and adjust dosages at 2-3 week intervals.

Preparations:
100mg Tablet
*Sertraline (PF/STO); 0.2907 per Tab (30)
50mg Tablet
*Sertraline (PF/STO); 0.1618 per Tab (30)
AMITRIPTYLINE

Indications:
Agitated depression.

Caution/Side Effects:
Acute retention especially in prostatic hypertrophy. Tricyclics may antagonise the action of adrenergic neurone blocking drugs e.g. guanethidine, and may seriously impair their antihypertensive effects with sudden rise in B.P. This entire group of antidepressants may cause marked anti-cholinergic side effects and may alter cardiac rate and rhythm. Black tongue. Blurred vision, dryness of mouth, constipation, sexual dysfunction and excessive sweating, drowsiness.

Dose:
50-200mg daily in divided doses.

Preparations:
10mg Tablet
* Amitriptyline (CPP\COL); 0.0296 per Tab (150)
* Apo-Amitriptyline (APO\COL); 0.0242 per Tab (150)

25mg Tablet
* Amitriptyline (CPP\COL); 0.0375 per Tab (240)
* Apo-Amitriptyline (APO\COL); 0.0315 per Tab (240)

CLOMIPRAMINE

Indications:
Most useful in obsessional and phobic disorders.

Caution/Side Effects:
See amitriptyline hydrochloride. Weight gain, urinary retention, tremor. *c.f. prescribing in liver disease. p. 12.*
Dose:
10mg initially increasing to 50-100mg daily in divided doses.

Preparations:
10mg Tablet
*Apo-Clomipramine (APO(COL)); 0.0727 per Tab (180)

25mg Tablet
*Apo-Clomipramine (APO(COL)); 0.0969 per Tab (180)

IMIPRAMINE

Indications:
Treatment of juvenile enuresis. Found to be useful in panic disorders. Depressive illness.

Caution/Side Effects:

Dose:
Adult: Initially up to 75mg in divided doses, increasing to 150-200mg. Up to 150mg may be given as a single dose at bedtime. Pediatric 6-12 yrs: 25mg 1hr before bedtime increase dosage up to 50mg maximum. Pediatric over 12 yrs: 25mg 1hr before bedtime increase dosage up to 75mg maximum. Nocturnal enuresis 25mg at bedtime in child 6-8 yrs; 8-11 yrs 25-50mg, 11-18yrs 50-75mg at bedtime.

Preparations:
10mg Tablet
*Apo-Impiramime (APO(COL)); 0.0339 per Tab (240)

25mg Tablet
*Apo-Impiramime (APO(COL)); 0.0363 per Tab (240)
TRIMIPRAMINE MALEATE

Indications:
Depression. Particularly useful in the elderly.

Caution/Side Effects:
See amitriptyline hydrochloride. \textit{c.f. prescribing in liver disease p. 18.}

Dose:
50-75mg daily as a single dose 2 hours before bedtime. Maximum 300mg daily. Maintenance dose 75-150mg daily.

Preparations:
25mg Tablet
*Apo-Trimip (APOCOL); 0.0533 per Tab (180

28:16.08.04 ATYPICAL ANTIPSYCHOTICS
RISPERIDONE

Indications:
Manic bipolar I disorder, Schizophrenia.

Caution/Side Effects:
Increase body temperature, cerebrovascular accident in the elderly, drug-induced tardive dystonia, excessive thirst, hyperglycemia, hypothermia, seizure, syncope, tardive dyskinesia, transient ischemic attack in the elderly.

Dose:
\textbf{Manic bipolar I disorder:} (monotherapy or in combination with lithium or valproate) initial, 2-3mg orally once a day. (monotherapy or in combination with lithium or valproate) maintenance, dosage adjustments should be made in increments of 1mg/day at intervals of at least 24 hours. \textbf{Schizophrenia:} Initial, 1mg orally 2 times a day, with increases in increments of 1mg 2 times a day on the second and third day, as tolerated, to a target dose of 3mg 2 times daily on the
second day to a target dose of 4mg once daily on the third day. Maintenance, small, oral dose increments/decrements of 1-2mg are recommended at intervals of not less than 1 week. Maximal effect is usually seen within a range of 4-8mg/day. Doses above 6mg/day for twice-daily dosing were not demonstrated to be more efficacious than lower doses. Pediatric: Safety and effectiveness have not been established.

**Preparations:**

- 1mg Tablet
  - *Apo-Risperidone (APO\COL); 0.1211 per Tab (60)
  - *Risperidone (APL\STO); 0.3084 per Tab

- 2mg Tablet
  - *Apo-Risperidone (APO\COL); 0.1453 per Tab (60)
  - *Risperidone (APL\STO); 0.524 per Tab
  - *Risperidone (CPP\COL); 0.0547 per Tab (60)

- 3mg Tablet
  - *Risperidone (APL\STO); 0.592 per Tab
  - *Risperidone (CPP\COL); 0.0700 per Tab (60)

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**28:16.08.08 BUTYROPHENES**

**HALOPERIDOL**

**Indications:**
For excited psychotic states in high doses. Used in mania.

**Caution/Side Effects:**
Extrapyramidal side effects common but little drowsiness. May develop hypotension and cholinergic effects. Not approved in children less than 3yrs of age. *c.f. prescribing in liver and renal disease p. 14; 30.*

**Dose:**
- **Adult:** 0.5-20mg daily in divided doses. i.m: 2-10mg then 5mg up to every hour as needed. Pediatric 3-12 yrs: (15-40kg) Initial dose:
272 Phenothiazines

0.25mg-0.5mg/day in 2-3 divided doses increase by 0.25-0.5mg every 5-7 days maximum 0.15mg/kg/day. Usual maintenance: 

Agitation: 0.01-0.03mg/kg/day once daily. Non-Psychotic disorders: 0.05-0.075mg/kg/day in 2-3 divided doses. Psychotic disorders: 0.05-0.15mg/kg/day in 2-3 divided doses.

Preparations:
5mg Tablet
*Haloperidol (AMO); 0.0315 per Tab (180)
*Haloxem (REM); 0.0605 per Tab (180)

5mg/ml Injection
*Haloperidol (RTM); 0.9365 per Amp
*Haloperidol (STP); 0.6728 per Amp

28:16.08.24 PHENOTHIAZINES

CHLORPROMAZINE

Indications:
To control psychotic excitement.

c.f. prescribing in liver and renal disease p. 12; 26.

Preparations:
100mg Tablet
*Chlorpromazine (STP); 0.0525 per Tab (90)

25mg Tablet
*Chlorpromazine (STP); 0.0323 per Tab (90)

25mg/ml Injection
*Chlorpromazine (PDN); 0.76 per Amp
Phenothiazines

50mg Tablet
*Chlorpromazine (STP\COL); 0.0431 per Tab (90)

5mg/ml Syrup
*Chlorpromazine (ROL\BKL); 0.8505 per Ml (240)

FLUPHENAZINE

Indications:
Schizophrenia and other psychoses. Depot injections for ambulant psychotics.

Caution/Side Effects:
Parkinsonian extrapyramidal effects, drowsiness, hypotension..

Dose:
Adult: Tab: 2-10mg daily in divided doses. Inj: 12.5-100mg monthly.

Preparations:
1mg Tablet
*Apo-Fluphenazine (APO\COL); 0.0969 per Tab (150)

25mg/ml Injection
*Fluphenazine (RTM\PHA); 1.9300 per Amp
*Fluphenazine (RTM\PHA); 7.8700 per Vial
*Fluphenazine (RTM\PHA); 8.0500 per Vial

PERPHENAZINE

Indications:
Useful in paranoid states. [Schizophrenia]

Caution/Side Effects:
Less drowsiness and hypotension. Less blood dycrasias of jaundice. See chlorpromazine. c.f. prescribing in liver and renal disease p. 16; 34. Not recommended in children under 12yrs.

Dose:
Adult: 12-24mg daily in divided doses.
Phenothiazines

Preparations
4mg Tablet
*Apo-Perphenazine (APO\COL); 0.0969 per Tab (180)

PROCHLORPERAZINE
Indications:
Minimum use in psychiatry. Anti emetic.
Caution/Side Effects:
c.f. prescribing in liver and renal disease p. 17; 35. See chlorpromazine.
Dose:
Psychiatry: 25-100mg daily in divided doses. Anti-emetic: 5-10mg 2-3 times daily.
Preparations:
12.5mg/ml Injection
*Prochlorperazine (ANT\COL); 2.826 per Amp
5mg Tablet
*Carmetic (CAR\COL); 0.0325 per Tab (180)
5mg/ml Injection
*Prochlorperazine (BCH\LAS); 2.422 per Amp

THIORIDAZINE
Indications:
When heavy sedation is not required. For restless, confused geriatric patients at night. Schizophrenia and other psychoses.
Caution/Side Effects:
Causes less extrapyramidal problems. Possibility of retinal pigmentation after prolonged usage and at doses over the maximum. More likely to induce hypotension. Contraindicated in cardiac disease. c.f. prescribing in liver and renal disease p. 18; 38.
Thioxanthenes 275

Dose:
**Adult:** 150-300mg in 3 divided doses to a maximum of 800mg/day. 
**Elderly:** 30-100mg daily. **Pediatric:** 0.5mg/kg/day in divided doses to a maximum of 3mg/kg/day.

**Preparations:**
- 100mg Tablet
  *Ridazin (TAR\BRY); 0.2180 per Tab (240)
- 25mg Tablet
  *Ridazin (TAR\BRY); 0.1300 per Tab (360)

TRIFLUOPERAZINE

**Indications:**
Paranoid and withdrawn states.

**Caution/Side Effects:**
Extrapyramidal symptoms, ocular pigmentation. *c.f. prescribing in liver and renal disease p. 18; 38. Safety and efficacy have not been established in children under 6yrs of age.

**Dose:**
**Adult:** 3-30mg daily. **Pediatric 6-14 yrs:** Up to 4mg once daily.

**Preparations:**
- 1mg Tablet
  *Apo-Trifluoperazine (APO\COL); 0.0484 per Tab (180)
- 5mg Tablet
  *Apo-Trifluoperazine (APO\COL); 0.0363 per Tab (180)

28:16.08.32 THIOXANTHENES

FLUPENTHIXL DECANOATE

**Indications:**
Maintenance in schizophrenia and other psychoses. Depot injection for ambulant psychotics.
Caution/Side Effects:

Dose:
20-40mg repeated at 2-4 week intervals.

Preparations:
1mg Tablet
*Flupenthixol (WOC\BKL); 0.998 per Tab (90)
20mg/ml Injection
*Flupenthixol (RIM\PHA); 8.2300 per Amp
*Flupenthixol (WOC\BKL); 7.8600 per Vial

ZUCLOPENTHIXOL

Indications:
Schizophrenia acute psychosis mania, exacerbation of chronic psychosis. May be suitable for agitated or aggressive patients who may become overexcited with flupentixol.

Caution/Side Effects:
Sedation, dry mouth, nausea, extrapyramidal reactions, vomiting, dizziness, constipation, mental depression. *c.f. prescribing in liver and renal disease p. 18; 38.*

Dose:
Adult: Initially 15-30mg/day increased every 2-3 days by 10-15mg. Maintenance doses of 20-40mg are suggested. 2.5-5mg/day in elderly demented patients for agitation and aggression. I.M: 50-150mg every 48-72 hours.

Preparations:
25mg/ml Injection
*Zuclopenthixol (WOC\BKL); 24.2500 per Vial
28:20 RESPIRATORY-CEREBRAL STIMULANTS

DOXAPRAM

Indications:
Treatment of respiratory depression or apnea following anaesthesia.

Caution/Side Effects:
Increase in blood pressure and heart rate; dizziness, perianal

Dose:
i.v. infusion - 1.5-4mg per minute according to patient's response.

Preparations:
20mg/ml Injection
*Doxapram (ANT\COL); 6.459 per Amp

METHYLPHENDATE HYDROCHLORIDE

Indications:
Attention deficit disorders; narcolepsy.

Caution/Side Effects:
Restlessness, vertigo, physical dependence, slurred speech.

Dose:
Narcolepsy: 10-60mg daily in 2-3 divided doses 30-45 minutes before meals. Hyperkinetic states: Pediatric 6 and over: 5mg twice daily before breakfast and lunch increased if necessary to 60mg daily.

Preparations:
10mg Tablet
*Ritalin (NVS\COL); 0.3883 per Tab (60)

20mg Tablet
*Metadate ER (CTP\COL); 1.0434 per Cap (90)
*Methylphenidate (CTP\COL); 0.6187 per Tab (90)
28:24 ANXIOLYTICS, SEDATIVE- HYPNOTICS

ZOPICLONE

Indications:
Effective in the treatment of insomnia.

Caution/Side Effects:
Dryness of the mouth and a bitter taste, residual sedation/psychomotor impairment and rebound insomnia. The potential of the drug to produce physical dependence have been reported; psychiatric reactions, including hallucinations have also been described. Not recommended in children.

Dose:
Adult: 7.5mg orally at bedtime has been effective in the treatment of insomnia; prolonged use (longer than 28 days) should be avoided; dose adjustments are not required in renal insufficiency or in the elderly.

Preparations:
No Offers to Supply (Contact BDS for Supplies)

28:24:08 BENZODIAZEPINES (SEDATIVES)

ALPRAZOLAM

Indications:
Indicated for anxiety and panic disorders. It exhibits some antidepressant activity.

Caution/Side Effects:
Adverse effects include dizziness, sleepiness, syncope, confusion, impaired memory and co-ordination, decreased libido, increased appetite, depression, and constipation. Withdrawal seizures may occur if discontinued too rapidly. Safety and efficacy are not established in children under 18 yrs of age.
Dose:
**Anxiety:** 0.5-4mg daily divided into 2-4 doses. **Panic disorders:** 1-10mg daily divided into 3-4 doses.

**Preparations**
- 0.25mg Tablet
  *Alprazolam (PFI STO); 0.0561 per Tab (30)
  *Apo-Alpraz (APO COL); 0.0484 per Tab (30)
- 0.5mg Tablet
  *Alprazolam (PFI STO); 0.0522 per Tab (30)
  *Apo-Alpraz (APO COL); 0.0266 per Tab (30)
- 1mg Tablet
  *Alprazolam (PFI STO); 0.0574 per Tab (30)
  *Apo-Alpraz (APO COL); 0.0969 per Tab (30)
- 2mg Tablet
  *Alprazolam (PFI STO); 0.0825 per Tab (60)

**CHLORDIAZEPOXIDE**

**Indications:**
For short term relief of anxiety and tension in neuroses. Muscle relaxant and hypnotic. Also see Major Tranquiliser on p. 239.

**Caution/Side Effects:**
Dizziness, drowsiness, ataxia and slurred speech. Short term usage recommended because they are habit forming. Also see p.239. Not recommended in children under 6 yrs of age. c.f. prescribing in liver and renal disease p. 12; 25.

**Dose:**
**Anxiety:** 5-20mg three- four times daily. **Alcohol withdrawal Syndrome:** 50-100mg initially followed by repeated doses as necessary- max dose 300mg/day.
Benzodiazepines (Sedatives)

Preparations:
10mg Capsule
*Apo-Chlordiazepoxide (APO\COL); 0.0727 per Cap (180)

DIAZEPAM

Indications:
Short term use as tranquilliser, sedative, and in status epilepticus, acute alcohol withdrawal. Also see chlordiazepoxide

Caution/Side Effects:
See chlordiazepoxide above. Excessive drowsiness and confusion in the elderly. Flumazenil as Anexate is available at the Q.E.H. for the treatment of benzodiazepine overdosage. c.f. prescribing in liver and renal disease p. 13; 28.

Dose:
Oral: 2-30mg daily, usually best as a single night time dose. Status epilepticus: 10 20mg I.V. at 5mg/minute. Repeat cautiously if necessary. Acute alcohol withdrawal: 10mg 3-4 times a day for 1 day, then 5mg 3-4 times a day when necessary.

Preparations:
10mg Tablet
*Apo-Diazepam (APO\COL); 0.0339 per Tab (60)

2mg Tablet
*Apo-Diazepam (APO\COL); 0.0363 per Tab (120)

5mg Tablet
*Apo-Diazepam (APO\COL); 0.0291 per Tab (120)

5mg/ml Im/iv Injection
*Diazepam (RTM\PHA); 0.4995 per Amp
LORAZEPAM

Indications:
See Chlordiazepoxide hydrochloride p. 279. Quick relief of anxiety symptoms but action not sustained

Caution/Side Effects:
See Chlordiazepoxide. Hydrochloride p. 279. It is habit forming and on sudden withdrawal may cause seizures. *cf. prescribing in liver disease p. 15. Safety and effectiveness in children less than 12yrs old have not been established.

Dose:
Oral: 1-6mg daily in divided doses but may be gradually increased to 10mg daily in 2-3 divided doses. Elderly half adult dose. I.V: 4mg given by slow intravenous injection.

Preparations:
1mg Tablet
*Apo-Lorazepam (APO\COL); 0.0291 per Tab (240)
2mg/ml Injection
*Ativan (BAX\BRY); 2.3952 per Vial
*Lorazepam (HOS\PHA); 2.1800 per Vial

MIDAZOLAM

Indications:
Sedation with amnesia and in conjunction with local anaesthesia; premedication.

Caution/Side Effects:
Hiccoughs, nausea, coughing, headache, *cf. prescribing in renal disease p. 32.

Dose:
70mcg/kg until patient becomes drowsy; usual dose range 2.5-5.0mg.
Preparations:
5mg/ml Injection
*Midazolam (HOSPHE); 2.1100 per Amp
*Midazolam (RTMPHE); 1.545 per Amp
*Midazolam (RTMPHE); 3.9500 per Vial

NITRAZEPAM
Indications:
Short term use for insomnia.

Caution/Side Effects:
Avoid prolonged use. Use with caution in hepatic and renal impairment. Drowsiness, lightheadedness, disorientation, confusion. Effects may be more accentuated in elderly patients. c.f. prescribing in liver and renal disease p. 11; 23.

Dose:
Adult: 5-10mg at bedtime.

Preparations:
5mg Tablet
*Apo-Nitrazepam (APOCOL); 0.0727 per Tab (60)

28:24:92 ANXIOLYTICS, SEDATIVES AND HYPNOTICS MISCELLANEOUS
BUSPIRONE
Indications:
Treatment of anxiety disorders (equivalent to diazepam with less CNS effects).

Caution/Side Effects:
Dizziness, nausea, headache, blurred vision, anger/hostility, lightheadedness, excitement. Does not appear to be addictive, avoid drinking large amounts of grapefruit juice. Safety and efficacy is not established in children under 18 yrs of age.
Anxiolytics, Sedatives and Hypnotics Miscellaneous 283

**Dose:**
5-10mg three times daily.

**Preparations:**
10mg Tablet
*Apo-Buspirone (APO\COL); 0.0969 per Tab (90)

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**CHLORAL HYDRATE**

**Indications:**
Short term treatment of insomnia.

**Caution/Side Effects:**
G.I. upset. Dizziness, clumsiness, hang over effect. c.f. prescribing in liver and renal disease p. 11; 25. Take with plenty of water or milk.

**Dose:**
- **Sedation:** 250mg 3 times daily to maximum 2g daily.
- **Insomnia:** 500mg-1g 15-30 minutes before bedtime.
- **Pediatric sedation:** 1-12yrs: 30-50mg/kg maximum 1g 45-60mins pre procedure. 12-18yrs: 1-2g 45-60mins pre-procedure.

**Preparations:**
100mg/ml Syrup
*Chloral Hydrate (DNB\BKL); 0.1682 per Ml (473)

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**HYDROXYZINE**

**Indications:**
Effective for alleviating 1gE-mediated pruritis and urticaria; anxiety, alcohol withdrawal.

**Caution/Side Effects:**
Drowsiness, dry mouth, headache. c.f. prescribing in liver disease p. 14.
Dose:
Adults and children over 12yrs: Pruritis: 25-50mg 3-4 times daily. Anxiety: 50-100mg daily in divided doses. Pediatric 1-6yrs: 1mg/kg or 15-25mg at night increasing to 50mg daily in divided doses. Pediatric 7-12yrs: 15-25mg at night increasing to 50-100mg daily in divided doses. Alcohol withdrawal: 50-100mg, immediately, then every 4-6 hours as needed.

Preparations:
10mg Capsule
*Apo-Hydroxyzine (APO\COL); 0.0727 per Cap (90)
25mg Tablet
*Apo-Hydroxyzine (APO\COL); 0.0969 per Tab (120)
2mg/ml Syrup
*Atarax (GSK\COL); 0.0471 per Ml (100)

28:28 ANTIMANIC AGENTS
LITHIUM CARBONATE

Indications:
[Bipolar disorder], Acute manic phases and for prophylaxis in manic depressions.

Caution/Side Effects:
Ataxia and tremor, nausea, dry mouth, vomiting and diarrhoea. Blood level should be monitored and maintained in a safe therapeutic range of 0.5 to 1 meg/L. c.f. prescribing in renal disease p.31

Dose:
Acute Mania: Controlled Release Preparations: 1800mg/day in 2-3 divided doses. Maintenance 900-1200mg/day in 2-3 divided doses. Immediate Release: 600mg three times daily.
Preparations:
300mg Capsule
*Apo-Lithium Carb. (APO\COL); 0.0848 per Cap (120)
*Lithium Carbonate (ROL\BKLI); 0.119 per Cap (120)
400mg Tablet
*Lithicarb (MNZ\COL); 0.3342 per Tab (120)

28:32:92 ANTIMIGRAINE AGENTS MISCELLANEOUS
DIHYDROERGOTAMINE/PROPYPHENAZINE/CAFFEINE

Indications:
A minority of patients suffering from migraine and cluster headaches who are resistant to paracetamol, soluble aspirin.

Caution/Side Effects:
Nausea, vomiting, headache.

Dose:
Do not use more than 2 tablets in a 24 hour period or 6 tablets in a week.

Preparations:
125mg P/ 0.5mg D/ 40 Tablet
*Tonopan (NVS\COL); 0.3079 per Tab (20)

ERGOTAMINE/CAFFEINE

Indications:
Relief of acute migraine or recurrent vascular headache.

Caution/Side Effects:
Nausea and vomiting
Antimigraine Agents Miscellaneous

**Dose:**
1-2 tablets at onset of attack to a maximum of 4 tablets in 24 hours; not to be repeated at intervals of less than 4 days; maximum of 10 tablets weekly. *c.f. prescribing in liver and renal disease p. 13: 29.*

**Preparations:**
500mcg Tablet
*Cafergot (NVS\COL); 0.3501 per Tab (10)*

**FLUNARIZINE**

**Indications:**
Prophylaxis of migraine headache, peripheral vascular disease; vertigo.

**Caution/Side Effects:**
To be taken at bedtime to reduce CNS symptoms. Weight gain may occur in pediatrics. Sedation and drowsiness.

**Dose:**
Migraine Prophylaxis: 10mg at bedtime. Peripheral Vascular Disease: 10-20mg daily. Vertigo: 20mg 3 times daily.

**Preparations:**
5mg Capsule
*Flunarizine (CIP\BKL); 0.2910 per Cap (180)*

**PIZOTIFEN (PIZOTYLINE)**

**Indications:**
Prophylaxis of migraine headache, in refactory or intolerant

**Caution/Side Effects:**
Increase in appetite - frequently causes weight gain. Should be taken at night to avoid sedation.

**Dose:**
1 tablet 3 times daily or 2 tablets at night.
Preparations:
No Offers to Supply (Contact BDS for Supplies)

28:36 ANTIPARKINSONIAN AGENTS
28:36:08 ANTICHOLINEergic AGENTS (PARKINSONS)

BENZHEXOL

Indications:
Parkinsonism, especially when tremor and salivation are marked. Drug induced parkinsonism but not tardive dyskinesia.

Caution/Side Effects:
Avoid if there is risk of urinary retention. Often abused by chronic psychotics as a psycho stimulant. Dry mouth, G.I. upset, blurred vision, nervousness and confusion.

Dose:
Parkinsons Disease: Initial dose of 1mg on first day, increased to 6-10mg daily in 3-4 divided doses. When used with Levodopa 1-2mg 3 times daily. Drug Induced Parkinsons: 5-15mg in divided doses.

Preparations:
2mg Tablet
*Apo-Trihex (APOCOL); 0.0557 per Tab (180)

5mg Tablet
*Apo-Trihex (APOCOL); 0.0667 per Tab (90)

BENZTROPINE

Indications:
As for benzhexol. Very useful i.v. for drug induced acute oculogyric crises.

Caution/Side Effects:
As for benzhexol and other anticholinergics but may cause sedation. Warn patient re driving or operating heavy machinery.
Dose:
Adult and Children over 12 yrs: 0.5-1mg daily at bedtime gradually increased to a maximum of 6mg daily. Maintenance dose of 1-4mg daily as a single dose or in divided doses. i.v. or i.m: 1-2mg, repeated until symptoms disappear. Pediatric 3-12 yrs: 20mcg/kg to a maximum of 6mg per day.

Preparations:
1mg/ml Injection
*Benztropine (CIP\BKL); 10.900 per Amp

2mg Tablet
*Apo-Benztropine (APO\COL); 0.0278 per Tab (90)

PROCYCLIDINE HYDROCHLORIDE

Indications:
Parkinsonism.

Caution/Side Effects:
Blurred vision, mydriasis, disorientation, lightheadedness, nausea, vomiting, xerostomia. Safety and effective not established for Pediatric patients.

Dose:
Adult: 2.5-10mg 3-4 times daily, during or after meals. Pediatric: 2.5-5mg orally 3 times daily after meals. An additional 5mg may be given at bedtime occasionally.

Preparations
5mg Tablet
*Procykem (CAR\COL); 0.0646 per Tab (240)
28:36:16 DOPAMINE PRECURSORS
LEVODOPA/BENSERAZIDE

Indications:
Parkinsonism, especially when akinesia is the most prominent feature. Alternative to Sinemet (L-dopa and Carbidopa), as one may be better tolerated than the other.

Caution/Side Effects:
Vomiting, anorexia, nausea, severe anxiety, insomnia, dizziness, postural hypotension, urinary retention. Red discoloration of the urine and other body fluids.

Dose:
50-100mg twice daily to a usual maintenance dose of 400-800mg daily in divided doses after meals.

Preparations:
L 200mg/b 50mg Tablet
*Prolopa (ROC/BKL); 0.7133 per Tab (240)
*Prolopa (ROC/LAS); 0.7133 per Tab (240)

LEVODOPA/CARBIDOPA

Indications:
Parkinsonism, especially when akinesia is most prominent feature. Alternative to Madopar (Levodopa/ Benserazide), as one may be better tolerated than the other.

Caution/Side Effects:
Abdominal pain, anorexia, nausea, severe anxiety, dizziness, postural hypotension, urinary retention.

Dose:
Initially one tablet (either strength) 3 times daily, increase by one tablet daily or every other day to a maximum of 8 tablets daily.


**Diabetes Mellitus**

**Preparations:**
- 100/10 Tablet
  *Apo-Levocarb (APO\COL); 0.1453 per Tab (240)
- 250/25 Tablet
  *Apo-Levocarb (APO\COL); 0.2422 per Tab (240)

**28:36:20 DOPAMINE RECEPTOR AGONIST**

**BROMOCRIPTINE**

**Indications:**
- Hyperprolactinemia (Amenorrhea, female infertility);
- Parkinsonism; suppression of lactation.

**Caution/Side Effects:**
- Nausea, hypotension, headache, peripheral vasoconstriction. The use of Bromocriptine for the suppression of post-partum lactation has been withdrawn by the FDA due to severe side effects reported including seizures, strokes and death.

**Dose:**
- Amenorrhea second to hyperprolactinemia: 2.5mg-5mg 2 times daily.
- Parkinsonism: 1.25-2.5mg twice daily. Take with food or milk.

**Preparations:**
- 2.5mg Tablet
  *Apo-Bromocriptine (APO\COL); 0.1453 per Tab (90)

**36:00 DIAGNOSTIC AGENTS**

**36:26 DIABETES MELLITUS**

**DIAGNOSTIC BLOOD GLUCOSE (B)**

**Indications:**
- Blood glucose monitoring. The BDS will only reimburse for one bottle of 50’s testing strips every three months to patients on oral diabetic medication or those diabetic patients controlled on diet and
exercise alone. In order for the diabetics controlled on diet and exercise alone to benefit, the prescription must clearly indicate that the patient is diabetic and controlled on diet and exercise only. BDS will reimburse for one bottle of 50’s testing strips every month to patients receiving insulin. BDS will not reimburse for autodisc sensors 100’s per bottle.

**Caution/Side Effects:**
Patients should be properly trained in the use of blood glucose monitoring systems.

**Preparations:**
- Glucose Strip
  - *Accu-chek Active (PRI.STO); 49.79 per Pack (1)
  - *Accu-chek Performa (PRI.STO); 51.81 per Pack (1)
  - *Advantage (PRI.STO); 49.79 per Pack (1)
  - *Ascencia Breeze (BYCARM); 54.99 per Pack (1)
  - *Ascencia Contour Ts (BYCARM); 54.99 per Pack (1)
  - *Lifescan One Touch Ultra (JOH.COL); 49.79 per Pack (1)
  - *Omnitest Plus Test Strip (BRA.COL); 34.69 per Bott (1)
  - *Optium Xceed (ABD.BRY); 50.00 per Pack (1)
  - *Precision Xtra (ABD.BRY); 50.00 per Pack (1)
  - *Precision Xtra (ABD.PHA); 50.00 per Pack (1)
  - *Sky Era (TTC.COL); 36.28 per Pack (1)

**DIAGNOSTIC CARBOHYDRATE SOLUTION**

**Preparations**
No Offers to Supply (Contact BDS for Supplies)

**36:68 ROENTGENOGRAPHY**

**BARIUM SULPHATE**

**Indications:**
Examination of the gastrointestinal tract

**Caution/Side Effects:**
Constipation.
Roentgenography

**Dose:**
Dependent on the type of examination being undertaken.

**Preparations:**
*E-Z-HD (764) (EZM\NIC); 17.6162 per Cup

100% Suspension
*Polybar Barium (ap14) (EZM\NIC); 24.5012 per Bott

2.1% Suspension
*Readi-Cat 2 (723) (EZM\NIC); 17.0162 per Bott

2.3% Suspension
*Cheetah (COV\BRY); 8.1 per Bott

**BETAINE HYD-SOD BICARB-DIMETHICONE**

**Indications:**
Double contrast radiography of the G.I. tract.

**Caution/Side Effects:**
Stomach cramps, belching.

**Dose:**
As for Barium Sulphate.

**Preparations**
*E-Z-Gas II (793) (EZM\NIC); 4.1424 per Sach

*E-Z-Gas II (793) (EZM\NIC); 4.1424 per Sach

**IOHEXOL**

**Indications:**
Myelography, angiography, urography and other related procedures.

**Caution/Side Effects:**
Patients must be well hydrated prior to and following administration.
Dose:
Dose and strength varies according to procedure.

Preparations:
No Offers to Supply (Contact BDS for Supplies)

IOVERSOL
Indications:
Myelography, angiography, urography and other related

Caution/Side Effects:
Patients must be well hydrated prior to and following administration.

Dose:
Dose and strength varies according to procedure.

Preparations:
240 Injection
*Optiray (COVBRY); 22.9 per Vial

MEGLUMINE IOTHALAMATE
Indications:
Diagnostic aid in angiocardiology, aortography, cerebral angiography, peripheral arteriography/venography, body computed tomography, arterial digital subtraction angiography, excretory urography, arthrography, cholangiography, enhancement of computed tomography brain imaging.

Caution/Side Effects:
Nausea, vomiting, facial flushing, feeling of body warmth.

Dose:
Patient Dependent.
294 Urine Contents

Preparations:
43% Injection
*Cysto-Conray (COVBRY); 31.51 per Bott
*Cysto-Conray (COVBRY); 56.78 per Bott

60% Injection
*Conray (COVBRY); 16.9 per Vial

36:84 TUBERCULOSIS
DIAGNOSTIC, TUBERCULOSIS

Preparations:
Tuberculin PPD-S (Mantoux) Tween Stab-D, 5 TU/0.1ml; 1ml
Consult the BDS for Supplies. (No Offers to Supply).

Tuberculin; 1 TU per 0.1ml; 1ml vial
Consult the BDS for Supplies. (No Offers to Supply).

Tuberculin; PPD, 0.05mg/0.1ml; 1ml vial
Consult the BDS for Supplies. (No Offers to Supply).

Tuberculin Syringe, Disposable, 1ml; 26g
Consult the BDS for Supplies. (No Offers to Supply).

36:88 URINE CONTENTS
DIAGNOSTIC PROTEINURIA TEST

Indications:
Detection of proteins in the urine.

Caution/Side Effects:
Public Sector Use.

Preparations
*Medi-Test Pro/Glu/Ket (SCNPHA); 7.700 per Bott
*Urs-1P Test Strips (TED/COL); 6.7300 per Bott
DIAGNOSTIC, URINE: Ph, PROTEIN, GLUCOSE, KETONES, BLOOD

Public Sector Use Only.

Preparations:
Reagent Strips
*Diagnostic Urine Strips (ACC\STO); 19.51 per Bott
*Medi-test Combi-10 (SCNP\HA); 13.35 per Bott
*Medi-test Combi 10 (SCNP\HA); 18 per Bott
*Multistix 10sg (BYC\ARM); 65 per Bott
*Urs-11 (TED\COL); 24.22 per Bott

40:00 ELECTROLYTIC, CALORIC AND WATER BALANCE

DIURETICS

Thiazide diuretics are used to relieve the oedema of heart failure as well as to lower blood pressure. They reduce peripheral vascular resistance and for this effect they have a flat dose response curve - i.e. increasing the dose above one or two tablets has little further effect.

The potent "loop" diuretics e.g. frusemide are used for quick results in emergencies, e.g. acute pulmonary oedema, and in chronic heart failure resistant to thiazides. They produce much more potassium loss.

In hepatic ascites choice of diuretic should be spironolactone first and cautious use of thiazide with potassium later. Loop diuretics can be dangerous as they readily cause hypokalemia and encephalopathy.
40:08 ALKALINIZING AGENTS

SODIUM BICARBONATE

Indications:
Metabolic acidosis.

Caution/Side Effects:
Do not over-correct. It is better to undercorrect, e.g. from a pH of 7.0 to 7.2 only, initially, hypernatremia, cerebral edema, intracranial hemorrhage. c.f. prescribing in renal disease p. 36.

Dose:
I.v: 8.4% solution used in 50-100ml aliquots only according to plasma bicarbonate, pH and base deficit 5% infusion in cardiac arrest only. Oral: 300mg-2g in four divided doses.

Preparations:
8.4% Injection
*Sodium Bicarbonate (HOS\PHA); 1.758 per Vial

SODIUM LACTATE COMPOUND

Indications:
Diabetic coma, diminished alkali reserve.

Caution/Side Effects:
Lactic acidosis. c.f. prescribing in renal disease p. 36.

Dose:
The dosage depends on age, weight and clinical condition of the patient.

Preparations:
Inj. i.v. (Hartmans Soln.BP); 250ml
*Sodium Lactate CO (2B2322Q) (BAX/BRY); 2.7700 per Bottle.
*Sodium Lactate CO (DIL/BKL); 2.6900 per Bottle.
Replacement Therapy

Inj. i.v. (Hartmans Soln BP); 500ml
*Sodium Lactate CO (2B2323Q) (BAX/BRY); 1.8800 per Bottle.
*Sodium Lactate CO (DIL/BKL); 1.7000 per Bottle.

Inj. i.v. (Hartmans Solution BP); 1000ml
*Sodium Lactate CO (2B2324X) (BAX/BRY); 1.9600 per Bottle.
*Sodium Lactate CO (DIL/BKL); 1.8600 per Bottle.
*Sodium Lactate CO (HOS/PHA); 1.8300 per Bottle.

Inj. i.v. in 5% Dextrose BP 500ml
*Sodium Lactate CO (2B2073Q) (BAX/BRY); 2.6600 per Bottle.

Inj. i.v. in 5% Dextrose BP 1000ml
*Sodium Lactate CO (BAX/BRY); 3.2300 per Bottle.

40:12 REPLACEMENT THERAPY
CALCIUM GLUCONATE/LACTATE/CARBONATE/CHLORIDE

Indications:
Osteoporosis; intravenous injection - 10ml of 10% after cardiac arrest (asystole), tetany, leg cramps.

Caution/Side Effects:
Arrhythmias, hypertension, constipation, venous thrombosis, lethargy and muscle weakness.

Dose:
Oral: Tabs.; 0.6-3g daily; i.v., 1-2g single dose.
Preparations:
10% Usp
*Calcium Chloride Prefilled (HOS/PHA); 4.47 per Syrn
Replacement Therapy

Inj; 10%; 10ml Amp
*Calcium Gluconate (DIL/BKL); 2.2800 per Amp
*Calcium Gluconate (BRA/COL); 0.3875 per Amp

300mg Tablet
*Calcium Lactate (STP/COL); 0.035 per Tab (180)

500mg Tablet
*Apo-Cal (APO/COL); 0.0727 per Tab (180)

PLASMA PROTEIN FRACTION (HUMAN)

Indications:
Loss of plasma volume e.g. in burns, trauma and complications of surgery.

Caution/Side Effects:
hypersensitivity; hypotension. WADA Status: Banned in and out of competition.

Dose:
Dependent upon the clinical condition of the patient and the response to treatment.

Preparations:
5% Injection
*Buminate (BAX/BRY); 105.28 per Bott

POTASSIUM CHLORIDE

Indications:
Patients on loop diuretics (e.g. frusemide) or thiazides if (1) they have a low potassium diet, (2) they are on digoxin, (3) they are on steroids, (4) they have cirrhosis, (5) they have diarrhoea and (6) their measured serum potassium is less than 3.2 mol/litre.
Replacement Therapy  299

**Caution/Side Effects:**
Exercise care in renal failure - insidious or acute. Nausea, vomiting, diarrhea, flatulence. *c.f. prescribing in renal disease p. 35.* Take with food and fluids.

**Dose:**
24mmol (1.8g)-48mmol (3.6g) i.e. 3-6 tablets daily.

**Preparations:**
2meq/ml Injection
*Potassium Chloride (BRA\COL);  0.604 per Vial
*Potassium Chloride (DIL\BKL);  2.0904 per Vial
*Potassium Chloride (HOS\PHA);  0.998 per Vial

600mg Tablet
*Apo-K (APO\COL);  0.092 per Tab (120)

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**REHYDRATION PREPARATION, ORAL**

**Indications:**
Depletion of salts and fluid in severe diarrhoea.

**Dose:**
Usually 200-400ml of solution after each loose bowel movement. **Infant:** 1-1 1/2 times usual feed volume; **Pediatric:** 200ml after each loose stool.

**Preparations:**
Sodium Chloride 3.5 g
Sodium Bicarbonate 2.5 g
Potassium Chloride 1.5 g
Glucose (dextrose) 20.0 g
for 1 litre water

**Preparations:**
*Oral Rehydration Salts (PDNPHA);  0.404 per Sach (10)
*Rehydration Salts Flavoured (CIPBKL);  0.4201 per Sach
SODIUM CHLORIDE

Indications:
Sodium depletion, electrolyte imbalance.

Caution/Side Effects:
Serum-electrolyte concentrations should be carefully monitored.

Dose:
The concentration and dosage of sodium chloride solutions for intravenous use is determined by several factors including the age, weight, and clinical condition of the patient and in particular the patients' hydration state.

Preparations:
0.45%
*Sodium Chloride (BRA\BRY); 1.99 per Bott

0.45% Injection
*Sod. Chlor. (2b1313q) (BAX\BRY); 2.4 per Bott
*Sod.chlor. (CIP\LAS); 1.48 per Bott

0.9%
*Sod. Chlor. (HOS\PHA); 0.832 per Vial
*Sod. Chlor. (HOS\PHA); 1.077 per Vial
*Sod. Chlor. (2b1308) (BAX\BRY); 1.3456 per Vial
*Sod. Chlor. (2b1322q) (BAX\BRY); 1.72 per Bott
*Sod. Chlor. (2b1323q) (BAX\BRY); 1.75 per Bott
*Sod. Chlor. (2b1324s) (BAX\BRY); 1.99 per Bott
*Sod. Chlor. (BRA\COL); 0.238 per Vial
*Sod. Chlor. (DIL\BKLA); 1.61 per Bott
*Sod. Chlor. (DIL\BKLA); 1.7 per Bott
*Sod. Chlor. (DIL\BKLA); 1.91 per Litre
*Sod. Chlor. (CIP\LAS); 1.48 per Bott
40:18 ION - REMOVING RESINS

40:18:18 POTASSIUM- REMOVING AGENTS

CALCIUM POLYSTERENE SULPHONATE

Indications:
Hyperkalemia.

Cautions/Side Effects:
Avoid in hyperparathyroidism, multiple myeloma, sarcoidosis or metastatic carcinoma. Do not dissolve powder in fruit juice which has a high K⁺ content. Should not be given by the oral route to neonates.

PUBLIC SECTOR USE ONLY.

Dose:
15g 3-4 times daily in water.

Preparations:
Oral Power, 1 lb Can
*Calcium Resonium (SFA\COL); 161.47 per Can

40:20 CALORIC AGENTS

AMINO-ACID PREPARATION, INTRAVENOUS

Indications:
Patients who need to be given nutrients because of their condition, e.g. chemotherapy, trauma, burns, prolonged coma, G.I. tract disorders, major surgery.

Preparations:
i.v. 5% Amino Acids with Electrolytes; 500ml
*Aminoplasmal E (BRA/COL); 10.9000 per Bottle.
Caloric Agents

i.v. 10% Amino Acids with Electrolytes; 500ml
*Aminoplasmal E (BRA/COL); 15.9600 per Bottle.

DEXTROSE

Indications:
Fluid replacement.

Caution/Side Effects:
Serum-glucose concentrations may need to be carefully monitored.

Dose:
Dependent on individual patient requirements.

Preparations:
10% Injection
*Dextrose (2b0162q) (BAX\BRY); 3.58 per Bott
*Dextrose (2b0163q) (BAX\BRY); 2.66 per Bott
*Dextrose (2b0164x) (BAX\BRY); 3.88 per Bott
*Dextrose (DIL\BKL); 2.91 per Bott

10% Injection
*Dextrose (DIL\BKL); 2.37 per Bott
*Dextrose (DIL\BKL); 3.79 per Bott

20% Injection
*Dextrose (2b0124p) (BAX\BRY); 11.06 per Bott

5% Injection
*Dextrose (2b0062q) (BAX\BRY); 2.66 per Bott
*Dextrose (2b0063q) (BAX\BRY); 1.83 per Bott
*Dextrose (2b0064x) (BAX\BRY); 1.99 per Bott
*Dextrose (CIP\LAS); 1.48 per Bott

5% Injection
*Dextrose (DIL\BKL); 1.78 per Bott
*Dextrose (DIL\BKL); 1.91 per Bott
*Dextrose (DIL\BKL); 2.5 per Bott
50% Injection
* Dextrose (BRA\COL); 1.43 per Vial
* Dextrose (HOSPHA); 1.434 per Vial

DEXTROSE AND SODIUM CHLORIDE

Indications:
Fluid and electrolyte replacement.

Caution/Side Effects:
As for Dextrose.

Dose:
As for Dextrose.

Preparations:
Injection
* Dext. 5%/sod. Chlor.0.9% (DIL\BKL); 2.05 per Bott
* Dext. 5%/sod. Chlor. 0.2% (BAX\BRY); 2.42 per Bott
* Dext. 5%/sod. Chlor. 0.2% (BAX\BRY); 3.04 per Bott
* Dext. 5%/sod. Chlor. 0.2% (BAX\BRY); 3.23 per Bott
* Dext. 5%/sod. Chlor. 0.45% (BAX\BRY); 2.61 per Bott
* Dext. 5%/sod. Chlor. 0.45% (BAX\BRY); 2.93 per Bott
* Dext. 5%/sod. Chlor. 0.45% (BAX\BRY); 3.07 per Bott
* Dext. 5%/sod. Chlor. 0.9% (BAX\BRY); 2.31 per Bott
* Dext. 5%/sod. Chlor. 0.9% (BAX\BRY); 2.4 per Bott
* Dext. 5%/sod. Chlor. 0.9% (BAX\BRY); 2.1 per Bott
* Dext. 5%/sod. Chlor. 0.9% (BAX\BRY); 3.09 per Bott
* Dext. 5%/sod. Chlor. 0.9% (DIL\BKL); 2.96 per Bott

SOYA BEAN OIL

Indications:
Essential fatty acids deficiency and in Total Parenteral Nutrition.

Caution/Side Effects:
Prolonged or too rapid infusion of soya oil emulsion or its use in patients with impaired fat metabolism has been associated with the
'overload syndrome'. Soya protein-based infant feeds can be antigenic and cause gastrointestinal adverse effects in sensitive

**Dose:**
Emulsions of fractionated soya oil containing 10, 20, or 30% are given by slow intravenous infusion as part of total parenteral nutrition regimens.

**Preparations:**
20% Injection
*Lipofundin (BRA\COL); 20.3700 per Bott
*Soya Bean Oil (DIL\BKL); 21.800 per Bott
*Soya Bean Oil (JA6214) (BAX\BRY); 29.600 per Bott

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### 40:28 DIURETICS

#### 40:28:04 CARBONIC ANHYDRASE INHIBITORS

**ACETAZOLAMIDE**

**Indications:**
For adjunctive treatment of chronic simple (open angle) glaucoma, secondary glaucoma and pre op in acute angle closure glaucoma.

**Caution/Side Effects:**

**Dose:**
**Adults:** 250mg to 1g daily in divided doses orally or parenterally.

**Preparations:**
250mg Tablet
*Apo-Acetazolamide (APO\COL); 0.0533 per Tab (120)*
500mg Injection
*Acetazolamide (BEV\BKL); 110.2600 per Vial

40:28:08  LOOP DIURETICS

FRUSEMIDE (B)

Indications:
Resistant oedema, renal failure, pulmonary oedema.

Cautions/Side Effects:
Fluid or electrolyte disturbances hyponatremia, hypotension, gout and glucose intolerance; deafness in renal failure; may precipitate prostatic urinary retention; toxicity with cephaloridine. WADA Status: As for Bendrofluazide. c.f. prescribing in liver and renal disease p. 13; 30.

Dose Range:
Adults and Children over 12yrs: 20-200mg up to 2g daily, in oliguria. May be more effective given twice daily. i.m., i.v. 20-100mg repeat as necessary up to 1g daily. Pediatric 1mth-12yrs: 0.5mg-2mg/kg, 2-3 times daily. (500mg tablet available as a SAD at Q.E.H. Pharmacy for use by Consultant in Renal Dialysis unit only).

Preparations:
Tablet, 40mg
*Lasix (SFA/COL); 0.0969 per Tab. (180)

Inj. 10mg/ml; 2ml Amp.
*Frusemide (LPH/PHA); 0.3671 per Amp.
*Frusemide (RTM/PHA); 0.3665 per Amp.

Oral Solution; 10mg/ml
*Furosemide (ROL/BKL); 0.4831 per ml. (240mls)
MANNITOL

**Indications:**
Forced diuresis, cerebral oedema

**Caution/Side Effects:**
Pulmonary oedema, cardiac failure. May cause chills, fever.

**Dose:**
50-200g in infusion as 10% or 20% solution; over 24 hours, according to circumstances.

**Preparations:**

- 10% Injection
  *Osmirol (2d5613q) (BAX\BRY); 6.9400 per Bott

- 20% Injection
  *Osmirol (2d5632q) (BAX\BRY); 9.8800 per Bott

AMILORIDE/HYDROCHLORTHIAZIDE (B)

**Indications:**
Potassium conservation in treatment of oedema or hypertension.

**Caution/Side Effects:**
Headache, weakness, nausea/anorexia, hyperkalemia, occasional gastro-intestinal upset, giddiness. This fixed combination drug is not indicated for initial therapy of oedema or hypertension. WADA Status: Banned in and out of competition. *c.f. prescribing in renal disease p. 22.*

**Dose:**
Hypertension/CHF: Usual starting dose is 1 tablet daily.
Preparations:
5mg A/50mg H Tablet
*Apo-Amilzide (APOCOL); 0.0522 per Tab (30)

40:28:20 THIAZIDE DIURETICS
BENDROFLUAZIDE (B)

Indications:
Mild cardiac failure and fluid retention, mild hypotenive and to potentiate other drugs in severe hypertension; diabetes insipidus.

Caution/Side Effects:
Fluid and electrolyte disturbances. [Hyperkalemia, hyperuricaemia], hypoglycaemia; interacts with digoxin to produce toxicity unless adequate potassium supplements. Occasionally rash (may be photosensitive). c.f. prescribing in liver and renal disease p. 11; 23. Not approved in children. WADA Status: Banned in and out of competition.

Dose:
Adult: 2.5-5mg daily.

Preparations:
2.5mg Tablet
*Bezide HS (CAR\COL); 0.0209 per Tab (30)

5mg Tablet
*Bezide (CAR\COL); 0.0354 per Tab (30)

40:28:24 THIAZIDE LIKE DIURETICS
CHLORTHALIDONE (B)

Indications:
As for bendrofluazide.

Caution/Side Effects:
As for bendrofluazide. WADA Status: As for Bendrofluazide.
Dose:
Adult: 25-50mg daily.

Preparations:
50mg Tablet
*Apo-Chlorthalidone (APO\COL); 0.0848 per Tab (30)

INDAPAMIDE (B)

Indications:
Mild to moderate hypertension. Edema from congestive heart failure. Not to be used for diuresis.

Caution/Side Effects:
It may take 2-3 months before optimal blood pressure levels are reached on one tablet daily. An increase in the dosage does not cause any greater reduction in blood pressure. Do not use with another diuretic. Hypokalemia, headache, dizziness may occur. Sustained Release tablet should be swallowed whole. WADA Status: Banned in and out of competition. c.f. prescribing in liver and renal disease p. 14; 31. Electrolyte imbalances. See protocol pg. xii section 6.

Dose:
Adult: One tablet daily before breakfast.

Preparations
1.5mg Tablet
*Indapamide SR (CIP\BKL); 0.0567 per Tab (30)

2.5mg Tablet
*Apo-Indapamide (APO\COL); 0.0606 per Tab (30)
40:36 IRRIGATING SOLUTIONS

GLYCINE

Indications:
Bladder irrigation during urological surgery

Caution/Side Effects:
hemolytic anemia, thrombocytopenia and dysrhythmias with or without electrocardiogram changes.

Preparations:
1.5% Injection
*Glycine (2B7317) (BAXBRY); 10.76 per Bott

STERILE WATER

Indications:
As an irrigating fluid or pharmaceutic aid. Sterile Water may also be used as an adjunct in the preparation of non-intravenously administered nutrient mixtures.

Caution/Side Effects:
After opening container, its contents should be used promptly to minimize the possibility of bacterial growth or pyrogen formation.

Dose:
Depends on procedure.

Preparations:
Injection
*Water For Inj (DILBK); 5.9500 per Bott
*Water For Inj (PDNPHA); 0.2575 per Vial
*Water For Inj 2b0306 (BAXBRY); 6.1900 per Bott
*Water For Inj (BRACOL); 0.2450 per Vial
*Water For Inj (BRACOL); 1.5100 per Bott
*Water For Inj (UNPCOL); 0.5900 per Bott
40:40 GOUT AND URICOSURIC AGENTS

ALLOPURINOL

Indications:
Prophylaxis of gout, hyperuricaemia

Caution/Side Effects:

Dose:
Adult: Initially 100mg daily. Maintenance: up to 600mg daily. For doses over 300mg take in divided doses. Pediatric: 10-20mg/kg to a maximum of 400mg daily.

Preparations:
100mg Tablet
*Allopurinol (CPP\COL): 0.0518 per Tab (180)
*Allopurinol (DRL\BKL): 0.0646 per Tab (180)
*Alopron (REM\SBI): 0.0444 per Tab (180)
*Apo-Allopurinol (APO\COL): 0.0339 per Tab (180)

COLCHICINE

Indications:
Acute gout, short term prophylaxis during initial therapy with allopurinol.

Caution/Side Effects:
Diarrhea, stomach cramps, nausea.

Dose:
Adult: Gout: Preoperative prophylaxis: 0.5-0.6mg 3 times daily, 3 days before through 3 days after surgery. Gout: Prophylaxis: less than 1 acute attack/yr, 0.5-0.6mg/day 3-4 times/wk; more than 1 acute attack/yr, 0.5-0.6mg/daily upto 1.5-1.8mg/day.
**Preparations:**
0.5mg Tablet
*Colchicine (HAL\COL); 0.1195 per Tab (90)

PROBENECID

**Indications:**
Gout, gouty arthritis - hyperuricaemia. To increase penicillin and cephalosporin plasma levels by impairing renal excretion.

**Caution/Side Effects:**
Take with food. Ensure fluid intake of 2 litres per day. Avoid concurrent salicylates. WADA Status : Banned in and out of competition. c.f. prescribing in renal disease p. 35.

**Dose:**
250-500mg twice daily, maximum 2g daily in 2-4 divided doses.

**Preparations:**
500mg Tablet
*Benuryl (VCL\COL); 1.3456 per Tab (120)

44:00 ENZYMES

HYALURONIDASE

**Indications:**
As an adjunct to increase absorption and dispersion of injected drugs, subcutaneous infusions. Use controversial.

**Caution/Side Effects:**
Sensitivity to hyaluronidase occasionally occurs.

**Dose:**
1500 units s.c. or i.m. mixed with injection fluid.
Preparations:
1500iu Injection
*Hyaluronidase (CPP\COL); 33.1 per Amp

48:10 RESPIRATORY ANTI-INFLAMMATORY AGENTS

The non-selective beta agonist isoproterenol has been superseded by the highly specific beta2-agonists salbutamol, fenoterol, orciprenaline and terbutaline in the treatment of bronchospasm.

Aerosol inhalers provide more rapid relief and usually cause less side effects than tablets. The dose of drug administered by inhaler is approximately one tenth that of the oral form.

Patients must be instructed in the correct use of the inhalers. The very young and the elderly may not be able to master the use of inhalers but the increasing availability of rotahalers, spacers and nebulizers should make inhaled drugs more easily administered.

Parenteral preparations are used to treat severe asthmatic attacks. Aminophylline by slow i.v. injection remains the drug of choice but much use is made of beta2-agonists (e.g. Terbutaline) which can be given subcutaneously by the nurse, in preference to the more risky, traditional s.c. adrenaline.

There is no useful role for combination tablets containing phenobarbitone and no place for sedatives or tranquilizers in treating attacks.
48:10 RESPIRATORY ANTI-INFLAMMATORY AGENTS

48:10:08 CORTICOSTEROIDS (RESPIRATORY)

BECLOMETHASONE (B)

Indications:
Prophylaxis of asthma.

Caution/Side Effects:
Rinse mouth with water after inhalation. Hoarseness, candidiasis of mouth or throat. WADA Status. Therapeutic use exemption use required.

Dose:

Preparations:
50mcg Inhr
*Beclomethasone (CIP\BKL); 4.55 per Inhr (1)
*Beclomethasone (CIP\LAS); 3.85 per Inhr (1)
*Beclomethasone (HEA\ALA); 5.85 per Inhr (1)

BUDESONIDE (B)

Indications:
Treatment of asthma.

Caution/Side Effects:
Rinse mouth with water after inhalation. Not recommended for children 6 years or younger. WADA Status: As for Beclomethasone.

Dose:
Adult and Pediatric over 6 years: 1-2 puffs twice daily. See protocol pg. xiv section 13.

Preparations:
100mcg Inhr
*Budesonide (CIP\BKL); 13.21 per Inhr (1)
*Budesonide (HEA\ALA); 13.7 per Inhr (1)
Corticosteroids (Respiratory)

200mcg Inhr
* Budesonide (CIP\BKL); 18.81 per Inhr (1)
* Pulmicort HFA (AZN\BRY); 28.47 per Inhr (1)
* Pulmicort Turbuhaler (AZN\BRY); 20.24 per Inhr (1)

FLUTICASONE (B)

Indications:
Asthma.

Caution/Side Effects:
Headache, pharyngitis, nasal congestion, dysphonia and oral candidiasis. Not recommended for children under 1 year.

Dose:
Adult and Pediatric 4 yrs and older: 50-1000mcg twice daily.
Pediatric 1-3 yrs: 50-100mcg twice daily. See protocol pg. xiv section 14.

Preparations:
125mcg Inhr
* Fluticasone (CIP\BKL); 15.07 per Inhr (1)

250mcg Inhr
* Fluticasone (CIP\BKL); 24.49 per Inhr (1)

25mcg Inhr
* Fluticasone (CIP\BKL); 14.21 per Inhr (1)

50mcg Inhr
* Flixotide (GSK\COL); 19.91 per Inhr (1)
Mast Cell Stabilisers

KETOTIFEN (B)

**Indications:**
Prophylaxis of asthma. Atopic asthma in children.

**Caution/Side Effects:**
Drowsiness, dry mouth, dizziness, weight gain. c.f. prescribing in liver disease p. 14.

**Dose:**
1-2mg twice daily with food. The oral syrup is restricted for use in children 12 years and under.

**Preparations:**
- 0.2mg/ml Syrup
  - *Ketotifen (LCS/STO): 0.0404 per ml (100)
  - *Ketotifen MK (BON\COL): 0.0377 per ml (100)
- 2mg Tablet
  - *Zaditen SRO (NVS/COL): 1.2253 per Tab (60)

NEDOCROMIL SODIUM

**Indications:**
Prophylaxis of asthma. Not used in treatment of acute asthmatic attack.

**Caution/Side Effects:**
Headache, nausea, bitter taste, sore throat.

**Dose:**
By aerosol inhalation; 4mg (2 puffs) twice daily, up to 4 times daily, if needed. Not yet recommended for children under 12 years.

**Preparations:**
No Offers to Supply (Contact BDS for Supplies)
SODIUM CROMOGLYCATE (B)

**Indications:**
Prophylaxis of asthma. Not used in treatment of acute asthmatic attack.

**Caution/Side Effects:**
Headache, coughing, nasolaryngeal oedema, bronchial irritation, bad taste, throat irritation.

**Dose:**
2 puffs 4 times daily.

**Preparations:**
5mg Inhr
*Sodium Cromoglycate (CIP\BKL); 13.51 per Inhr (1)

48:12 BRONCHODILATORS

48:12.04.12 SELECTIVE β2 ADRENERGIC AGONIST (RESPIRATORY)

FENOTEROL HYDROBROMIDE (B)

**Indications:**
For the symptomatic relief of bronchospasm in bronchial asthma and bronchitis.

**Caution/Side Effects:**
Because of longer duration of action when compared to other beta 2 agonists, dosage should be carefully monitored. Tachycardia, palpitations, tremor, nervousness. WADA Status: Declaration of Use required.

**Dose:**
Adult: 200-400 micrograms (1-2 puffs) 3 times daily. See protocol pg. xiv section 14.
Selective β2 Adrenergic Agonist (Respiratory) 317

Preparations:
0.25mg/ml Syrup
*Berotec (BO\STO); 0.1118 per Ml (120)
100mcg Inhr
*Berotec (BO\STO); 13.46 per Inhr (1)

SALBUTAMOL SULPHATE (B)
Indications:
Bronchospasm.

Caution/Side Effects:
Tachycardia, palpitations, tremor, nervousness, headache, insomnia, nausea.

WADA Status: Inhaler. Doses below 1600mcg over 24 hours permitted. Doses in excess of 1600mcg/24 hours requires a Therapeutic Use Exemption.

Dose:
Tabs: 2-8mg, 3-4 times daily or until objectionable tremor occurs.
Aerosol: 1-3 puffs, 3-4 times daily. Syrup: 6-12 years, 2mg (1 tsp) three times daily. See protocol pg. xiv section 14.

Preparations:
0.4mg/ml Syrup
*Broncomat (UNP\COL); 0.0058 per Ml (300)
0.5% Resp Sohn
*Broncomat (UNP\COL); 1.88 per Bott (1)
0.5mg/ml Injection
*Salbutamol (PDN\PHA); 0.777 per Vial
100mcg Inhr
*Salbutamol (CIP\BKL); 3.09 per Inhr (1)
*Salbutamol (CIP\LAS); 3.28 per Inhr (1)
Selective β2 Adrenergic Agonist (Respiratory)

*Salbutamol (HEA\ALA); 3.99 per Inhr (1)
*Ventolin (GSK\COL); 4.98 per Inhr (1)

4mg Tablet
*Salbutamol (CIP\BKL); 0.0444 per Tab (120)

SALMETEROL XINOFOATE (B)

Indications:
Not to be used as monotherapy. A long-acting inhaled beta2-agonist which can be added to a low-to-medium dose inhaled corticosteroid in moderate persistent asthma (Step 3 in the Caribbean guidelines). This approach has been shown to improve symptom control and may be especially beneficial in patients with significant nocturnal symptoms. Improved asthma control has been demonstrated with an inhaled long-acting beta2-agonist and a medium-dose inhaled corticosteroid compared to a doubled dose of inhaled corticosteroid. Salmeterol has been shown to prevent exercise-induced bronchospasm for 10 - 12 hours when taken shortly before exercise.

Caution/Side Effects:
Throat irritation, skeletal muscle tremors, headache and dizziness. Increased heart rate if overdosed. Should not be used for acute symptom relief or for exacerbations. See protocol pg. xiv section 14.

WADA Status: Inhaled salmeterol is only permitted when used within the manufacturers recommended therapeutic regime. Doses in excess of this threshold, will require a Therapeutic Use Exemption.

Dose:
Adult: 2 puffs every 12 hours. Pediatric: 1 puff every 12 hours.

Preparations:
25mcg Inhr
*Salmeterol (CIP\BKL); 19.4800 per Inhr (1)
48:12:08 ANTICHOLINERGIC AGENTS (RESPIRATORY)

IPRATROPiUM BROMIDE (B)

**Indications:**
Chronic obstructive pulmonary disease unresponsive to beta 2 agonists.

**Caution/Side Effects:**
Glaucoma, dry mouth, bitter taste.

**Dose:**

**Preparations:**
20mcg Inhr
*Atrovent N (BOE\STO); 25.57 per Inhr (1)
250mcg/ml
*Ipratropium (HEA\ALA); 3.43 per Bott (1)

48:18 RESPIRATORY SMOOTH MUSCLE RELAXANTS

AMINOPHYLLINE

**Indications:**
Bronchospasm. Acute asthma.

**Caution/Side Effects:**
As for theophylline.

**Dose:**
i.v., 250-500mg by slow i.v. injection over 20 minutes.
Preparations:
25mg/ml Injection
*Aminophylline (MTP\COL); 1.83 per Amp

THEOPHYLLINATE CHOLINE

Indications:
Relief and/or prophylaxis of asthma.

Caution/Side Effects:
As for theophylline.

Dose:
100-200 mg 2-4 times daily.

Preparations:
No Offers to Supply (Contact BDS for Supplies)

THEOPHYLLINE (B)

Indications:
Relief and/or prophylaxis of asthma and reversible bronchospasm. Patients unresponsive to salbutamol inhaler and/ or tablets, or who cannot use bronchodilator inhalers, or in severe asthmatics where combination with salbutamol may be useful.

Caution/Side Effects:
Patients should take medication at the same time each morning. Look for end of dose symptoms. Headache, insomnia, restlessness, tremor, tachycardia. G.I. upset especially nausea and vomiting. cf. prescribing in liver disease p. 18.

Dose:
Liquid: Adult: 2-4 tsps 3 to 4 times daily; Pediatric: 1-1 1/2 tsps 3 to 4 times daily. Sustained release: 100-300mg daily as a single dose, occasionally more for Theo-24. 250mg (one tablet) twice daily for Nuelin SA, drug levels valuable when high doses are used.
Preparations:

100mg Tablet
*Apo-Theo LA (APO\COL); 0.0727 per Tab (90)

200mg Tablet
*Apo-Theo LA (APO\COL); 0.1211 per Tab (90)
*Theophylline (CIP\BK); 0.1887 per Tab (90)

48:92 RESPIRATORY AGENTS MISCELLANEOUS
BUDESONIDE/FORMOTEROL (B)

Indications:
Treatment of asthma.

Caution/Side Effects:
Beta blockers including eye drops can weaken the effect of the inhaler. Ketoconazole may increase systemic exposure to the budesonide component. Use with caution in patients with cardiovascular disease, diabetes, untreated hypokalemia or thyrotoxicosis. Data on use in pregnancy and breast feeding are unavailable. Headache, palpitations, tremor, candida infection in the oropharynx, mild throat irritation, coughing, hoarseness. Dosage is individual according to disease severity. Titrate to lowest dose when control is achieved. Not recommended in children under 12 yrs.

WADA Status: As for Salbutamol.

Dose:
Adult and Pediatric over 12 years: 1-2 inhalations once or twice daily. See protocol pg. xiv section 14.

Preparations:
160mcg B/4.5mcg F Inhr
*Budesonide/formoterol (CIP\BK); 48.25 per Inhr (1)
*Budesonide/formoterol (HE\AL); 22.53 per Inhr (1)
*Symbicort Turbuhaler (AZN\BRY); 46.05 per Inhr (1)
*Symbicort Turbuhaler (AZN\BRY); 77.51 per Inhr (Public Sector only)
320mcg B/9mcg F Inhr
*Budesonide/Formoterol (CIP\BKL); 31.11 per Inhr (1)

80mcg B/4.5mcg F Inhr
*Budesonide/Formoterol (CIP\BKL); 18.17 per Inhr (1)
*Budesonide/Formoterol (CIP\BKL); 39.8 per Inhr
*Symbicort Turbuhaler (AZN\BRY); 36.6 per Inhr (1)
*Symbicort Turbuhaler (AZN\BRY); 61.68 per Inhr

FLUTICASONE/SALMETEROL (B)

Indications:
Asthma, chronic obstructive pulmonary disease.

Caution/Side Effects:
Growth suppression, abdominal pain, dyspepsia, candidiasis, osteoporosis, back pain, cataract, glaucoma, chest congestion, hoarseness.

WADA Status: Therapeutic use exemption required.

Dose:
Asthma: Adults and Pediatrics 12 years and older: 1 inhalation twice daily (Seretide Diskus 50/100, 50/250, 50/500) or 2 inhalations twice daily (Seretide Evohaler 25/50, 25/125, 25/250), based on asthma severity. Age 4-11: 1 Inhalation of Seretide Diskus 50/100 twice daily or 2 puffs Evohaler 25/50 twice daily. COPD: 1 inhalation of 50/500 twice daily or 2 inhalations of 25/250 evohaler twice daily. See protocol pg. xiv section 14.

Preparations:
100mcg F/50mcg S Inhr
*Fluticasone/Salmeterol (CIP\BKL); 36.2500 per Inhr (1)
*Seretide Diskus (GSK\COL); 49.9800 per Inhr (1)

125mcg F/25mcg S Inhr
*Fluticasone/Salmeterol (CIP\BKL); 32.2400 per Inhr (1)
*Seretide MDI (GSK\COL); 61.9000 per Inhr (1)
IPRATROPIUM/SALBUTAMOL (B)

Indications:
Treating moderate-to-severe COPD; it is indicated primarily in patients who fail to respond on ipratropium alone. The role of the combination in acute asthma is unclear.

Caution/Side Effects:
Tachycardia, dry mouth, Bronchitis, upper respiratory tract infections and headache.

Dose:
Two inhalations four times daily is indicated in chronic obstructive pulmonary disease. In severe acute asthma, ipratropium 0.5mg/salbutamol 2.5mg via nebulizer has been administered. See protocol pg. xiv section 14.

Preparations:
0.2mg I/1mg S Resp Soln
*Combivent (BOESTO); 3.1485 per Bott (20)

20mcg I/120mcg S Inhr
*Ipratropium/Salbutamol (CIP\BKl); 7.51 per Inhr (1)

21mcg I/120mcg S Inhr
*Combivent (BOESTO); 32.11 per Inhr (1)
EAR DROPS

There are two types:-

(1) Oil or glycerol based; and

(2) Antibiotic or Antibiotic/Steroid combination.

The former is used entirely as a wax softener. For small wax 3 - 4 drops daily followed by swabbing with cotton buds is recommended. For hard, impacted wax use twice daily for a week followed by syringing.

The latter type is used in otitis externa and media if there is no perforation of the ear drum.

N.B. Ear drops are contraindicated in traumatic perforation of the ear drum. (It acts as a vehicle for infection to the sterile middle ear cavity via the perforation).

EYE DROPS

Steroid Eye Drops

Care must be taken when using Steroid or Steroid/antibiotic mixture eye drops.

Use may cause:-

(1) Greatly enhanced Herpes virus (dendritic ulcers) resulting in loss of eye.

(2) Steroid induced glaucoma.

(3) Steroid induce cataract.

Therefore before use it is necessary to perform:-

(1) Magnified examination of the cornea.

(2) Measurement of the intraocular pressure.

In other words steroid eye drops can be dangerous without specialist ophthalmic examination.
52:00 EYE, EAR, NOSE AND THROAT PREPARATIONS

52:02 ANTIALLERGIC AGENTS
SODIUM CROMOGLYCATE

Indications:
Allergic conjunctivitis. Prophylaxis of allergic rhinitis.

Caution/Side Effects:
Local irritation

Dose:
Adults and Pediatrics over 6 yrs: 1 spray into each nostril 3-4 times daily. Dosing frequency may be increased to 6 times daily if needed. Drops: Pediatric over 4 yrs: 1-2 drops 4-6 times daily.

Preparations:
2% Eye Drop
*Sodium Cromoglycate (ASL\PHA); 3.9 per Bott (1)
*Sodium Cromoglycate (CIP\BKL); 1.91 per Bott (1)

4% Nasal Spray
*Sodium Cromoglycate (CIP\BKL); 14.1 per Bott (1)

52:04:04 EENT ANTIBACTERIALS
CHLORAMPHENICOL

Indications:
Bacterial infection in otitis externa.

Caution/Side Effects:
Avoid prolong use

Dose:
2-3 drops 3 times daily. Apply ointment 2-3 times daily.
FRAMYCETIN SULPHATE

Indications:
Treatment of bacterial infection in otitis externa and eye infections.

Caution/Side Effects:
Avoid prolonged use.

Dose:
Apply ointment or instill drops 3-4 times daily.

Preparations:
0.5% Eye Drop
*Framoptic (ASL\PHA); 6.65 per Bott (1)

GENTAMICIN

Indications:
See framycetin sulphate.

Caution/Side Effects:
See framycetin sulphate.

Dose:
Ear: 2-3 drops 3-4 times daily and at night. Eye: 1-2 drops every 3-4 hours. Apply ointment 3-4 times a day and at night.

Preparations:
0.3% Eye Drop
*Gentamicin (ASL\PHA); 2.45 per Bott (1)
*Gentamicin (CIP\BKL); 2.15 per Bott (1)
NEOMYCIN FREE ANTIBIOTIC PREPARATION

Indications:
Superficial bacterial infections.

Caution/Side Effects:
Hypersensitivity to components.

Dose:
1 or 2 drops 4 times daily.

Preparations:
Drops, Eye, (Fucidic Acid);
*Fucithalmic (LEO/COL); 8.7500 per Tube. (1 Tube)

52:04:20 EENT ANTIVIRALS

ACYCLOVIR

Indications:
Herpes Simplex Infections.

Caution/Side Effects:
Local irritation and inflammation.

Dose:
Apply 5 times a day until 3 days after healing.

Preparations:
3% Eye Oint
*Acyclovir (CIP\LAS); 1.35 per Tube (1)

52:06 ANTIBACTERIAL-ANTI-INFLAMMATORY AGENTS

DEXAMETHASONE -FRAMYCETIN - GRAMICIDIN

Indications:
Inflammation and bacterial infections.

Caution/Side Effects:
Avoid prolonged use.
Dose:
Ear: 2-3 drops 3-4 times daily. Apply ointment 2-3 times daily.
Eye: 1-2 drops every 1-2 hours for 2 or 3 days in acute ocular conditions. Followed by 1-2 drops 3 or 4 times daily.

Preparations:
Eye Drop
*Framoptic D (ASL\PHA); 3.5 per Bott (1)

52:08 EENT ANTI-INFLAMMATORY AGENTS
BETAMETHASONE DISODIUM PHOSPHATE
Indications:
Local treatment of inflammation.

Caution/Side Effects:
Use for short periods of time. Prolonged use can cause herpetic corneal disease and "steroid glaucoma".

Dose:
One drop 4 times daily. Ointment: Apply 2-4 times daily.

Preparations:
0.1% Eye Drop
*Vista-Methasone (MTP\COL); 4.71 per Bott (1)

BUDESONIDE
Indications:
Rhinitis.

Caution/Side Effects:
Not recommended in children under 6 years. Non-halogenated corticosteroid. See under beclomethasone.
**EENT Anti-Inflammatory Agents**

**Dose:**

**Adults and Children over 6 years:** 1-2 sprays into each nostril twice daily. After the initial therapy of 2 sprays twice daily, the dosage may be reduced to one spray twice daily. *See protocol pg. xiv section 13.*

**Preparations:**

100mcg Nasal Spray
*Budesonide (CIP\BKL); 10.79 per Bott (1)*

32mcg Nasal Spray
*Rynase AQ (CAR\COL); 9.1 per Bott (1)*

64mcg Nasal Spray
*Rynase AQ (CAR\COL); 14.16 per Bott (1)*

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**DICLOFENAC SODIUM**

**Indications:**

Cataract extraction, eye pain, refractive keratoplasty.

**Caution/Side Effects:**

Transient burning and stinging, keratitis and elevated intraocular pressure, peripheral corneal infiltrates. Ophthalmic diclofenac solution should not be used with soft contact lenses but may be used with bandage hydrogel soft contact lenses. The solution should be stored between 15 and 25 degrees Celsius.

**Dose:**

**Extraction of cataract:** 1 drop into affected eye four times a day for 14 days, begin 24 hours postop. **Filamentary Keratitis:** 1 drop into affected eye four times a day for 28 days. Light intolerance, eye pain, refractive keratoplasty: 1-2 drops into affected eye before surgery and four times a day beginning within 15 minutes after surgery and continued up to 3 days postop.
Preparations:
0.1% Eye Drop
*Diclofenac Sodium (CIP\BKl); 7.75 per Bott (1)

FLUNISOLIDE
Indications:
Allergic rhinitis, seasonal or perennial.
Caution/Side Effects:
Loss of taste or smell, nausea, vomiting, dyspepsia, headache, dizziness, nasal irritation. Safety and efficacy are not established in children under 6 years.
Dose:
Adult: Allergic rhinitis, seasonal or perennial: 2 sprays (25mcg/spray) in each nostril twice daily. Maximum of 8 sprays/nostril/day. Pediatric 6-14 years: 1 spray (25mcg/nostril) three times daily or 2 sprays/nostril twice daily. Maximum of 4 sprays/nostril/day. See protocol pg. xvi section 18.
Preparations: No Offers to Supply (Contact BDS for Supplies)

FLUTICASONE
Indications:
Seasonal and perennial allergic and nonallergic rhinitis.
Caution/Side Effects:
Headache, epistaxis, nasal burning, cough and nasal irritation. Not recommended in children under 4 years.
Dose:
Adult and Pediatric over 12 years: 2 sprays (50mcg each) in each nostril once daily (total daily dose, 200mcg) increasing to twice daily if needed. Pediatric 4-12: 100mcg daily (1 spray in each nostril) increasing to twice daily if needed. See protocol pg. xvi section 14.
Preparations:
50mcg
*Fluticasone (CIP\BKL); 9.98 per Bott (1)

MOMETASONE

Indications:
Useful in the treatment of seasonal and perennial allergic rhinitis.

Caution/Side Effects:
Headache, pharyngitis, epistaxis, cough, dysmenorrhea, nasal burning. Store spray away from light.

Dose:
Adults and children over 12 years: 2 sprays in each nostril once daily. Decrease to one spray once daily as a maintenance dose.
Pediatric (2-11 years): 1 spray into each nostril once daily. See protocol pg. xvi section 18.

Preparations:
50mcg Nasal Spray
*Nasonex (SCASTO); 22.61 per Inhr (1)

NEPAFENAC

Indications:
Extraction of cataract, inflammatory disorder of the eye, pain.

Caution/Side Effects:
Vitreous detachment, conjunctival oedema, dry eye, foreign body sensation, itching of eye, light intolerance, hyperemia, increased intraocular pressure, decreased visual acuity, sinusitis.

Dose:
Adult and Children 10 years and older: 1 drop in affected eye(s) three times a day starting 1 day prior to cataract surgery, continued on the day of surgery and through the first 2 weeks of the postoperative period. See protocol pg. xvi section 18.
Preparations:
0.1% Eye Drop
*Nevanac (ALCSTO); 20.18 per Bott (1)

TRIAMCINOLONE

Indications:
Intranasal triamcinolone is used in the treatment of seasonal and perennial allergic rhinitis

Caution/Side Effects:
Headache occurred in 18% of patients receiving intranasal triamcinolone. Other adverse effects included nasal irritation, dry mucous membranes, congestion, throat discomfort, sneezing. Not recommended in children under 6 years.

WADA Status: Banned only in competition.

Dose:
Adults and Pediatrics 6 years or older: 2 sprays into each nostril once daily increasing to 4 sprays into each nostril daily if the desired effect has not been reached after 4-7 days. Maintenance dose: 1 spray into each nostril daily. See protocol pg. xvi section 18.

Preparations:
55mcg Nasal Spray
*Nasacort AQ (SFA\COL); 14.94 per Bott (1)

52:16 EENT LOCAL ANESTHETIC

OXYBUPROCAINE HYDROCHLORIDE

Indications:
Topical anaesthesia.

Caution/Side Effects:
Minims should be discarded after a single use. Not to be used as an ocular analgesic, may predispose to corneal ulceration.
Dose:
1 3 drops into conjunctival sac to anaesthetise surface of the eye.

Preparations:
0.4% Eye Drop
*Minims Oxybuprocaine (CH\BRY); 3.761 per Amp (4)

PROPARACAINE

Indications:
Rapid and short acting topical anaesthesia.

Caution/Side Effects:
Warn patient not to rub eyes; not painful while causing an abrasion.

Dose:
1 2 drops at intervals as required to obtain adequate anaesthesia.

Preparations:
0.5% Eye Drop
*Alcaine (ALC\STO); 10.76 per Bott (1)

52:20 EENT MIOTICS
PILOCARPINE NITRATE

Indications:
Treatment of glaucoma.

Caution/Side Effects:
Patient should exercise caution with night driving. Small pupil limits field of vision, noticeable particularly at night.

Dose:
Adult: 1-2 drops 4 times daily.

Preparations:
2% Eye Drop
*Vistacarpine (MTP\COL); 5.79 per Bott (1)
4% Eye Drop
*Isopt-Carpine (ALC\STO); 5.79 per Bott (1)

52:24 EENT MYDRIATICS
ATROPINE SULPHATE

Indications:
For mydriasis and/or cycloplegia. Used in refraction in children, and in uveitis in children or adults.

Caution/Side Effects:
Do not use in persons with primary acute closed angle glaucoma, or a tendency towards glaucoma. Advise patient not to drive or operate heavy machinery while pupils are dilated.

Dose:
Adult: 1-2 drops 1 hour before refracting. Uveitis: 1-2 drops up to 4 times daily. Pediatric 3mths-2yrs: 1 drop 2-3 times daily for 3 days before refraction.

Preparations:
1% Eye Drop
*Atropine Sulphate (MTP(COL); 3.07 per Bott (1)
*Minims Atropine (CHA\BRY); 3.761 per Amp
*Atropine Sulphate (CIP\BKL); 2.75 per Bott (1)

DIPIVEFRIN

Indications:
Treatment of glaucoma.

Caution/Side Effects:
Should not be used in narrow angle glaucoma. Burning, stinging, tachycardia, headache. WADA Status: Banned in competition.

Dose:
1 drop twice daily into eye.
Preparations:
No Offers to Supply (Contact BDS for Supplies)

HOMATROPINE HYDROBROMIDE
Indications:
See Atropine Sulphate

Caution/Side Effects:
Burning, stinging.

Dose:
1-2 drops up to every 3 or 4 hours.

Preparations:
2% Eye Drop
*Homatropine (ASLPHA); 9.5 per Bott (1)

PHENYLEPHRINE HYDROCHLORIDE
Indications:
Decongestant and vasoconstrictor, pre operative only.

Caution/Side Effects:
Ocular pain. contraindicated in hypertension. Use only under close medical supervision.

Dose:
One drop into each eye.

Preparations:
10% Eye Drop
*Minims Phenylephrine (CHA\BRY); 3.761 per Amp
*Phenylephrine (AKIBK); 12.89 per Amp
10% Injection
*Phenylephrine (RIMPHA); 15.18 per Amp
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2mg/ml Injection
*Phenylephrine (BAX\BRY); 1.1304 per Vial

TROPICAMIDE

**Indications:**
For mydriasis and cycloplegia for diagnostic procedures; pre and post operative eye surgery.

**Caution/Side Effects:**
Blurred vision, ocular irritation, headache. Advise patient not to drive or engage in hazardous activity while pupils are dilated. Contra-indicated in narrow angle glaucoma.

**Dose:**
For refraction: 1 or 2 drops.

**Preparations:**
1% Eye Drop
*Tropicamide (ASL\PHA); 5.27 per Bott (1)

52:28  MOUTH WASHES AND GARGLES

HYDROGEN PEROXIDE

**Indications:**
Cleansing and deodorising wounds and ulcers.

**Preparations:**
6%
*Hydrogen Peroxide (GNT\SBI); 2.02 per Bott
*Hydrogen Peroxide (THR\SBI); 1.57 per Bott
52:32 EENT VASOCONSTRICTORS
ANTAZOLINE/TETRAHYDROZOLINE

Indications:
Relief of ocular irritation, congestion. Allergic conditions.

Caution/Side Effects:
Transient stinging, burning or tearing.

Dose:
1 or 2 drops into the affected eye(s) up to 4 times a day.

Preparations:
0.05% A/0.04% T Eye Drop
*Allerex (ASL PHA); 2.53 per Bott (1)

OXYMETAZOLINE

Indications:
Short term treatment of nasal congestion.

Caution/Side Effects:
As for xylometazoline.

Dose:
As for xylometazoline.

Preparations:
0.025% Nasal Drop
*Oxymetazoline (CIP\LAS); 1.8 per Bott (1)
0.05% Nasal Drop
*Oxymetazoline (CIP\LAS); 1.86 per Bott (1)

XYLOMETAZOLINE

Indications:
Short term treatment of nasal congestion.
Caution/Side Effects:
Burning, nasal dryness. Do not use for longer than 3-5 days to prevent rebound congestion.

Dose:
**Adults and Children over 12 years:** 1 spray into each nostril 2-3 times daily or 2 drops into each nostril 2-3 times daily. **Pediatric 3mths-6 years:** 1-2 drops 1-2 times daily of 0.05% preparation. **Over 6 years:** 1 drop into each nostril 2-3 times daily of 0.1% preparation.

Preparations:
0.005% Paed Nasal Drop
*Otrivine (NVSCOL)*; 2.69 per Bott (1)
0.1% Nasal Drop
*Otrivine (NVSCOL)*; 4.71 per Bott (1)
0.1% Nasal Spray
*Otrivine (NVSCOL)*; 3.9 per Bott (1)
*Otrivine MDI (NVSCOL)*; 3.23 per Bott (1)
*Xylometazoline (CIPBKL)*; 3.39 per Bott (1)

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52:36 EENT UNCLASSIFIED

BALANCED SALT SOLUTION

Indications:
For irrigation during various surgical procedures of the eyes, ears, nose and/or throat.

Caution/Side Effects:
Not for iv use. Solution is not to be reused because it contains no preservative. The adapter plug is designed to accept irrigating canula which is used for delivery of solution.

Dose:
SINGLE patient use only.
**Preparations:**
*Balanced Salt Solution (AKI\BKL); 6.0600 per Bott Soln*
*B.S.S. (ALC\STO); 7.0000 per Bott*
*B.S.S. (ALC\STO); 32.2900 per Bott*

**FLUORESCEIN SODIUM**

**Indications:**
Detection of lesions and foreign bodies due to injury or disease.

**Caution/Side Effects:**
Hypersensitivity to components. Nausea and vomiting. Transient discoloration of skin and urine. Use one strip for each eye.

**Dose:**
1 or 2% solution as eye drops or as sterile papers. Injection 10 or 25%, for retinal angiography. The usual dose is the equivalent of 500 mg of fluorescein. A dose of 7.5 mg/kg has been suggested for children.

**Preparations:**
10% Injection
*Fluorescein (RIM\PHA); 0.3725 per Bott*
*Fluorescein (RIM\PHA); 20.3992 per Vial*

**LEVOBUNOLOL HYDROCHLORIDE**

**Indications:**
Treatment of chronic open angle glaucoma.

**Caution/Side Effects:**
Ocular stinging. Use with caution in patients who are on systemic beta blockers, have asthma or cardiac disease.

**Dose:**
1 drop once or twice daily.
Preparations:
0.5% Eye Drop
*Betagan (ALL\COL); 14.8 per Bott (1)

TIMOLOL/PILOCARPINE

Indications:
Treatment of glaucoma, ocular hypertension.

Caution/Side Effects:
See Timolol and Pilocarpine.

Dose:
1 drop into affected eyes twice daily.

Preparations:
0.5% T/2% P Eye Drop
*Fotil (SPH\COL); 11.76 per Bott (1)
0.5% T/4% P Eye Drop
*Fotil Forte (SPH\COL); 12.78 per Bott (1)

52:40 ANTI-GLAUCOMA AGENTS

52:40:04 EENT ALPHA ADRENERGIC AGONISTS

BRIMONIDINE TARTRATE

Indications:
Ocular hypotension and glaucoma.

Caution/Side Effects:
Blurring, lid retraction, headache, fatigue, drowsiness. TO BE USED ONLY IN THOSE PATIENTS UNRESPONSIVE TO OTHER PREPARATIONS.

Dose:
1 drop 3 times daily. See protocol pg. xvi section 19.
Preparations:
0.1% Eye Drop
*Alphagan P (ALL\COL); 39.7 per Bott (1)

52:40:08 EENT BETA ADRENERGIC AGONISTS
BETAXOLOL HYDROCHLORIDE

Indications:
Treatment of chronic open angle glaucoma.

Caution/Side Effects:
Ocular stinging. Observe caution in patients who are on systemic beta blockers. Although it is a selective beta 1 blocker, it must be used with caution in asthmatics, diabetics and athletes. Shake before using.

WADA Status: See Atenolol.

Dose:
1 drop twice daily.

Preparations:
0.25% Eye Drop
*Betoptic S (ALCSTO); 13.46 per Bott (1)

TIMOLOL MALEATE

Indications:
Treatment of chronic open angle glaucoma. May be used alone or in conjunction with miotics or adrenaline.

Caution/Side Effects:
Dose:
Adult: 1 drop twice daily into eye.

Preparations:
0.25% Eye Drop
*Timolol (MTP\COL); 2.75 per Bott (1)

0.5% Eye Drop
*Timolol (ASL\PHA); 1.64 per Bott (1)
*Timolol (ASL\PHA); 3.31 per Bott (1)
*Timolol (HEA\ALA); 1.24 per Bott (1)
*Timolol (CIP\BKL); 1.45 per Bott (1)

52:40:28 EENT PROSTAGLANDIN ANALOGS
BIMATOPROST

Indications:
Glaucoma, ocular hypertension.

Caution/Side Effects:
Conjunctival hyperemia, iris pigmentation, and eyelid/eyelash changes, glaucoma.

Dose:
1 drop once daily. See protocol pg xvi section 19.

Preparations:
0.03% Eye Drop
*Lumigan (ALL\COL); 29.07 per Bott (1)
*Lumigan (ALL\COL); 48.6 per Bott (1)

LATANOPROST

Indications:
Latanoprost ophthalmic solution has effectively lowered intraocular pressure in ocular hypertension, primary open-angle glaucoma, and capsular glaucoma, and has produced additive effects with opthal-
mic timolol and dorzolamide. It is indicated as an initial treatment for elevated eye pressure associated with ocular hypertension and glaucoma.

**Caution/Side Effects:**
Mild conjunctival hyperemia and local irritation, iris pigmentation can occur during long-term therapy and has resulted in drug discontinuation.

**Dose:**
1 drop preferably in the evening once daily. *See protocol pg. xvi section 18.*

**Preparations:**
0.005% Eye Drop
*Xalatan (PFI\STO); 32.97 per Bott (1)

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**TRAVOPROST**

**Indications:**
Indicated primarily in patients with ocular hypertension or open-angle glaucoma who are unresponsive to or intolerant of other topical antiglaucoma agents. It appears at least as effective as latanoprost, and may be more effective in black patients.

**Caution/Side Effects:**
Conjunctival hyperemia, reduced visual acuity, eye discomfort or pain, and ocular pruritus. An increase in iris pigmentation (brown) occurs in up to 5% of patients; increased eyelid pigmentation and eyelash changes have been reported.

**Dose:**
1 drop once daily. *See protocol pg. xvi section 19.*

**Preparations:**
0.004% Eye Drop
*Travatan (ALC\STO); 32.2900 per Bott (1)*
BRIMONIDINE/TIMOLOL

Indications:
Reduction of intraocular pressure (IOP) in patients, with progression of glaucoma or ocular hypertension, who are insufficiently responsive to topical B-blockers.

Caution/Side Effects:
Ocular stinging, ocular pain, pruritus headache, conjunctival hyperemia, and conjunctival inflammation.

Dose:
One drop into the affected eye twice a day.

Preparations:
0.2% B/0.5% T Eye Drop
*COMBIGAN (ALL/COL); 32.2900 per Bott (1)

DORZOLAMIDE HYDROCHLORIDE/TIMOLOL

Indications:
Ocular hypertension in patients who are insufficiently responsive to beta-blockers. Open angle glaucoma.

Caution/Side Effects:
Nausea, vomiting, headache, vasoconstriction, palpitations. Not recommended for use in patients with bronchial asthma, history of bronchial asthma, or severe chronic obstructive pulmonary disease, overt cardiac failure, second and third degree AV block, sinus bradycardia. Adverse effects include bronchospasm, heart block, myocardial infarction, respiratory failure.

Dose:
1 drop in affected eye(s) twice daily. See protocol pg. xvi section 19.
**Preparations**

2% D/0.5% T Eye Drop  
*Dorzolamide /Timolol (CIP\LAS); 7.5400 per Bott (1)  
*Glaucometil TD (LPO\COL); 20.9600 per Bott (1)  

22.26mg D/6.83mg T Eye Drop  
*Cosopt (MSD\STO); 32.9700 per Bott (1)

**LATANOPROST/TIMOLOL**

**Indications:**  
Primary open angle glaucoma or ocular hypertension which has not responded too well to beta-blockers alone.

**Caution/Side Effects:**  
Decreased heart rate, ocular burning, conjunctival hyperemia, ocular itching, dry eye and tearing.

**Dose:**  
1 drop once daily. *See protocol pg. xvi section 19.*

**Preparations:**  
0.005% L/0.5% T Eye Drop  
*Xalacom (PFI\STO); 41.2800 per Bott (1)*

**52:92 EENT DRUGS MISCELLANEOUS**

**ARACHIS/ALMOND OIL**

**Indications:**  
Removal of ear wax.

**Caution/Side Effects:**  
Do not use for prolonged periods. Discontinue if any pain is experienced and consult a doctor.
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Dose:
With the head tilted, fill each ear using the dropper provided. Repeat next day.

Preparations:
Ear Drops
*Earex (SSASTO);  8.3200 per Bott (1)

DEXTRAN/HYDROXYPROPYLMETHYLCELLULOS

Indications:
Dry eye syndromes.

Caution/Side Effects:
Blurred vision, matting or stickiness of eyelids, and eye lashes, transient increase in intraocular pressure (postoperatively).

Dose:
Instil 1 or 2 drops as frequently as required to relieve eye irritation.

Preparations:
0.1% D/0.3% H Eye Drop
*Tears Naturale II (ALCSTO);  6.7300 per Bott (1)
0.3% Eye Drop
*Hypromellose (MTP\COL);  2.6600 per Bott (1)
1.4% Pva/ 0.6% P Eye Drop
*Artificial Tears (CIP\BKL);  3.4400 per Bott (1)
56:00 GASTROINTESTINAL DRUGS

56:08 ANTI-DIARRHOEAL AGENTS

Routine use in the treatment of all diarrhoeal states is not indicated. In most acute diarrhoeas they are unnecessary. They may prolong or worsen the diarrhoea associated with organisms that penetrate the intestinal mucosa i.e. toxigenic e.g. E. Coli, Salmonella, Shigella etc. Barbados is a signatory to the WHO policy on diarrhoeal diseases which encourages the use of Oral Rehydration Salts as the preferred treatment.

56:10 ANTIFLATULENTS

56:12 CATHARTICS

Many cathartics are available with different mechanisms of action. Saline cathartics e.g. magnesium hydroxide and magnesium sulphate produce a watery evacuation in 1-3 hours. Stimulant cathartics e.g. senna, bisacodyl and agarol produce a soft to semi-fluid stool in 6-8 hours. Bulk-formers e.g. Ispaghula Husk and Sterculia produce a softening of the stool in 1-3 days. Lubricant cathartics e.g. mineral oil softens the stool in 6-8 hours.
These are drugs that promote the process of digestion in the gastro-intestinal tract in conditions characterized by a lack of one or more of the specified substances that function in the digestion of food.

**ANTI-EMETICS**

**MISCELLANEOUS G. I. DRUGS**

**H. Pylori Treatment**

In the treatment of H. pylori no one regimen can be considered definitive and consideration includes cost, compliance, side-effects, and efficacy.

Patients unable to tolerate metronidazole would be better served by the 10-14 days regimen including Ampicillin.

Please note that Clarithromycin at this time is a Specially Authorised Drug and these regimens should be used with proven diagnosis of H. Pylori.

1. **10 - 14 Day Regimen**
   - Proton Pump Inhibitor
   - twice daily dosing
   - Ampicillin 1g
   - twice daily dosing
   - Clarithromycin 500mg
   - twice daily dosing

2. **10 Day Regimen (for patients resistant to penicillin)**
   - Proton Pump inhibitor
   - twice daily dosing
   - Metronidazole 400mg
   - twice daily dosing
   - Clarithromycin 250mg
   - twice daily dosing
   - Peptobismol
   - 2 tbsp four times daily
   (help to overcome the metronidazole resistance)
56:00 GASTROINTESTINAL DRUGS
56:08 ANTI-DIARRHOEAL AGENTS

DIPHENOXYLATE/ATROPINE

**Indications:**
Management of diarrhoea.

**Caution/Side Effects:**

**Dose:**
2 tabs. 4 times daily until diarrhoea is controlled, then reduce to minimum dose required. **Pediatric 4-8 years:** 1 tablet 3 times daily, **9-12 yrs:** 1 tablet 4 times daily, **13-16 yrs:** 2 tablets 3 times daily.

**Preparations:**
2.5 D/0.025mg A Tablet
*Diastop (MNZ/COL): 0.1130 per Tab (28)*

LOPERAMIDE

**Therapeutic Category:**
Antidiarrhoeal agent.

**Indications:**
Treatment of chronic diarrhoea and reduction of ileostomy discharge.

**Cautions/Side Effects:**
Fatigue, dizziness, nausea, vomiting, dry mouth, abdominal cramp, urinary retention, rash. **Not recommended for children under 2 years.**
Cathartics and Laxatives

Dose:
4mg initially then 2mg after each loose stool until diarrhea is controlled to a maximum of 16mg/day. **Pediatric 2-5 yrs:** 1mg up to 3 times daily for 2 days; **6-8 yrs:** Initially 2mg, then 1mg after each loose stool; maximum of 4mg/day for 2 days. **9-11 yrs:** Initially 2mg, then 1mg after each loose stool; maximum of 6mg/day for 2 days.

**Preparations:**
Tablet, 2mg
*Apo-Loperamide (APO) Rd; 0.0727 per Tab (30)*

**56:10 ANTIFLATULENTS**

**SIMETHICONE (ACTIVATED DIMETHICONE)**

**Indications:**

**Dose:**
**Pediatric:** 0.5-1ml after each meal.

**Preparations:**
20mg/0.3ml Drops
*A Baby Gas-X (NVS) Rd; 5.7900 per Bott (1)*
40mg/ml Drops
*A Infacol (FRS) Rd; 6.8600 per Bott (1)*

**56:12 CATHARTICS AND LAXATIVES**

**GLYCERIN**

**Indications:**
Laxative. Useful for lower bowel evacuation.

**Caution/Side Effects:**
Suppository does not have to melt to produce laxative action.
Cathartics

**Dose:**
1 Supp. inserted high into rectum and retain for 15 minutes when bowel movement is required. Moisten with water before use. See protocol pg. x section iv.

**Preparations:**
Suppos
*Glycerin Adult (FLEBRY); 0.1692 per Supp (12)
*Glycerine Adult (MTPCOL); 0.1908 per Supp (12)
*Glycerine Infant (MTPCOL); 0.1683 per Supp (12)
*Glycerine Paed (MTPCOL); 0.1683 per Supp (12)

**PSYLLIUM**

**Indications:**
Constipation.

**Caution/Side Effects:**
May cause flatulence and intestinal obstruction. Take with full glass of water to minimise obstruction. Exercise caution in patients with ulcerative colitis.

**Dose:**
1 rounded teaspoonful stirred in glass of water 1-2 times daily.

**Preparations:**
Powder
*Konsyl Orange Original (KSYCOL); 11.44 per Bott (1)
*Konsyl Orange Sf (KSYCOL); 20.18 per Bott (1)
*Konsyl Orange Smooth (KSYCOL); 17.49 per Bott (1)
*Konsyl Original (KSYCOL); 19.05 per Bott (1)
*Benefiber Nutriose Sf (NVSCOL); 15.74 per Bott (1)
*Benefiber WF (NVSCOL); 14.21 per Bott (1)
SODIUM PHOSPHATE and BIPHOSPHATE ENEMA

Indications:
Bowel clearance before radiological procedures, endoscopy and surgery.

Dose:
One as required. Pediatric: One as required.

Preparations:
- Fleet Enema Adult (FLE\BRY); 1.8 per Enma (2)
- Fleet Enema Paed (FLE\BRY); 1.96 per Enma (2)

56:16 DIGESTANTS

PANCREATIC ENZYMES - BILE SALTS

Indications:
Conditions where pancreatic enzymes are low or absent e.g. chronic pancreatitis, postpancrectomy.

Cautions/Side Effects:
Slight looseness of stools may occur. Take before or with meals. Swallow tablets whole, do not chew or crush before swallowing.

Dose:
Take 2-3 tablets.

Preparations:
Tablet
Consult the BDS for Supplies. (No Offers to Supply).

56:22 ANTI-EMETICS

DIMENHYDRINATE

Indications:
Prevention and treatment of nausea, vomiting and the vertigo of motion sickness.
Cautions/Side Effects:
Drowsiness, dry mouth. Patients should be warned against driving or performing other tasks requiring alertness. c.f. prescribing in liver and renal disease p. 13; 28.

Dose:
Adult Oral: 50-100mg 2-3 times daily to a maximum of 300mg or 6 tabs. in 24 hours. Supp: 50-100mg 2-3 times daily. i.v: 50mg as needed. Pediatric: 2-6 years 12.5mg; 25mg every 6-8 hours. 6-12 years 25-50mg 2-3 times daily.

Preparations:
3mg/ml Syrup
*Gravinate (CAR\COL); 0.0275 per Ml (125)

50mg Tablet
*Apo-Dimenhydrinate (APO\COL); 0.0315 per Tab (180)
*Gravinate (CAR\COL); 0.0441 per Tab (180)

50mg/ml /ivim Injection
*Dimenhydrinate (RTM\PHA); 1.874 per Vial
*Dimenhydrinate (RTM\PHA); 2.1 per Vial

PROCHLOROPERAZINE (Cross Ref. as tranquiler p. 274).

58:28 ANTIULCER AND ACID SUPPRESSANTS
56:28:12 HISTAMINE RECEPTOR ANTAGONISTS
FAMOTIDINE
Indications:
Treatment of gastric and duodenal ulcers, reflux oesophagitis and Zollinger Ellison Syndrome.

Cautions/Side Effects:
See under Cimetidine. Headaches. c.f. prescribing in renal disease p. 29.
Dose:
Adult: 40mg at night. Maintenance 20mg at night. Injection is administered as 20mg every 12 hours. Pediatric: Oral and intravenous: 0.5mg/kg twice daily. See protocol pg. xiii section 9.

Preparations:
40mg Tablet
*Famotidine (CIP\LAS); 0.0296 per Tab (30)
*Famopsin (REM\SBI); 0.0714 per Tab (30)

RANITIDINE

Indications:
Treatment of peptic ulcer disease, reflux oesophagitis and Zollinger Ellison Syndrome.

Cautions/Side Effects:
See Under Cimetidine. c.f. prescribing in liver and renal disease p. 17; 36.

Dose:
Adult: 150mg twice daily with breakfast or at night; or 300mg daily as a single dose at night. Maintenance dose is 150mg at night. Pediatric: Intravenous: 1mg/kg every 6-8 hours; oral: 2-4mg/kg per day given in 2 divided doses (maximum of 300mg per day). See protocol pg. xiii section 8.

Preparations:
150mg Tablet
*Ranitidine (HEA\ALA); 0.0288 per Tab (60)

25mg/ml Injection
*Ranitidine (PDN\PHA); 0.714 per Amp

300mg Tablet
*Ranitidine (ALK\PHA); 0.0495 per Tab (60)
56:28:32 GI PROTECTANTS

SUCRALFATE

**Indications:**
Treatment of gastric and duodenal ulcers, chronic gastritis.

**Caution/Side Effects:**
Constipation, gastric discomfort, diarrhoea. Tablet may be dispersed in 10-15mls of water for ease of administration. *c.f. prescribing in renal disease p. 37.*

**Dose:**
4g daily either as 1 tablet every 6 hours (1 hour before meals and at bedtime) or 2 tablets every 12 hours (on rising and at bedtime). **Pediatric:** 0.5-1g four times daily (1 hour before meals and at bedtime).

**Preparations:**
1g Tablet
*Apo-Sucralfate (APO\COL); 0.1211 per Tab (120)*

56:28:36 PROTON PUMP INHIBITORS

ESOMEPRAZOLE

**Indications:**
Treatment of gastric and duodenal ulcers, reflux oesophagitis and Zollinger Ellison Syndrome.

**Cautions/Side Effects:**
See under Cimetidine. Headaches. **Not recommended in children less than 12 years.**

**Dose:**
20-40mg once daily as IV injection or IV infusion over 10-30 minutes. Therapy should not exceed 10 days.
Proton Pump Inhibitors

Preparations:
Inj, 40mg
*Nexium (AZN/BRY); 14.9150 per vial.

OMEPRAZOLE

Indications:
Treatment of duodenal and gastric ulcers. Gastroesophageal reflux disease.

Cautions/Side Effects:
Constipation, diarrhea, headache, nausea, rash. Capsule is to be swallowed whole. Take before breakfast. c.f. prescribing in liver disease p. 16. Safety and efficacy not established in children.

Dose:
20mg daily for 4 weeks or 40mg daily for 2 weeks for duodenal ulcers. May need up to 8 weeks for gastric ulcers.

Preparations:
20mg Capsule
*Omeprazole (ALK\PHA); 0.0773 per Cap (30)
*Omeprazole (HEA\ALA); 0.0869 per Cap (30)

40mg Injection
*Omeprazole (CIP\BKL); 5.41 per Vial
*Omeprazole (CIP\LAS); 4.04 per Vial
*Omeprazole (DRL\BKL); 5.41 per Vial


56:32 GI PROKINETIC AGENTS
METOCLOPRAMIDE MONOHYDROCHLORIDE

**Indications:**

**Cautions/Side Effects:**
Restlessness, drowsiness, dizziness, fatigue, insomnia, headache. Exercise caution in activities requiring mental alertness. cf. prescribing in renal disease p. 32. Avoid use with alcohol, tranquillisers and narcotics as added sedation occurs. Take 10-15 minutes before each meal for esophageal reflux and emptying.

**Dose:**
Adult: Tabs: 5-10mg 3 times daily. Pediatric: oral 0.3-0.75mg/kg per day in 3-4 divided doses. Intravenous: 2.5-10mg as a single dose (0.1mg/kg as a single dose in children under 6 years)

**Preparations:**
10mg Tablet
*Metoclopramide (CIP\BKL); 0.021 per Tab (90)
*Perinorm (IPC\BRY); 0.0315 per Tab (90)
1mg/ml Syrup
*Metoclopramide (MUP\BKL); 0.1227 per Ml (480)
5mg/ml Injection
*Metoclopramide (PDN\PHA); 0.5485 per Amp
*Metoclopramide (STP\COL); 0.619 per Amp
HEAVY METAL ANTAGONISTS

The heavy metal antagonists have the property of forming complexes with heavy metals and preventing or reversing the binding of metallic cations to body ligands. These complexes are called chelates. Attention must be paid to the solubility of these complexes and their route of excretion. A list of the antidote and the toxic substance(s) it antagonizes is found below:

<table>
<thead>
<tr>
<th>Antidote</th>
<th>Toxic Substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desferrioxamine</td>
<td>Iron</td>
</tr>
<tr>
<td>Sodium Calciumedetate</td>
<td>lead</td>
</tr>
<tr>
<td>Penicillamine</td>
<td>Copper</td>
</tr>
<tr>
<td></td>
<td>Lead</td>
</tr>
</tbody>
</table>

DESFERRIOXAMINE MESYLATE

Therapeutic Category:
Iron chelating agent.

Indications:
Acute iron intoxication. Chronic iron overload as in haemolytic anaemia or haemochromatosis.

Cautions/Side effects:
Hypotension.

Dose:
I.m: 2g in 8-12ml water for injections. i.v: up to 15mg/kg/hr. to a maximum of 80mg/kg (6g) in 24 hours.

Preparations:
Inj. pdr for reconstitution, 500mg vial
Consult the BDS for Supplies. (No Offers to Supply)
DIMERCAPROL

**Therapeutic Category:**
Chelating agent.

**Indications:**
Acute arsenic, inorganic or elemental mercury, gold and inorganic lead poisoning.

**Cautions/Side Effects:**
Nausea, vomiting, headache, paresthesias, tingling of the hands, sweatings, abdominal pain.

**Dose:**
2-5mg/kg by deep IM injection every 4 hours for 2 days, then 2-4 times on the third day and 1-2 times daily thereafter for 10 days or until complete recovery occurs.

**Preparations:**
Inj. 50mg/ml; 2ml Amp
*Consult the BDS for Supplies. (No offers to Supply).*

Inj. 10%
*Consult the BDS for Supplies. (No Offers to Supply).*

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PENICILLAMINE

**Indications:**
Acute copper (or lead) poisoning, also Wilson's disease. Third line drug for rheumatoid arthritis.

**Cautions/Side Effects:**
Epigastric pain, nausea, rash *c.f. prescribing in renal disease p. 34.*

**Dose:**
Adult: 1-2g daily in divided doses (In R. A: 125mg-250mg with doses increases over a 3-4 mth period to a maximum of 1.5g).
Pediatric: 20mg/kg daily.
Preparations:
Tablet, 250mg
Consult the BDS for supplies. (No offers to supply).

68:00 HORMONES AND SYNTHETIC SUBSTITUTEs

68:20 ANTI-DIABETIC AGENTS

The oral hypoglycaemics are used in insulin independent diabetes mellitus e.g. maturity onset diabetes. Oral sulfonylureas should only be used in combination with insulin under special investigational environments. The routine practice of combining insulin with oral sulfonylureas is not generally encouraged though they may be some clinical circumstances to merit such. They are used to augment caloric and sugar restriction and not to replace it! Metformin is the oral hypoglycaemic of choice in obese, mature onset diabetics, but it is not as well tolerated as the sulphonylureas.

Drug Interactions

Alcohol: Anti-diabetic agents interact with alcohol to produce excess hypoglycemia and a disulfiram reaction (flushing, sweating, palpitations). Reaction is most pronounced with 1st generation sulphonylureas. Reaction with metformin results in lactic acidosis.

Beta Blockers: Hypo/hyperglycemia or hypertension. Propranolol accounts for most interactions and should be avoided.

Acarbose: Increased risk of hypoglycemia. Caution patients to carry glucose products rather than sucrose to counteract hypoglycemia. Reaction may be life threatening.

MAOI’s: Excessive hypoglycemia, CNS depression, seizures. Monitor blood glucose levels and decrease dose of hypoglycemic agent if necessary.
68:20:08 INSULINS

Insulin is used in the treatment of insulin dependent diabetes mellitus or juvenile onset diabetes, when the islets of Langerhans are not producing any insulin. Insulin may also be used for short term therapy, e.g. in gestational diabetes mellitus, to cover surgery, or during acute infections.

Two major types of insulin are listed in the Formulary. These are the short acting, soluble or regular insulin and the intermediate or lente insulin. Insulins are available as the new human insulins.

Cautions/Side Effects:
When prescribing insulin, doctors should clearly state the type and dosage of the insulin required. Patients should be given the correct syringes/needles and shown the volume to draw up.

Note! Local irritation and lipoatrophy at injection site can be reduced by the routine rotation of the injection site. Overdose causes hypo-glycaemia.

Dose
The dose should be individualized to suit the patient’s condition. It is crucial to check exactly how the patient is measuring the insulin!
68:00  HORMONES AND SYNTHETIC SUBSTITUTES

68:04 ADRENALS

BETAMETHASONE

Indications:
Suppression of inflammatory and allergic disorders.

Cautions/Side Effects:
Adrenal suppression. Gastro Intestinal distress, euphoria/depression.
WADA Status: Banned only in competition.

Dose:
Adult: 0.5-5mg daily.

Preparations:
Tablet, 0.5 mg
Consult the BDS for Supplies. (No Offers to Supply).

DEXAMETHASONE

Indications:
Suppression of inflammatory and allergic disorders; shock; diagnosis of cushings disease.

Cautions/Side Effects:
See Betamethasone. WADA Status: See Betamethasone.

Dose:
Adult: 0.5-9mg daily in single or divided doses. Pediatric:
23.3mcg/kg (670mcg/m²/day) in 3 divided doses or 2.5-10mg/m²/day in 3-4 divided doses.

Preparations:
0.5mg Tablet
*Apo-Dexamethasone (APO\COL); 0.0969 per Tab (90)
*Dexamethasone (ROL\BKL); 0.1997 per Tab (90)
1.5mg Tablet
*Dexamethasone (ROL\BKL); 0.3189 per Tab (90)
**Adrenal**

4mg Tablet

*Apo-Dexamethasone (APo\COL); 0.1938 per Tab (90)

*Dexamethasone (WO\CBKL); 0.1881 per Tab (90)

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**DEXAMETHASONE SODIUM PHOSPHATE**

**Indications:**
See Dexamethasone.

**Dose:**
Adult: i.m., slow i.v. injection or infusion 0.5-20mg. Pediatric: 200-500mg/kg daily.

**Preparations:**
5mg/ml Iv Injection

*A Dexamethasone Sod. Phos. (LPH\PHA); 0.495 per Amp

*Dexamethasone Sod. Phos. (RTM\PHA); 0.4885 per

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**FLUDROCORTISONE ACETATE**

**Indications:**
Mineralocorticoid replacement in adrenocortical insufficiency.

**Cautions/Side effects:**
Edema, electrolyte abnormalities, growth suppression in children.

**Dose:**
Adult: 50-300mcg daily. Pediatric: 0.05-0.1mg/day.

**Preparations:**
Tablet, 0.1mg

*Fludrocortisone (DNB/BKL); 1.7514 per Tab. (60)
HYDROCORTISONE

**Indications:**
For anti-inflammatory action, e.g. connective tissue disorders, chronic active hepatitis, allergic disorders.

**Cautions/Side Effects:**
Hypertension, sodium retention and potassium loss, diabetes, muscle weakness and myopathy, osteoporosis, mental changes, gastrointestinal upset and peptic ulcer; growth retardation in children; Cushings syndrome.

**Dose:**
Adult: 20-30 mg daily in divided doses. Pediatric: 2.5-10 mg/kg/day in divided doses every 6-8 hours.

**Preparations:**
100 mg Injection
*Hydrocortisone (ALK\PHA)*; 1.062 per Vial
*Hydrocortisone (RTM\PHA)*; 1.288 per Vial

10 mg Tablet
*Hydrocortisone (DNB\BKL)*; 1.3252 per Tab (120)

20 mg Tablet
*Hydrocortisone (DNB\BKL)*; 1.3252 per Tab (120)
*Hydrocortisone (TLS\SBI)*; 1.1303 per Tab (120)

250 mg Inj.
*Hydrocortisone (RTM\PHA)*; 2.635 per Vial

HYDROCORTISONE SODIUM SUCCINATE

**Indications:**
See Hydrocortisone.

**Dose:**
Adult: i.m., slow i.v. injection or infusion: 100-500 mg, 3-4 times in 24 hours or as required. Pediatric: i.m. 1-5 mg/kg/day or 30-150 mg/m²/day in divided doses every 12-24 hours.
Preparations:
Inj. pdr for reconstit 100 mg
No offers.
Inj. pdr for reconstit 500 mg
*Hydrocortisone (RTMPHA); 4.895 per Vial

METHYLPREDNISOLONE ACETATE

Indications:
See Hydrocortisone.

Caution/Side Effects:
See Hydrocortisone.

Dose:
Adult: i.m. slow i.v. injection or infusion 10-500mg. Pediatric: 0.5-1.7mg/kg every 6-12 hours.

Preparations:
40mg/ml Injection
*Depo-Medrol (PFI\STO); 8.26 per Vial

METHYLPREDNISOLONE SODIUM SUCCINATE

Indications:
See Hydrocortisone.

Caution/Side Effects:
See Hydrocortisone.

Dose:
See Methylprednisolone Acetate.

Preparations:
500mg Injection
*Methylprednisolone Sod. Succ. (RTMPHA); 17.95 per Vial
*Solu-Medrol+Diluent (PFI\STO); 17.36 per Vial
**PREDNISOLONE**

**Indications:**
Drug of choice for most conditions requiring oral corticosteroids, for anti-inflammatory action, e.g. connective tissue disorders, chronic active hepatitis, ulcerative colitis, myasthenia gravis.

**Cautions/Side Effects:**
Hypertension, sodium retention and potassium loss, diabetes, muscle weakness and myopathy, osteoporosis, mental changes, gastro-intestinal upset and peptic ulcer; growth retardation in children; Cushing's syndrome. **WADA Status: Banned only in competition. c.f. prescribing in liver disease p. 16.**

**Pediatric:** 2.5-60mg daily after breakfast. 1-2mg/kg/day (Max 60mg/day).

**Preparations:**
1mg/ml Soln
*Pediapred (CTPCOL); 0.2083 per Ml (120)
*Prednisolone (LCSSTO); 0.0672 per Ml (120)

20mg Tablet
*Prednisolone (REMSBII); 0.1857 per Tab (90)

2mg/ml Soln
*Pred Cort DS (CARCOL); 0.1608 per Ml (125)

5mg Tablet
*Prednisolone (CIPBKL); 0.0232 per Tab (90)
*Prednisolone (CPPCOL); 0.0329 per Tab (90)
*Prednisolone (PDNPHA); 0.0397 per Tab (90)
*Prednisolone (STPCOL); 0.035 per Tab (90)
TRIAMCINOLONE ACETONIDE

Indications:
See Hydrocortisone

Caution/Side Effects:
Avoid in chronic use.

Dose:
40mg repeated at intervals.

Preparations:
10mg/ml Injection
*Triamcinolone (CIP\BKL); 9.26 per Vial
40mg/ml Injection
*Triamcinolone (CIP\BKL); 2.64 per Vial
*Triam-Denk (EDK\COL); 3.229 per Vial

68:12 CONTRACEPTIVES

MEDROXYPROGESTERONE

Indications:
Long-acting contraceptive.

Caution/Side Effects:
Fluid retention, weight changes.

Dose:
150mg every 12 weeks for contraception. The first injection for contraception must be given ONLY during the first 5 days of a normal menstrual period. ONLY within the first 5-days postpartum if not breast feeding; and if exclusively breastfeeding ONLY at the sixth post partum week.

Preparations:
150mg/ml Injection
*Medroxyprogesterone (CIP\BKL); 7.7 per Vial
68:16  ESTROGENS AND ANTIESTROGENS

ESFERIFIED OESTROGEN (ESTROPITE)

**Indications:**
Prevention of post-menopausal osteoporosis. Atrophic vaginitis; atrophic urethritis, estrogen replacement. HRT (maybe cyclical and progestogen should be added for 10-14 days of the cycle or may be continuously combined). **50-70% less potent than the conjugated equine oestrogen.**

**Cautions/Side Effects:**
Headache, nausea, hypertension, vaginal bleeding. c.f. prescribing in liver disease p. 16.

**Dose:**
0.625-2.5mg daily

**Preparations:**
Oestrogens conjugated; 0.625mg per tab
*Consult the BDS for Supplies. (No Offers to Supply).*

Oestrogens conjugated; 1.25mg per tab
*Consult the BDS for Supplies. (No Offers to Supply).*

Oestrogens conjugated; 2.5mg per tab
*Consult the BDS for Supplies. (No Offers to Supply).*

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68:16:04 OESTROGENS

CONJUGATED EQUINE OESTROGENS

**Indications:**
Prevention of post-menopausal osteoporosis. Atrophic vaginitis; atrophic urethritis, estrogen replacement. HRT (maybe cyclical and progestogen should be added for 10-14 days of the cycle or may be continuously combined).
Cautions/Side Effects:
Headache, nausea, hypertension, vaginal bleeding, weight changes. 
c.f. prescribing in liver disease p. 16.

Dose:
Oral: 0.3-1.25mg daily.; i.v./i.m: 25mg may repeat in 6-12 hours if 
necessary; vaginal cream: 2-4g daily for 3 weeks, off for 1 week 
then repeat

Preparations:
Oestrogens Conjugated; 0.625mg per tab
*Premarin (WYE/ARM); 0.6729 per Tab. (120)
*Premarin (WYE/STO); 0.6729 per Tab. (120)

Oestrogens Conjugated; 1.25mg per tab
Consult the BDS for Supplies. (No Offers to Supply).

Oestrogens Conjugated; 0.3mg per tab
*Premarin (WYE/ARM); 0.6086 per Tab. (30)
*Premarin (WYE/STO); 0.6086 per Tab. (30)

Oestrogens Conjugated; Vaginal Cream, tube with applicator
*Premarin (WYE/ARM); 25.7400 per Tube. (1)
*Premarin (WYE/STO); 25.7500 per Tube. (1)

OESTRADIOL

Indications:
HRT (maybe cyclical and progestogen should be added for 10-14 
days of the cycle or may be continuously combined). Prevention of 
post-menopausal osteoporosis and vascular disease. Atrophic 
vaginitis; atrophic urethritis, estrogen replacement.

Caution/Side Effects:
Less thromboembolic disease than semisynthetic or synthetic 
oestrogen, spotting, breast tenderness, chloasma, weight changes. 
c.f. prescribing in liver disease p. 16.
Combined Preparations for Menopausal Symptoms

**Dose:**
Oral: 0.5-2mg daily. Vaginal: 2-4g (0.2-0.4mg oestradiol) daily for 1-2 weeks, then increase to 1-2g/day for 1-2 weeks; then maintenance dose of 1g 1-3 times weekly for 3 weeks, then off for 1 week; then repeat cycle once vaginal mucosa has been restored.

**Preparations:**
1mg Tablet
*Progynova (BSP\BKL); 8.07 per Pkge (1)
*Progynova (BSP\COL); 8.07 per Pack (1)
*Progynova (BSP\LAS); 8.07 per Pkge (1)

2mg Tablet
*Progynova (BSP\BKL); 8.29 per Pkge (1)
*Progynova (BSP\COL); 8.29 per Pack (1)

68:17 COMBINED PREPARATIONS FOR MENOPAUSAL SYMPTOMS

**MENOPAUSAL PREPARATIONS**

**Indications:**
Symptoms due to oestrogenic deficiency and for the prophylaxis of postmenopausal osteoporosis in women at risk of developing fractures.

**Cautions/Side Effects:**
Headache, dizziness, nausea, changes in bleeding patterns. Do not chew tablets, swallow whole.

**Dose:**
1 tablet daily.

**Preparations:**
Oestrogens Conjugated 0.625mg/Medroxyprogesterone 2.5mg per tab
Consult the BDS for Supplies. (No Offers to Supply).

Oestrogens Conjugated 0.625mg/Medroxyprogesterone 5mg per tab
Consult the BDS for Supplies. (No Offers to Supply).
Oestradiol/ Cyproterone Acetate (Progesterone Derivative)
Tablet, Oestradiol/Cyproterone Acetate
*Climen (BSP/BKL); 10.9800 per Pack. (1 Pack)
*Climen (BSP/COL); 10.9800 per Pack. (1 Pack)
*Climen (BSP/LAS); 10.9800 per Pack. (1 Pack)

Oestradiol - Oestriol - Norethisterone (Testosterone Derivative)
Tablet, Oestradiol 1mg/Drospirenone 2mg
*Angeliq (BSP/BKL); 18.8100 per Pack. (1 Pack)
*Angeliq (BSP/COL); 18.8100 per Pack. (1 Pack)
*Angeliq (BSP/LAS); 18.8100 per Pack. (1 Pack)

Tablet, Oestradiol/Norethisterone
*Cliane (BSP/BKL); 12.9400 per Pack. (1 Pack)
*Cliane (BSP/COL); 12.9400 per Pack. (1 Pack)
*Cliane (BSP/LAS); 12.9400 per Pack. (1 Pack)
*Novofem (NOV/COL); 15.0700 per Pack. (1 Pack)

Tablet, Oestradiol/Norgestrel
*Progyluton (BSP/BKL); 10.6600 per Pack. (1 Pack)
*Progyluton (BSP/COL); 10.6600 per Pack. (1 Pack)
*Progyluton (BSP/LAS); 10.6600 per Pack. (1 Pack)

68:20 ANTI-DIABETIC AGENTS
68:20:02 ALPHA GLUCOSIDASE

ACARBOSE

Indications:
Indicated as monotherapy or in combination with sulfonylureas, metformin, or insulin for treating patients with non-insulin dependent diabetes mellitus.

Caution/Side Effects:
Flatulence, diarrhoea, and abdominal pain.
Dose:
**Adult:** 25mg 3 times daily is administered at the beginning of each main meal. The usual maintenance dose is from 50-100mg 3 times daily. (Not to exceed 50mg 3 times daily in patients 60kg or less; or 100mg 3 times daily in patients greater than 60kg)

**Preparations:**
50mg Tablet
*Glucar (GLPARM); 0.1076 per Tab (180)

---

**68:20:04** BIGUANIDES
**METFORMIN HYDROCHLORIDE** (B)

**Indications:**
Diabetes mellitus in obese, mature onset, diabetes without ketosis, when diet and attempts at weight loss fail. Not interchangeable with sulphonylureas; can be combined with one of them or used on its own in the obese.

**Caution/Side Effects:**
Anorexia or dyspepsia occurs in 15% of cases. Lactic acidosis is an infrequent side effect. Nausea, vomiting, diarrhoea, flatulence. *c.f. prescribing in liver and renal disease p. 15; 32.* Not recommended in children under 17 years.

**Dose:**
500-2550mg every eight to twelve hours. Start at the smallest dose and increase as required to a maximum of 2550mg daily in divided doses. If doses greater than 2g are required give in 3 divided doses.

**Extended Release:** 500mg-1g once daily initially to a max of 2500mg/day. Anovulatory women with polycystic ovary syndrome: 500mg orally three times daily.

**Preparations:**
500mg Tablet
*Diamet (WERCOL); 0.0565 per Tab (180)
*Glyformin (REM/SBI); 0.0275 per Tab (180)
*Metformin (LSTSTO); 0.0242 per Tab (180)
Tablet Extended Release 500mg
*Metformin XR (HEA/ALA); 0.0606 per Tab
*Metformin XR CIP/BKL); 0.0433 per Tab
850mg Tablet
*Emnorm (IPC\BRY); 0.0455 per Tab (90)
*Glyformin (REM\SBI); 0.0458 per Tab (90)

68:20:08 INSULINS
BIPHASIC ISOPHANE (HUMAN) (B)
Indications:
Diabetes Mellitus.
Caution/Side Effects:
Hypoglycemia. WADA Status: Banned in and out of competition.
Dose:
See protocol pg. xiii section 8.
Preparations:
Injection
*Humulin 70/30 (LIL\STO); 13.51 per Vial (5)
*Novolin 70/30 (NOV\COL); 13.46 per Vial (5)

INSULIN RAPID (B)
Indications:
Diabetes Mellitus
Caution/Side Effects:
See under Insulin (lente), Zinc Suspension, Human.
Dose:
See under Insulin (lente), Zinc Suspension, Human. See protocol pg. xiii section 9.
Preparations:
Injection
*Humulin-R (LIL\STO); 13.51 per Vial (5)
*Novolin-R (NOV\COL); 13.46 per Vial (5)
INSULIN SYRINGE (B)

THE BDS WILL ONLY REIMBURSE FOR PATIENTS WHO ARE ON INSULIN.

Preparations:
*Insulin Syringe 30gx1/2" (ALMPHA); 0.1841 per Each (10)
*Insulin Syringe 31gx5/16" (ALMPHA); 0.187 per Each (10)

ZINC SUSPENSION (B)

Indications:
Diabetes Mellitus.

Caution/Side Effects:
See under Insulin (lente), Zinc Suspension, Human.

Dose:
See under Insulin (lente), Zinc Suspension, Human. See protocol pg. xiii section 9.

Preparations:
100u/ml
*Humulin-N (LILSTO); 13.51 per Vial (5)

100u/ml Injection
*Novolin-N (NOVCOL); 13.46 per Vial (5)

68:20:20 SULPHONYLUREAS

GLIBENCLAMIDE (B)

Indications:
Diabetes Mellitus. More potent than chlorpropamide but shorter acting and not affected by renal failure. Half-life: 10 hours; Duration of Action: 24 hours. Glyburide is the micronised form of Glibenclamide and prescriptions for both will not be honored.
Sulphonylureas

Caution/Side Effects:
Hypoglycemia: Occurs more commonly in elderly patients, even with low doses. It is best avoided in the elderly. c.f. prescribing in liver and renal disease p. 14; 30. Take with breakfast.

Dose:
2.5-5mg to a maximum of 20mg daily. See protocol pg. xiii section 9.

Preparations:
5mg Tablet
*Daonil (SFA\COL); 0.1669 per Tab (120)

GLICLAZIDE (B)

Indications:
Treatment of diabetes mellitus. Maybe of benefit in retinopathy.

Caution/Side Effects:
Gastrointestinal upset, nausea, hypoglycemia, weight gain, dizziness. c.f. prescribing in liver and renal disease p. 14; 30.

Dose:
Initially 40-80mg daily, adjusted according to response to a maximum of 320mg daily. Up to 80mg given as a single dose with breakfast; higher doses to be divided with main meals. N.B: Diamicon MR is a once daily dosage tablet. Breaking the tablet destroys the formulation. BDS WILL REIMBURSE FOR A MAXIMUM OF 120MG OF DIAMICRON MR PER MONTH AT A ONCE DAILY DOSING. DOSAGES REQUIRING BREAKING OF TABLETS ARE NOT RECOMMENDED BY THE MANUFACTURER AND WILL NOT BE HONOURED. See protocol pg. xiii section 8.

Preparations:
30mg Tablet
*Diamicon MR (SER\STO); 0.227 per Tab (120)
376 Antihypoglycemic Agents

60mg Tablet
*Diamicrom MR (SERSTO); 0.4307 per Tab (60)

80mg Tablet
*Gliclazide (CIP\BKL); 0.0518 per Tab (120)
*Gliclazide (CIP\BKL); 0.052 per Tab (120)
*Gliclazide (HEA\ALA); 0.0592 per Tab (120)

GLIMEPIRIDE (B)

Indications:
Adjunct to diet in non-insulin dependent diabetics

Caution/Side Effects:
Hypoglycemia, headache, dizziness, nausea.

Dose:
Recommended initial dose 1-2mg once daily, increased gradually (every 1-2 weeks) to a maximum of 8mg once daily. See protocol pg. xiii section 9.

Preparations:
2mg Tablet
*Glimepiride (CIP\BKL); 0.0663 per Tab (45)
*Glimepiride (DRL\BKL); 0.0667 per Tab (45)
*Glimepiride (HEA\ALA); 0.086 per Tab (45)

4mg Tablet
*Glimepiride (CIP\BKL); 0.1427 per Tab (45)
*Glimepiride (DRL\BKL); 0.1426 per Tab (45)
*Glimepiride (HEA\ALA); 0.124 per Tab (45)

68:22 ANTIHYPOGLYCEMIC AGENTS

GLUCAGON

Indications:
Treatment of hypoglycaemia.

Caution/Side Effects:
Nausea, vomiting, rash.
**Progestogens**

**Dose:**
0.5-1mg I.M., I.V. or S.C. Repeat in 20 minutes if ineffective.

**Preparations:**
1mg Injection
*Glucagon Hypokit (NOV\COL); 67.28 per Amp

---

**68:28 PITUITARY**

**Vasopressin**

**Indications:**
Diabetes insipidus; post-operative abdominal distention.

**Caution/Side Effects:**
Vascular disease, chronic nephritis, vertigo.

**Dose:**
s.c. or i.m. 5-10 units every 3-4 hours. i.v. 20 units over 15 minutes.

**Preparations:**
20u/ml Injection
*Pressyn (FER/PHA); 19.97 per Amp
*Vasopressin (BCH\LAS); 15.999 per Amp
*Vasopressin (DIL\BKL); 27.99 per Amp

---

**68:32 PROGESTOGENS**

**Hydroxyprogesterone Caproate**

**Indications:**
Amenorrhea, pre-term labour (prophylaxis).

**Caution/Side Effects:**
Changes in appetite or weight, fluid retention, oedema, acne, chloasma (melasma), allergic skin rashes

**Dose:**
Pre-term labour (prophylaxis): 250-500mg intramuscularly weekly during first half of pregnancy or longer. Amenorrhea: 375mg intramuscularly.
PROGESTOGENS

Preparations
250mg/ml Injection
*Hydroxyprogesterone (WOC\BKL); 15.02 per Vial

MEDROXYPROGESTERONE ACETATE

Indications:
Anovulatory dysfunctional uterine bleeding (DUB), post menopausal hormone replacement therapy, contraception, carcinoma of the endometrium.

Caution/Side Effects:
Fluid retention, menstrual disorders. Use with caution in conditions which worsen fluid retention. c.f. prescribing in liver disease p. 15.

Dose:
Oral: 2.5-10mg daily for at least 10 days per month as HRT; daily from days 16 or 21 of cycle for 5-10 days in anovulatory DUB. Higher parenteral doses are required in endometrial cancer.

Preparations:
100mg Tablet
*Apo-Medroxy (APO\COL); 0.5329 per Tab (30)

10mg Tablet
*Apo-Medroxy (APO\COL); 0.2664 per Tab (10)

2.5mg Tablet
*Apo-Medroxy (APO\COL); 0.0727 per Tab (20)

NORETHISTERONE (NORETHINDRONE)

Indications:
See Medroxyprogesterone Acetate.

Caution/Side Effects:
c.f. prescribing in liver disease p. 15. Contraindicated in pregnancy. Ten times more potent than medroxyprogesterone
Dysfunctional Uterine Bleeding: 2.5-10mg daily for 5-10 days.
Endometriosis: 5mg daily for 2 weeks. Maintenance: Increase dose by 2.5mg per day every 2 weeks until 15mg daily.

Preparations:
5mg Tablet
*Norcolut (CHW\BKL); 0.159 per Tab (90)
*Norcolut (CHW\LAS); 0.1615 per Tab (90)
*Norethisterone (CIP\BKL); 0.1814 per Tab (90)
*Norethisterone (CPP\COL); 0.121 per Tab (90)

68:36: THYROID AND ANTITHYROID AGENTS
CARBIMAZOLE

Indications:
Hyperthyroidism.

Caution/Side Effects:
Monitor carefully in pregnancy and breast feeding as overdose may cause fetal and neonatal thyroid depression. May cause skin rashes, joint swelling, arthalgias.

Dose:
20-60mg daily in 3-4 divided doses until patient is euthyroid. Usual maintenance dose is 5-20mg daily which may be taken as a single daily dose but is not usually recommended. Pediatric: 0.75-1mg/kg/day in divided doses. Neonates: 2.5mg every 8 hours with a gradual reduction as symptoms are controlled.

Preparations:
5mg Tablet
*Carbimazole (CRO\COL); 0.0592 per Tab
*Carbimazole (REM\SBI); 0.0850 per Tab
PROPYLTHIOURACIL

Indications:
Hyperthyroidism.

Caution/Side Effects:
Fever, leukopenia, rash.

Dose:
150-450mg daily until patient is euthyroid; maintenance dose, 50-150mg.

Preparations:
50mg Tablet
*Propylthiouracil (HAL\COL); 0.1518 per Tab (270)

THYROXINE SODIUM

Indications:
Hypothyroidism.

Caution/Side Effects:
Angina, sweating, headache, diarrhoea, tachycardia (features of thyrotoxicosis), weight loss, restlessness.

Dose:
50-100mcgs daily increased by 25-50mcg at intervals of about 4 weeks. Maintenance Dose: 100-200mcgs daily. Best taken on an empty stomach. Start at low dose (12.5-50mcg daily) in elderly or patients with ischaemic heart disease.

Preparations:
0.1mg Tablet
*Eltroxin (GSK\COL); 0.0662 per Tab (60)
*Eutirox (MEK\COL); 0.0397 per Tab (60)
200mcg Injection
*Levothyroxine (DIL\BKL); 122.21 per Vial
72:00 LOCAL ANAESTHETICS
BUPIVACAINE HYDROCHLORIDE

Indications:
Used in epidural analgesia. Especially in obstetrics. Contraindicated in intravenous regional anesthesia (Bier's block). 0.75% solution is contra-indicated for epidural block in

Caution/Side Effects:
Highly toxic effects include convulsions, respiratory and cardiac arrest in overdose.

Dose:
Maximum dose of 150-175mg in a 4 hour period. High therapeutic index.

Preparations:
0.25% Injection
*Bupivacaine (ANT\COL); 4.575 per Vial
*Bupivacaine (HOSP\HA); 5.9500 per Vial
*Bupivacaine (HOSP\HA); 7.100 per Vial

0.5% Injection
*Bupivacaine (HOSP\HA); 6.300 per Vial
*Bupivacaine (HOSP\HA); 7.3500 per Vial
*Marcaine Spinal Heavy (AZN\BRY); 5.5700 per Vial
LIGNOCAINE HYDROCHLORIDE

Indications:
Class I. Treatment of ventricular arrhythmias complicating acute myocardial infarction. It is the most widely used of the local anesthetic agents and is used for local blocks, spinal anesthesia and together with adrenaline to provide "vasoconstrictor" action. It is also used as a membrane stabiliser in the treatment of ventricular dysrhythmia.

Caution/Side Effects:
Hypotension, dizziness, blurred vision, sweating, confusion, fits. Accumulates to toxic levels rapidly in patients with cardiac failure. Highly toxic effects include convulsions, respiratory and cardiac arrest in overdose. c.f. prescribing in liver disease p. 14.

Dose:
Available in concentrations from 0.5%-10%. The latter is widely used as a surface analgesic for mucous membranes. Maximum dose 4mg/kg or 250mg in 6 hours.

Preparations:
1% Injection
*Rapicaine (UNP\COL); 0.9700 per Vial

10% Spray
*Xylocaine Pump (AZN\BRY); 22.8800 per Bott

2% Gel
*Xylocaine (AZN\BRY); 6.066 per Tube

2% Injection
*Rapicaine (UNP\COL); 1.6700 per Vial

5% Oint
*Xylocaine (AZN\BRY); 8.3400 per Tube
LIGNOCAINE HYDROCHLORIDE WITH ADRENALINE

Indications:
Adrenaline is often added to local anaesthetics to retard diffusion and limit absorption, to prolong the duration of effect, and to lessen the danger of toxicity.

Caution/Side Effects:
Protect from light.

Dose:
The content of adrenaline does not exceed 0.002% (1 in 50 000).

Preparations:
1% L/1:100,000 E Injection
* Rapicaine (UNP\COL); 0.9400 per Vial
2% L/1:100,000 E Injection
* Rapicaine (UNP\COL); 1.5300 per Vial

76:00 OXYTOCICS

DINOPROSTONE

Therapeutic Category:
Naturally occurring prostaglandin E₂.

Indications:
Induction of labour; cervical ripening; post-partum haemorrhage.

Caution/Side Effects:
Nausea; vomiting, diarrhoea, fever, abdominal pain.

Dose:
0.5mg into the vagina every 6 hours for labour induction. The maximum recommended cumulative dose for a 24 hour period is 1.5mg.
Preparations:
Gel, 0.5mg/3g
Consult the BDS for Supplies. (No Offers to Supply).

ERGOMETRINE MALEATE

Indications:
Post partum haemorrhage.

Caution/Side Effects:
Nausea, vomiting. Caution should be exercised in patients with heart disease, hypertension and vascular disease. c.f. prescribing in liver and renal disease p. 13; 28.

Dose:
Oral: 0.2-0.4mg every 6-12 hours. I.M.: 200mcg every 2-4 hours for up to 5 doses.

Preparations:
500mcg Tablet
*Ergometrine Maleate (STP\COL); 0.0592 per Tab (21)
500mcg/ml Injection
*Ergometrine Maleate (STP\COL); 0.9419 per Amp

OXYTOCIN

Indications:
Induction of labour.

Caution/Side Effects:
To be used for medical rather than elective induction of labour. Refrigerate.
Dose:
0.5-1μm/minute (equal to 3-6ml per hour). The dose should be gradually increased in increments of 1-2μm/minute at 30-60 minute intervals until contraction is established. Once labour has progressed to 5-6cm dilation, the dose may be reduced by similar increments. Dose adjustments may be necessary.

Preparations:
10μ/ml Injection
*Oxytocin (RBX\BKL); 0.4419 per Amp
*Oxytocin (RTM\PHA); 0.4685 per Amp
80:00 SERUMS, TOXOIDS AND VACCINES

80:04 SERUMS

80:08 TOXOIDS

80:12 VACCINES

*Immunisation Schedule*

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Vaccines</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 months</td>
<td>1st Diphtheria, Tetanus and Pertussis (DPT) and Oral Polio</td>
</tr>
<tr>
<td>4 ½ months</td>
<td>2nd Diphtheria, Tetanus and Pertussis (DPT) and Oral Polio</td>
</tr>
<tr>
<td>6 months</td>
<td>3rd Diphtheria, Tetanus and Pertussis (DPT) and Oral Polio</td>
</tr>
<tr>
<td>12 - 15 months</td>
<td>Measles or Measles/Mumps Rubella (MMR)</td>
</tr>
<tr>
<td>18 months</td>
<td>1st Booster Diphtheria, Tetanus and Oral Polio</td>
</tr>
<tr>
<td>4 ½ years</td>
<td>2nd Booster Diphtheria, Tetanus and Oral Polio</td>
</tr>
<tr>
<td>5 years</td>
<td>B C G Vaccine</td>
</tr>
<tr>
<td>11 years</td>
<td>Diphtheria and Tetanus booster</td>
</tr>
</tbody>
</table>

*DOSAGE*

DPT - 0.5ml given intra-muscularly Polio - 0.2ml orally Measles or MMR - 0.5ml subcutaneously in outer aspect of upper arm.

*STORAGE OF VACCINE*

Diphtheria, Tetanus, and Pertussis vaccine should be stored between 2°C - 8°C. Should not be frozen.
Measles or MMR - Best preserved by storing frozen at a temperature of -10°C to -30°C or in refrigerator at temperature between +2°C and +8°C.

Precautions should be taken to ensure that such temperatures are observed during transportation of vaccine and storage in order to maintain the cold chain.

CONTRAINDICATIONS
1. Febrile illness.
2. Diarrhoea. (OPV should be postponed).
3. Convulsion within 1-48 hours following pertussis - omit pertussis at next visit.
4. Rubella should not be given to females when pregnancy is suspected.
5. Children who have leukaemia or who are on immunosuppressive therapy e.g. antimetabolites, corticosteroids or in cases of primary immunodeficiency states e.g. hypogammaglobulinemia.

ADVERSE REACTIONS
Diphtheria, Tetanus, and Pertussis -
(i) Mild local reaction consisting of pain, erythema, tenderness and induration at injection site are common and may be associated with systemic reactions including mild to moderate transient fever, chills, malaise and irritability;
(ii) more marked reactions such as fever (over 40°C), drowsiness, convulsions, excessive screaming or transient shock-like episodes may occur. Occurrence of these features is a CONTRAINDICATION to further injections.

Measles
Mild fever, rash may occur 5-12 days after vaccine. Omit Measles if child has known allergy to eggs or chicken.
ANTI-D IMMUNOGLOBULIN

Indications:
Prevention of D (RhO) sensitisation in RhD negative women.

Caution/Side Effects:
Risk of sensitisation

Dose:
Routine antenatal prophylaxis: 2 doses of 500 units given at weeks 28 and 34 gestation. Postnatal prophylaxis is still necessary.

Preparations:
125mcg/ml Injection
*Partobulin (BAX/BRY); 121.16 per Vial
1500iu
*Hyper Rho D (TCB/COL); 212.55 per Syrn

IMMUNOGLOBULIN, HUMAN

Indications:
Passive Immunity.

Caution/Side Effects:
Hypersensitivity

Dose:
IV, IM, or SC according to Indications:

Preparations:
10% Injection
*Gammagard (BAX/BRY); 1750.07 per Bott
*Gamunex (TCB/COL); 1907.4 per Bott
6g Injection
*Sandoglobulin (CSL\LAS); 823.51 per Bott

TETANUS ANTITOXIN (HUMAN)

Indications:
Passive Immunity.

Caution/Side Effects:
As for Immunoglobulin.

Dose:
250 units IM.

Preparations:
250iu Injection
*Hyper-tet (TCB\COL); 79.04 per Syrn
*Tetabulin (BAX\BRY); 40.40 per Vial

80:12 VACCINES

DIPHTHERIA, TETANUS

Preparations:
Inj. 5ml Vial, Adult
*D.T. Vax (AVP\COL); 18.46 per Vial
*Imo-Vax D.T. Adult (AVP\COL); 12.65 per Vial

DIPHTHERIA, TETANUS AND PERTUSSIS

Preparations:
Inj. Absorbed, (20 dose vial)
*D.T. COQ/DTP (AVP\COL); 18.95 per Vial
*Infanrix DPTA (GSK\COL); 37.14 per Syrn
Vaccines

HAEMOPHILUS B DIPHTHERIA

Indications:
Active Immunisation

Caution/Side Effects:
Local reaction, fever, malaise

Dose:
0.5ml IM

Preparations:
Inj. (1 dose syringe)
*Act-Hib (AVP/COL); 45.75 per Vial
*Hiberix (GSK/COL); 21.8 per Vial

POLIOMYELITIS

Indications:
Active immunisation

Caution/Side Effects:
Local reaction, fever, malaise

Dose:
According to schedule.

Preparations:
Liquid, (20 dose vial)
*Imovax Polio (AVP/COL); 17.22 per Syrn
*Opvero (AVP/COL); 8.67 per Vial

TETANUS TOXOID

Indications:
Active Immunisation

Caution/Side Effects:
Local reaction, fever, malaise.
**TYPHOID**

**Indications:**
Active Immunisation.

**Caution/Side Effects:**
Local reaction, fever malaise.

**Dose:**
0.5ml IM or deep SC.

**Preparations:**
*Typhim V1 (AVP\COL); 39.02 per Vial*

---

**YELLOW FEVER**

**Indications:**
Active Immunisation.

**Caution/Side Effects:**
Not recommended in infants under 9 months.

**Dose:**
0.5ml deep SC.

**Preparations:**
*Stamaril (AVP\COL); 44.41 per Vial*
### 84:00 SKIN AND MUCOUS MEMBRANE PREPARATIONS

<table>
<thead>
<tr>
<th>Area</th>
<th>Quantity Used/Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face</td>
<td>5 - 15 grams</td>
</tr>
<tr>
<td>Both Hands</td>
<td>15 - 50 grams</td>
</tr>
<tr>
<td>Scalp</td>
<td>50 - 100 grams</td>
</tr>
<tr>
<td>Both Arms</td>
<td>100 grams</td>
</tr>
<tr>
<td>Both legs</td>
<td>100 grams</td>
</tr>
<tr>
<td>Groin</td>
<td>15 - 30 grams</td>
</tr>
</tbody>
</table>

### 84:04 ANTI-INFECTIVES, TOPICAL

**CHLORHEXIDINE**

**Indications:**
An antiseptic antimicrobial with activity against gm +ve and gm -ve bacteria, facultative anaerobes and aerobes and yeast.

**Cautions/Side Effects:**
Hypersensitivity to chlorhexidine.

**Dose Range:**
Dressing may remain on wound for up to 24 hours. See protocol pg. x section 4.

**Preparations:**
Sterile Dressing 0.5%; 10cm x 10cm
No Offers to Supply (Contact BDS for Supplies)

### 84:04:04 ANTIBIOTICS TOPICAL

**FRAMYCETIN SULPHATE**

**Indications:** Treatment of skin infections.

**Cautions/Side Effects:**
When possible, the sensitivity of the organism should be determined before treatment as resistant organisms are common. May cause sensitisation.
**Antibiotics, Topical**

**Dose Range:**
Apply 1-2 times daily to infected areas. *See protocol pg. x section 4.*

**Preparations:**
Dressing, Sterile 1%; 10cm x 10cm
*No Offers to Supply (Contact BDS for Supplies)*

---

**FUCIDIC ACID**

**Indications:**
A steroidal antibiotic used in the treatment of osteomyelitis and skin and soft tissue infections due to Staph. Aureus which are resistant to semisynthetic penicillins and other antibiotic. Fucidic Acid is also active against most gram-positive and Neisseria organisms.

**Caution/Side Effects:**
Skin rash, pruritis, eczema. *c.f. prescribing in liver disease p. 13.*

**Dose:**
Apply a single layer directly to wound once daily. Two layers may be used if wound is severely exudative. Cream/Ointment may be applied once daily. *See protocol pg. x section 4.*

**Preparations:**
2% Cream
*Fucidic Acid (CIP\BKL); 5.49 per Tube (2)*
*Fucidin (LEO/COL); 6.5900 per Tube (2)*

2% Ointment
*Fucidin (LEO/COL); 6.5900 per Tube*

Dressing, Sterile 1%, 10x10cm
*Fucin Intertulle (LEO/COL); 2.2610 Each (10)*
GENTAMICIN SULPHATE

Indications:
Skin infections.

Cautions/Side Effects:
Apply ointment sparingly to affected areas. When possible, sensitivity of the organism should be determined before treatment as resistant organisms are common. Sensitisation may occur.

Dose Range:
Apply 3 times daily to infected areas. See protocol pg. x section 4.

Preparations:
Ointment, 0.3%; 15g tube
Consult the BDS for Supplies. (No Offers to Supply).

MUPIROCIN

Indications:
Impetigo due to susceptible bacteria. Cream is recommended for secondarily infected traumatic skin lesions due to susceptible bacteria.

Caution/Side Effects:
Headache, rhinitis, congestion, pharyngitis, taste perversion, burning, stinging, cough, and pruritus.

Dose:
Apply three times daily for 5 days. See protocol pg. x section 4.

Preparations:
2% Oint
*Bactroban (GSK/Col); 9.5 per Tube (2)
NEOMYCIN PREPARATIONS, TOPICAL

Indications:
Treatment of skin infections. Gram +ve organisms- Bacitracin Tyrothricin.

Cautions/Side Effects:
When possible, sensitivity of the organism should be determined before treatment, as resistant organisms are common. May cause frequent sensitisation, especially in prolonged use in leg ulcers. Gram –ve organisms- Neomycin, Polymycin, Polymixin.

Dose:
Apply 3 times daily to infected areas.

Preparations:
Bacitracin
*Bactin Oint. (CAR/COL); 3.4400 per Tube. (2 Tubes)

Bacitracin/Neomycin
*Baneocin (BCH/LAS); 3.36 per Tube (1)
*Baneocin (BCH/LAS); 3.36 per Tube (1)

Bacitracin/Neomycin/Tyrothricin
*BNT CR (CAR/COL); 4.5200 per Tube. (2 Tubes)

BIFONAZOLE

Indications:
Fungal infection including dermatophytosis, pityriasis versicolor and cutaneous candidiasis.

Caution/Side Effects:
Burning, itching, erythema.

Dose:
Apply once daily for 2-4 weeks if necessary.
Antifungals Topical

Preparations:
1% Cream
*Mycospor (BSP\COL); 7.43 per Tube (2)

CICLOPIROX OLAMINE

Indications:
Treatment of fungal infections, especially candidiasis.

Caution/Side Effects:
Irritation, pruritus

Dose:
Apply twice daily. See protocol pg. x section 4.

Preparations:
1% Cream
*Batrafen (SFA\COL); 8.48 per Tube (2)
1% Soln
*Batrafen (SFA\COL); 6.32 per Bott (2)

CLOTRIMAZOLE

Indications:
Topical antifungal.

Caution/Side Effects:
Skin irritation.

Dose:
Apply twice daily. Gently massage cream into the affected area. See protocol pg. x section 4.

Preparations:
1% Cream
*Clotrimazole (CIP\BKL); 0.59 per Tube (2)
*Clotrimazole (GPC\STO); 0.65 per Tube (2)
*Clotrimazole (HEA\ALA); 0.94 per Tube (2)
Antifungals Topical  397

1% Ear drop
*Candid (GLP\ARM);  5.38 per Bott (1)

1% Powder
*Clotrimazole (CIP\LAS);  2.02 per Bott (1)

1% Soln
*Candid (GLP\ARM);  5.38 per Bott (2)
*Candid Mouth Paint (GLP\ARM);  5.38 per Bott (2)

ECONAZOLE

Indications:
Topical ring worm infections, "athletes foot", fungal skin infections.

Caution/Side Effects:
Burning, stinging, erythema.

Dose:
Apply twice daily in cutaneous candidiasis; apply once daily in ring worm and athletes foot.  See protocol pg. x section 4.

Preparations:
1% Cream
*Econaderm (CAR\COL);  2.1 per Tube (2)

1% Soln
*Econaderm (CAR\COL);  3.88 per Bott (2)

ISOCONAZOLE

Indications:
Cutaneous mycotic infections.

Caution/Side Effects:
Skin eruptions and allergic contact dermatitis.

Dose:
Apply twice daily for 2-4 weeks.  See protocol pg. x section 4.
Antifungals Topical

Preparations:
1% Cream
*Travogen (BSP\BKL); 5.41 per Tube (2)
*Travogen (BSP\COL); 5.41 per Tube (2)
*Travogen (BSP\LAS); 5.41 per Tube (2)

KETOCONAZOLE
Indications:
Tinea corporis and cruris; tinea versicolor. Candidiasis, seborrheic dermatitis.

Caution/Side Effects:
Irritation, pruritis, stinging. Treatment with the topical cream is usually for no more than 2 weeks.

Dose:
Apply once daily to affected area. **Seborrheic dermatitis:** apply twice daily for 2-4 weeks or until clinical clearing. **Dandruff:** Apply shampoo to wet hair every 3-4 days then as needed to control dandruff. *See protocol pg. x section 4.*

Preparations:
2% Cream
*Ketoconazole (HEA\ALA); 1.88 per Tube (2)
*Ketoconazole (CAR\COL); 2.23 per Tube (2)

2% Shampoo
*Ketoconazole (HEA\ALA); 2.49 per Bott (1)
*Ketoconazole (WOC\BKL); 4.9 per Bott (1)

MICONAZOLE
Indications:
Tinea and candidiasis infections.

Caution/Side Effects:
Local irritation and sensitivity reactions.
Dose:
Apply sparingly twice daily to affected areas. Apply once daily for tinea versicolor. See protocol pg. x section 4.

Preparations:
2% Cream
*Micazole (GPC\STO); 0.67 per Tube (2)
*Miconazole (HEA\ALA); 1 per Tube (2)
2% Powder
*Micospec (CAR\COL); 3.61 per Bott (2)

NAFTIFINE

Indications:
Treatment of tinea pedis, tinea cruris and tinea corporis.

Caution/Side Effects:
Local burning or stinging, dryness or itching.

Dose:
Apply once daily. See protocol pg. x section 4.

Preparations:
1% Cream
*Exoderil (BCH\LAS); 4.04 per Tube (2)
1% Soln
*Exoderil (BCH\LAS); 4.04 per Bott (2)

NYSTATIN

Indications:
For yeast infections, Candidiasis.

Dose Range:
Apply twice daily. See protocol pg. x section 4.
Scabicides and Pediculocides

Preparations:
Topical Cream, 100,000 units/g; 15g
No Offers to Supply (Contact BDS for Supplies)

TERBINAFINE

Indications:
Fungal infections, including Tinea versicolor.

Caution/Side Effects:
Local burning, pruritus and contact dermatitis. Should not be used for more than 2 weeks.

Dose:
Apply once daily to affected areas. Rub in small amount. SHOULD NOT BE USED FOR MORE THAN 2 WEEKS.

Preparations:
1% Cream
*Terbinafine (CIP\BKL): 1.4 per Tube (2)
*Terbinafine (CIP\LAS): 1.75 per Tube (2)
*Terbinafine (HEA\ALA): 2.15 per Tube (2)

84:04:12 SCABICIDES AND PEDICULICIDES

BENZYLBENZOATE

Indications:
Treatment of scabies and pediculosis.

Caution/Side Effects:
Avoid application to the face. Emulsion is to be applied to all members of affected household. Medication has characteristic odour and causes irritation.
Dose:
**Adult:** Apply to whole body. Repeat without bathing on the following day; wash off 24 hours later; a third application may be necessary in some cases. **Pediatric:** Dilute 25% to 12.5% with water. Infants: Dilute to 8.3%.

**Preparations:**
25% Emulsion
*Benzylbenzoate (PDNPHA)*; 0.0188 per ml (150)

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**LINDANE**

**Indications:**
Treatment of scabies and pediculosis.

**Caution/Side Effects:**
Lindane should only be used in patients who cannot tolerate or have failed first-line treatment with safer medications for the treatment of scabies. Seizures and deaths have been reported following lindane use. Risk of serious neurotoxicity when used in infant, children, the elderly, individuals with other skin conditions (e.g. atopic dermatitis, psoriasis), and in those who weigh less than 110 lbs (50kg). Lindane is contraindicated in premature infants and individuals with known uncontrolled seizure disorders. Instruct patients on the proper use of lindane.

**Dose:**
Adult weighing greater than 50kg (110 lbs). **Lice Infestation:** Apply 1 ounce of shampoo to clean, dry hair: DO NOT use more than 2 ounces; leave on for 4 minutes, add water and lather, then rinse. **Scabies:** Apply 1 ounce of cream/lotion to entire body from the neck down for 8 to 12 hours then rinse; DO NOT use more than 2 ounces.

**Preparations:**
Cream, 1%
*Scaboma (GLP/ARM)*; 5.3800 per 15g Tube. (2 Tubes)
Emulsion, 25%
*Scaboma (GLP/ARM); 0.0538 per ml. (100mls)

84:04:92 ANTI-INFECTIVES TOPICAL
MISCELLANEOUS

POVIDONE IODINE

Indications:
Surgical scrub or cleansing agent.

Caution/Side Effects:
Hypersensitivity reactions and irritation of the skin and mucous membranes.

Dose:
When necessary as a surgical scrub or cleansing agent. Apply undiluted to minor wounds and infections twice daily.

Preparations:
0.75%
*Operand Scrub (RIM\PHA); 0.0141 per Ml
*Videne Surgical Scrub (ECO\COL); 0.0241 per Ml

1% Soln
*Operand Antiseptic (RIM\PHA); 7.75 per Bott
*Videne Antiseptic (ECO\COL); 7.43 per Bott

SILVER SULPHADIAZINE

Indications:
Skin infections, particularly gram negative infections such as pseudomonal infections in second and third degree burns. Infected leg ulcers and pressure sores.

Caution/Side Effects:
Sensitivity to sulphonamides. Protect the intact skin.
Dose:
In burns apply daily; in leg ulcer apply at least 3 times a week.

Preparations:
1%
*Silver Sulphadiazine (ASL\PHA); 4.25 per Tube
1% Cream
*Silver Sulphadiazine (RBX\BKL); 17.2 per Jar
<table>
<thead>
<tr>
<th>CLASS</th>
<th>GENERIC</th>
<th>BRAND NAME</th>
<th>COST</th>
<th>DOSAGE REGIMEN</th>
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<tbody>
<tr>
<td>3</td>
<td>BETAMETHASONE 0.1% CR</td>
<td>BETACORT (CAR)</td>
<td>5.00</td>
<td>APPLY BD</td>
</tr>
<tr>
<td>3</td>
<td>BETAMETHASONE 0.1% CR</td>
<td>BETAMETHASONE (GPC)</td>
<td>5.00</td>
<td>APPLY BD</td>
</tr>
<tr>
<td>3</td>
<td>BETAMETHASONE 0.1% OINT</td>
<td>BETAMETHASONE(HEA)</td>
<td>5.00</td>
<td>APPLY BD</td>
</tr>
<tr>
<td>5</td>
<td>FLUCINOLONE 0.025% CR</td>
<td>FLUCINOLONE (ASL)</td>
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</tr>
<tr>
<td>5</td>
<td>FLUTICASONE 0.05% CR</td>
<td>CUTIVATE (GSK)</td>
<td>13.34</td>
<td>APPLY OD</td>
</tr>
<tr>
<td>5</td>
<td>HYDROCORTISONE 1% CR</td>
<td>HYDROCORTISONE (CIP)</td>
<td>5.00</td>
<td>APPLY BD</td>
</tr>
<tr>
<td>5</td>
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<tr>
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<tr>
<td>5</td>
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<td>HYDROCORTISONE (GPC)</td>
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<td>APPLY BD</td>
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<tr>
<td>7</td>
<td>METHYLPREDNISOLONE 0.1% CR</td>
<td>ADVANTAN (BSP)</td>
<td>15.56</td>
<td>APPLY OD</td>
</tr>
<tr>
<td>7</td>
<td>METHYLPREDNISOLONE 0.1% OINT</td>
<td>ADVANTAN (BSP)</td>
<td>15.56</td>
<td>APPLY OD</td>
</tr>
<tr>
<td>3</td>
<td>MOMETASONE 0.1% CR</td>
<td>MOMETASONE (HEA)</td>
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<tr>
<td>3</td>
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<td>MOMETASONE (HEA)</td>
<td>9.31</td>
<td>APPLY OD</td>
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<tr>
<td>5</td>
<td>MOMETASONE 0.1% OINT</td>
<td>MOMETASONE (GSK)</td>
<td>9.98</td>
<td>APPLY OD</td>
</tr>
<tr>
<td>5</td>
<td>PREDNICARBATE 0.1% CR</td>
<td>DERMATOP (SFA)</td>
<td>12.40</td>
<td>APPLY BD</td>
</tr>
</tbody>
</table>

**N.B:** Topical corticosteroid preparations are grouped according to relative anti-inflammatory activity (as measured by vasoconstrictor assay) 1 being highest and 7 lowest. Activity may vary considerably depending on the vehicle, site of application, the individual patient and if an occlusive dressing is used.
84:06 ANTI-INFLAMMATORY AGENTS, TOPICAL

BETAMETHASONE VALERATE

Indications:
Relief of inflammation and other skin disorders which are unresponsive to less potent corticosteroids

Caution/Side Effects:
Atrophy, striae, erythema, thinning of skin. Acneiform eruptions and telangiectasia. Avoid prolonged use. Avoid use in children. May be absorbed especially when applied over wide areas.

Dose:
Apply 2-3 times daily. Use sparingly. Rub in lightly. See protocol pg. x section 4.

Preparations:
0.1% Cream
*Betacort (CAR\COL); 2.21 per Tube (2)
*Betamethasone (GPC\STO); 0.92 per Tube (2)

0.1% Oint
*Betamethasone (HEA\ALA); 1.61 per Tube (2)

CINCHOCAINE/PREDNISOLONE

Indications:
Haemorrhoids.

Caution/Side Effects:
Avoid excessive use.

Dose:
1 suppository into rectum at night and morning and after a bowel movement. Cream is used similarly. See protocol pg. x section 4.
Anti-Inflammatory Agents

**Preparations:**
- 0.5%c/0.19% P Oint
  *Scheriproct (BSP/BKL); 5.68 per Tube (2)
  *Scheriproct (BSP/COL); 5.68 per Tube (2)
  *Scheriproct (BSP/LAS); 5.68 per Tube (2)
- 1mg C/1.3mg P Suppos
  *Scheriproct (BSP/BKL); 0.6075 per Supp (12)
  *Scheriproct (BSP/COL); 0.6075 per Supp (12)
  *Scheriproct (BSP/LAS); 0.6075 per Supp (12)

**HYDROCORTISONE**

**Indications:**
Relief of mild inflammatory skin conditions when a weak steroid is needed.

**Caution/Side Effects:**
See Betamethasone valerate.

**Dose:**
Apply 2-3 times daily. Use sparingly. *See protocol pg. x section 4.*

**Preparations:**
- 1% Cream
  *Hydrocortisone (CARI/COL); 2.45 per Tube (2)
  *Hydrocortisone (CIP/LOS); 1.83 per Tube (2)
- 1% Oint
  *Hydrocortisone (GPC/STO); 2.15 per Tube (2)
  *Hydrocortisone (CARI/COL); 2.96 per Tube (2)

**METHYLPREDNISOLONE**

**Indications:**
Various dermatoses, atopic and contact dermatitis, psoriasis.

**Caution/Side Effects:**
Burning, itching, irritation, skin atrophy.
Dose:
Apply once daily. See protocol pg. x section 4.

Preparations
0.1% Cream
*Advantan (BSP\BKL); 8.56 per Tube (2)
*Advantan (BSP\COL); 8.56 per Tube (2)
*Advantan (BSPLAS); 8.56 per Tube (2)

0.1% Oint
*Advantan (BSP\BKL); 8.56 per Tube (2)
*Advantan (BSP\COL); 8.56 per Tube (2)
*Advantan (BSPLAS); 8.56 per Tube (2)

MOMETASONE FUROATE

Indications:
For relief of inflammatory and pruritic conditions.

Caution/Side Effects:
See Betamethasone Valerate. Do not use occlusive dressing.

Dose:
Use sparingly once daily. Rub in gently. See protocol pg. x section 4.

Preparations:
0.1% Cream
*Furasone (CAR\COL); 4.31 per Tube (2)
*Mometasone (HEA\ALA); 4.04 per Tube (2)

0.1% Oint
*Furasone (CAR\COL); 4.98 per Tube (2)

PRETNICARBATE

Indications:
For relief of inflammatory and pruritic conditions. May be used in sensitive areas.
Caution/Side Effects:
Uninterrupted treatment for over 4 weeks should be avoided.

Dose:
Apply once daily as a thin layer. Rub in gently. Use Sparingly. See protocol pg. x section 4.

Preparations:
0.1% Cream
*Dermatop (SFA/COL); 7,4000 per Tube. (2 Tubes)

TRIAMCINOLONE

Indications:
Relief of inflammation and pruritic conditions.

Cautions/Side Effects:
Burning, itching.

Dose Range:
Apply 2-4 times daily. See protocol pg. x section 4.

Preparations:
Cream, 0.025%
Consult the BDS for Supplies. (No Offers to Supply).

TRIBENOSIDE/LIDOCAINE

Indications:
Relief of pain, itching and inflammation associated with external and internal hemorrhoids.

Caution/Side Effects:
Slight burning sensation, increased intestinal motility and pain.

Dose:
One suppository morning and evening until acute symptoms ease, then one suppository once daily. See protocol pg. x section 4.
Anti-Infectives and Anti-Inflammatories 409

Preparations:
Oint
*Procto-Glyvenol (NVS(COL)); 5.65 per Pkge (1)
Suppos
*Procto-Glyvenol (NVS(COL)); 1.324 per Supp (5)

84:10 ANTI-INFECTIVES AND ANTI-INFLAMMATORIES

BETAMETHASONE/NEOMYCIN

Indications:
Mild inflammatory dermatoses.

Cautions/Side Effects:
Apply sparingly over small area. Avoid use on broken skin. See under Betamethasone Valerate.

Dose:
Apply twice daily.

Preparations:
Betamethasone/Neomycin
Consult the BDS for Supplies. (No Offers to Supply).

ECONAZOLE/HYDROCORTISONE

Indications:
For inflammatory dermatoses with fungal infection.

Caution/Side Effects:
See under Betamethasone Valerate

Dose:
Apply twice daily. Rub in gently. See protocol pg. x section 4.
Preparations:  
1% E/1% H Cream  
*Econaderm HC (CAR/COL);  2.83 per Tube (2)

MICONAZOLE/BETAMETHASONE

Indications:  
Mild inflammatory dermatoses with fungal infection.

Caution/Side Effects:  
Apply sparingly over small area. Avoid use on broken skin. See under Betamethasone Valerate.

Dose:  
Apply twice daily. See protocol pg. x section 4.

Preparations:  
2% M/0.1% B Cream  
*Micospec Bv (CAR/COL);  2.83 per Tube (2)

84:28 KERATOLYTICS

BENZOYL PEROXIDE

Indications:  
Burns, bedsores, varicose ulcers and acne.

Caution/Side Effects:  
Irritation. May bleach fabrics. See protocol pg. x section 4.

Dose:  
Apply 1-2 times daily.

Preparations:  
10% Cream  
*Benzac AC (DPTSTO);  10.36 per Tube

5% Gel  
*Benzac AC (DPTSTO);  10.36 per Tube (1)
84:32 KERATOPLASTICS

COAL TAR

Indications:
Scaly lesions e.g. psoriasis. Seborrhoeic dermatitis of the scalp.

Caution/Side Effects:
Irritation and sensitivity may occur. Do not apply to acutely inflamed skin.

Dose:
Apply twice daily. Shampoo: use once or twice weekly.

Preparations:
Shampoo
* Tarmed (STIBRY); 9.55 per Bott (1)

84:36 MUCOUS-SKIN PREPARATIONS, MISCELLANEOUS

HYPROMELLOSE/PROPYLENE GLYCOL

Indications:
Debridement of dry, necrotic or sloughy wounds.

Caution/Side Effects:
Sensitivity to hydrogel.

Dose:
Insert into the wound to a minimum depth of 5mm, and covered with a sterile secondary dressing. It is not suited for application to wounds that are exuding very heavily. The interval between dressing changes will depend entirely upon the state of the wound. On heavily exuding or malodorous wounds, daily changes will be required; but on dry wounds, the dressing may be changed on alternate days. It is recommended that the dressing is not left ‘insitu’ for longer than three days between changes.
412 Genitourinary Smooth Muscle Relaxants

**Preparations:**
Gel. 2.3% HM/20% PG
*Intrasite Gel (SMNIMS); 11.9 per Tube (1)
*Purilon (CLPIMS); 11.9 per Tube (1)

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**LUBRICATING JELLY**

**Preparations**
*Aquagel (ECOCOL); 2.21 per Tube
*Durex Play (SSABRY); 1.86 per Sach
*Lubifem (CIPLAS); 2.02 per Tube

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**SILVER NITRATE**

**Indications:**
Cauterisation of granulation tissue.

**Caution/Side Effects:**
burning and skin irritation; staining of skin.

**Dose:**
Apply stick once to granulation tissue.

**Preparations:**
75%
*Silver Nitrate (PDNPHA); 1.64 per Each

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**86:00 SMOOTH MUSCLE RELAXANTS**

**86:12 GENITOURINARY SMOOTH MUSCLE RELAXANTS**

**OXYPHYLUS**

**Indications:**
Oxybutynin is an effective spasmolytic agent for the treatment of neurogenic bladder, bladder spasm, overactive bladder, and detrusor muscle instability.
Caution/Side Effects:
Tachycardia, palpitations, somnolence, dry mouth, constipation, blurred vision, mydriasis, urinary retention, and urticaria.

Dose:
Adults and Pediatric over 5 years: 5mg 2-3 times daily. Adult dose may be increased to 5mg 4 times daily. Geriatric: 2.5-5mg 4 times daily.

Preparations:
5mg Tablet
*Apo-Oxybutynin (APO\COL); 0.0727 per Tab (120)

88:00 VITAMINS

Primary vitamin deficiency is due mainly to inadequate intake of nutrients. This is especially so in pregnant and lactating women, pre-school children and the under-privileged. Most people do not need to take vitamins daily if they eat three balanced meals. Fad diets are often associated with inherent vitamin deficiencies.

There is no proven need to take large "mega"b doses of vitamins daily especially since the intake of vitamins A, B, and D in large doses may be harmful. There is still no proof that the controversial practice of large daily doses of vitamin C will either prevent or alleviate the symptoms of the "common cold".

There is no justification for buying expensive vitamins in the belief that they are better or more potent than less expensive brands.

It should be noted that the RDA’s (Recommended Dietary Allowances) found on the labels of vitamins are just guides to daily intake and include a surplus to provide for the variation in the requirements of all individuals.

Thus the use of multivitamins as a panacea for all conditions, as is the current vogue for vitamin E, or as a substitute for proper eating habits and a balanced diet is not recommended.
414 Vitamins

88:04 VITAMIN A

Indications:
Vitamin A is administered to patients with Vitamin A deficiency. It can reduce the mortality rate from measles, prevents stress ulcers and may promote wound healing. Various skin conditions including ichthyosis, acne vulgaris and psoriasis have been treated with Vitamin A.

Caution/Side Effects:
Vitamin A toxicity can occur with excessive amounts of vitamin A taken over short or long periods of time.

Preparations:
25000u Capsule
*Vitamin A (CPC\BKL); 0.2349 per Cap (90)

88:08 VITAMIN B COMPLEX
FOLIC ACID

Indications:
Megaloblastic anaemia due to deficiency of folic acid e.g. in pregnancy, infancy, childhood.

Caution/Side Effects:
High doses may precipitate latent pernicious anaemia.

Dose:
5-10mg daily.

Preparations:
1mg Tablet
*Folic Acid (RIMP\PHA); 0.0588 per Tab (60)
5mg Tablet
*Folic Acid (GPC\STO); 0.0061 per Tab (60)
*Folic Acid (PDN\PHA); 0.0134 per Tab (60)
HYDROXYCOBALAMINE (B12)

Indications:
The treatment and prevention of vitamin B12 deficiency.

Caution/Side Effects:
Hydroxocobalamin should, if possible, not be given to patients with suspected vitamin B12 deficiency without first confirming the diagnosis.

Dose:
Pernicious anaemia and other macrocytic anaemias without neurological involvement: 250 to 1000 micrograms intramuscularly on alternate days for 1 to 2 weeks, then 250 micrograms weekly until the blood count returns to normal. Maintenance doses of 1000 micrograms are given every 2 to 3 months.

Preparations:
1mg/ml Injection
*Hydroxocobalamin (RTM\PHA); 1.1715 per Amp
*Hydroxocobalamin (RTM\PHA); 1.19 per Amp

PYRIDOXINE

Indications:
Treatment and prevention of pyridoxine deficiency states.

Caution/Side Effects:
Long-term use of large doses of pyridoxine is associated with the development of severe peripheral neuropathies.

Dose:
Up to 150 mg daily are used in general deficiency states.

Preparations:
50mg Tablet
*Pyridoxine (CPC\BKL); 0.0597 per Tab
VITAMIN B COMPLEX

**Indications:**
Deficiency of the B vitamins, other than deficiency of vitamin B12.

**Caution/Side Effects:**
The B vitamin group includes the B1 substances (thiamine and its derivatives), B2 (riboflavin), B6 (pyridoxine and derivatives), and B12 (the cobalamin). **For use in Public Sector only.**

**Preparations:**
Capsule
*Becoplex (CAR\COL); 0.0968 per Cap
Injection
*Vitamin B Complex Im (RTMPHA); 1.35 per Vial
*Vitamin B Complex Iv (RTMPHA); 1.35 per Vial

88:12 VITAMIN C

**Indications:**
The treatment and prevention of deficiency.

**Caution/Side Effects:**
Usually well tolerated. Large doses are reported to cause diarrhoea and other gastrointestinal disturbances. **For use in Public Sector only.**

**Dose:**
25 to 75 mg daily in the prevention of deficiency, and 250 mg or more daily in divided doses for the treatment of deficiency.

**Preparations:**
250mg Tablet
*Vitamin C (HTP\PHA); 0.074 per Tab
500mg Tablet
*Vitamin C (CPC\BKL); 0.0624 per Tab
88:16 VITAMIN D

ROCALTROL (CALCITRIOL)

Management of hypocalcemia in patients on chronic renal dialysis only.

Caution/Side Effects:
Not indicated in simple Vitamin D deficiency. Observe calcium levels twice weekly during titration period.

Dose:
0.25-1mcg daily. Initial dose 0.25 mcg. If a satisfactory response is not achieved, increase dosage by 0.25mcg/day at 4 to 8 week intervals.

Preparations:
0.25mcg Capsule
*Calcitriol (CIP\BKL); 0.3867 per Cap (120)

0.25mg Capsule
*One-Alpha (LEOCOL); 0.4037 per Cap (120)

88:24 VITAMIN K ACTIVITY

PHYTOMENADIONE (Vit. K-1) (Cross Ref. to Anticoagulants p. 181).

Indications:
Vitamin K deficiency most commonly seen in hepatic failure. Overdose of oral anticoagulant.

Caution/Side Effects:
Vitamin K antagonises the anticoagulant effects of coumarins and indandiones. Antibiotics in the gut may reduce or inhibit the bacterial synthesis of vitamin K.
Dose:
In the treatment of vitamin K deficiency bleeding in neonates, 1 mg intravenously, subcutaneously, or intramuscularly; further doses may be given if necessary. As a prophylactic measure, a single dose of 0.5 to 1 mg may be given intramuscularly to the newborn infant, or 2 mg orally followed by a second dose of 2 mg after 4 to 7 days.

Preparations:
10mg Tablet
*Phytomenadione (CPC\BKL); 1.0968 per Tab (60)
10mg/ml Iv Injection
*Konakion (ROC\BKL); 1.13 per Amp
*Konakion (ROC\LAS); 1.13 per Amp
*Phytomenadione (HOS\PHA); 1.406 per Amp
1mg Injection
*Vitamin K-1 (HOS\PHA); 6.46 per Amp

88:28 MULTIVITAMIN PREPARATIONS
MULTIVITAMINS
For use in Public Sector only.
Indications:
Prevention and treatment of specific disease states, or where the diet is known to be inadequate.
Caution/Side Effects:
Preparations containing vitamin A or D, may be harmful if patients take more than the prescribed dose.
Dose:
Usually once a day.
Preparations:
Injection
*Infuvite Iv (BAX\BRY); 10.092 per Pair
*Vitamins Multi Paed (BAX\BRY); 14.802 per Inj
Multivitamin Preparations

Tablet
*Multivitamins (PDN\PHA); 0.04 per Tab

MULTIVITAMINS + MINERALS

Indications:
As for Multivitamins. For use in Public Sector only.

Caution/Side Effects:
As for Multivitamins.

Dose:
As for Multivitamins.

Preparations:
*Ferrovite (GPC\STO); 0.0105 per Ml

Capsule
*Vitaplex-P (CAR\COL); 0.2196 per Cap

Syrup
*Vitaplex M (CAR\COL); 0.0493 per Ml

PAEDIATRIC MULTI VITAMIN

Indications:
As for Multivitamins.

Caution/Side Effects:
As for Multivitamins. See Appendix on p. 466. BDS WILL REIMBURSE FOR ONE BOTTLE EVERY TWO MONTHS. IT IS ONLY TO BE SUPPLIED TO CHILDREN UNDER ONE YEAR OF AGE.

Dose:
1.0 ml daily.
420 Other Therapeutic Agents

Preparations:
Drops
*Poly-vitamin Paed (RIMPHA); 9.8 per Bott (1)

92:00 UNCLASSIFIED THERAPEUTIC AGENTS

92:08 5 ALPHA REDUCTASE INHIBITORS

FINASTERIDE

Indications:
Benign prostatic hyperplasia.

Cautions/Side Effects:
Women/children should not handle tablets. Neoplasm of breast, breast tenderness and swelling, ejaculation disorders erectile dysfunction, rash, urticaria, depression, testicular pain and decreased libido.

Dose:
5mg once daily.

Preparations:
Tablet 5mg
*Finasteride (CIP/BKL); 0.2197 per Tab. (30)
*Finasteride (DRL/BKL); 0.2430 per Tab. (30)

92:92 OTHER THERAPEUTIC AGENTS

TAMSULOSIN

Indications:
Benign prostatic hyperplasia.

Caution/Side Effects:
Abnormal ejaculation, dizziness, arthalgia, headache, nausea, diarrhoea, rhinitis and slight reductions in hemoglobin have been
reported. Food may decrease absorption of tamsulosin. Alterations in blood pressure or heart rate have not been significant.

**Dose:**
The recommended oral dose for the treatment of benign prostatic hyperplasia is 0.4mg once daily, to be taken ½ hour after same meal daily. *See protocol pg. xvi section 15.*

**Preparations:**
0.4mg Capsule
*Tamsulosin MR (HEAA\ALA); 0.399 per Cap (30)*

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### 93:00 VASOACTIVE DRUGS

**CINNARIZINE**

**Indications:**
Peripheral vascular disease; Raynaud’s syndrome; vestibular disorders, such as vertigo, tinnitus, nausea and vomiting in Meniere’s disease.

**Caution/Side Effects:**
Fatigue, allergic skin reactions. *c.f. prescribing in liver disease p. 12.*

**Dose:**
**Adult:** 75mg once or twice daily followed by a maintenance dose of 75mg once daily.

**Preparations:**
75mg Tablet
*Cinnarizine (LCSSTO); 0.0774 per Tab (60)*
NAFTIDROFURYL

Indications:
Intermittent Claudication

Caution/Side Effects:
Nausea, G.I. upset; headache, dizziness, insomnia, skin rash, thrombophlebitis, hepatitis

Dose:
1-2 capsules three times daily.

Preparations:
100mg Capsule
*Naftiryl (CAR\COL); 0.2686 per Cap (180)
*Praxilene (MLS\COL); 0.1884 per Cap (180)

200mg Capsule
*Praxilene (MLS\COL); 0.3770 per Cap (120)

94:00 MEDICAL DEVICES

ADMINISTRATION SETS, PARENTERAL, STERILE
ADMIN SET (DIALYSIS)

Preparations
*Intrapur Pvc Free (BRA\COL); 9.23 per Set
*Vented Paclitaxel (2c7557) (BAX\BRY); 13.91 per Set

ADMIN SET ADULT

Preparations:
*Administration Set (CIP\LAS); 0.7500 per Set
*Intrafix Air Pump (BRA\COL); 1.5100 per Set
*Intrafix Primeline (4062181/46 (BRA\COL); 1.700 per Set
*L/S Primary Admin Set Latex (HOS\PHA); 2.2900 per Set
Vasoactive Drugs 423

*Macrodrip Adult (CSC\PHA); 1.100 per Set
*Original Infusomat Tubing (BRA\COL); 3.7900 per Set
*Solution Set (2C5431) (BAX\BRY); 1.3700 per Set

ADMIN SET GLYCINE

Preparations:
*Irrig Set Y-type (2c4005) (BAX\BRY); 10.7600 per Set

ADMIN SET PAED

Preparations:
*Buretrol Interlink (2C7564) (BAX\BRY); 11.2800 per Set
*Buretrol Intlnk Add On 2C7565 (BAX\BRY); 6.9700 per Set
*Dosifix (BRA\COL); 7.0800 per Set
*IV Admin. Set Paed Microdrip (CSC\PHA); 1.3500 per Set
*L/S Primary Burette Microdrip (HOS\PHA); 10.5000 per Set
Vitamins Formulation

3544 THIAMINE-RIBOFLAVINE-PYRIDOXINE-NICOTINAMIDE-ASCORBIC ACID

INJECTION, IM
THIAMINE 250 MG
RIBOFLAVINE 4 MG
PYRIDOXINE 50 MG
NICOTINAMIDE 160 MG
PANTHOSENATE 6 MG
ASCORBIC ACID 500 MG
PER 7 ML, (5 ML AMP AND 1-2 ML AMP)

3545 THIAMINE-RIBOFLAVINE-PYRIDOXINE-NICOTINAMIDE-ASCORBIC ACID

INJECTION, IV
THIAMINE 250 MG
RIBOFLAVINE 4 MG
PYRIDOXINE 50 MG
NICOTINAMIDE 160 MG
PANTHOSENATE 5 MG
ASCORBIC ACID 500 MG
PER 10 ML (PAIR 5 ML AMP)

3546 VITAMINS, MULTI
DROPS, PAEDIATRIC

NIACIN 8 MG
VITAMIN A 1500 U
VITAMIN B1 0.5 MG
VITAMIN B2 0.6 MG
VITAMIN B6 0.4 MG
VITAMIN B12 1.5 MCG
VITAMIN C 35 MG
VITAMIN D 400 U
VITAMIN E 5 U
PER 0.6 ML: 10ML DROPPER
Oestradiol-Oestriol-Norethisterone 425

6691  OESTRADIOL-OESTRIOL-NORETHISTERONE
       (TESTOSTERONE DERIVATIVE)

       Activelle
       - Estradiol 1mg (as hemihydrate)
       - Norethisterone Acetate 0.5mg

       Kliogest
       - Estradiol 2mg
       - Norethisterone Acetate 1mg

       Trisequens
       - 12 blue tabs - estradiol 2mg (as hemihydrate)
       - 10 white tabs - estradiol 2mg (as hemihydrate)
       - Norethisterone 1mg
       - 6 red tabs - estradiol 1mg (as hemihydrate)
SECTION III

Specially Authorised

Drugs (SAD’s)
Specially Authorised Drugs

SPECIALLY AUTHORISED DRUGS (SAD’s)

A Specially Authorised Drug is one not found in the Barbados National Drug Formulary but made available to a physician for a specific patient for a specific period of time.

Such drugs may also be made available to an institution or department to be used by patients who attend a particular clinic/unit.

In order to obtain a S.A.D. the physician is required to fill out a S.A.D. application form which is obtainable from the Barbados Drug Service, Queen Elizabeth Hospital, Psychiatric Hospital or pharmacies within the system. The completed form is returned to the Director, Barbados Drug Service. S.A.D. requests are reviewed by the Formulary Committee at their meetings.

It is to be noted that S.A.D.’s originating from the QEH must be approved by the Chairman, QEH Drug Committee. In cases of emergency the S.A.D. form can be submitted directly to the Chief Dispenser, QEH.

The S.A.D. system may be used by any physician in Barbados. In emergencies the physician may telephone the Director, Barbados Drug Service for approval which must be followed up by the appropriate application form.

For further information please call or write the Director, Barbados Drug Service.

_The S.A.D’s listed in this section are under revision by the Drug Formulary Committee._
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<thead>
<tr>
<th>FORMAT</th>
<th>TRADE NAME</th>
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<td>ACARBOSE:</td>
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<td>TAB 100MG GLUCOBAY (LAS)</td>
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<td>TAB 50MG GLUCOBAY (COL)</td>
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<td>ACECLOFENAC:</td>
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<td>ACETYLCYSTEINE:</td>
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<td>SOLN 20% ACETYLCYSTEINE (BKL)</td>
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<td>ACYCLOVIR:</td>
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<td>INJ 50MG/ML ACYCLOVIR (BKL)</td>
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<tr>
<td>INJ 50MG/ML ZOVIRAX (COL)</td>
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<td>INJ 20% PLASBUMIN (COL)</td>
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<td>INJ 25% ALBUMIN HUMAN (LAS)</td>
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<td>TAB 375MG</td>
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<td>RAPICLAV (BRY)</td>
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<td>ARIMIDEX (BRY)</td>
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<td>EYE 0.05% A/ 0.04% T SPERSALLERG (COL)</td>
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<tr>
<td>CR 0.1%</td>
<td>BETNOVATE (COL)</td>
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<tr>
<td>OINT 0.1%</td>
<td>BETNOVATE (COL)</td>
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**BICALUTAMIDE:**
- TAB 150MG | BICALUTAMIDE (BKL)
- TAB 150MG | CASODEX (BRY)
- TAB 50MG | APO-BICALUTAMIDE (COL)
- TAB 50MG | CASODEX (BRY)

**BIFONAZOLE:**
- SOLN 1% | MYCOSPOR (COL)
- SOLN 1% | MYCOSPOR (LAS)
- SOLN 1% | MYCOSPOR (BKL)
- SOLN 1% | ONICOBEX (BKL)
- SOLN 1% | ONICOBEX (COL)
- SPRA 1% | MYCOSPOR (COL)
- SPRAY 1% | MYCOSPOR (BKL)
- SPRAY 1% | MYCOSPOR (LAS)

**BIPH INSULI ASPART:**
- INJ NOVOMEX 70/30 PENFILLS (COL)

**BIPHASIC ISOPHANE:**
- INJ HUMULIN 70/30 CARTRIDGE (STO)
- INJ INSULIN HUMAN 70/30 (BKL)
- INJ NOVOLIN 70/30 PENFIL (COL)

**BISPOROL:**
- TAB 10MG | CONCOR (COL)
- TAB 5MG | CONCOR (COL)

**BISPOROL/HCTZ:**
- TAB 10MG B/6.25MG H | ZIAC (COL)
- TAB 2.5MG B/6.25MG H | ZIAC (COL)

**BOVINE LIQ. SURF:**
- INJ NEOSURF (BKL)

**BRINZOLAMIDE:**
- EYE 1% | AZOPT (STO)

**BROMAZEPAM:**
- TAB 1.5MG | LEXOTAN (BKL)
- TAB 1.5MG | LEXOTAN (LAS)
- TAB 3MG | LEXOTAN (BKL)
- TAB 3MG | LEXOTAN (LAS)

**BROMOCRIPTINE:**
- TAB 0.5MG | PARLODEL (STO)

**BUDENOSIDE:**
- N SP 32MCG | RHINOCORT AQ (BRY)
- N SP 64MCG | RHINOCORT AQ (BRY)
- RESP 0.25MG/ML | BUDESONIDE (BKL)
- RESP 0.25MG/ML | PULMICORT (BRY)
- RESP 0.5MG/ML | BUDESONIDE (BKL)
- RESP 0.5MG/ML | PULMICORT (BRY)

**BUDENOSIDE/FORMOTEROL:**
- INHR 160MCG B/4.5MCG F | VANNRAIR (BRY)
- INHR 320MCG B/9MCG F | SYMBICORT TURBUHALER (BRY)
- INHR 80MCG B/4.5MCG F | VANNRAIR (BRY)

**BUMETANIDE:**
- INJ 0.5MG/ML | BUMETANIDE (BKL)

**CABERGOLINE:**
- TAB 0.5MG | CABERGOLINE (BKL)
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<td>ROCALTROL (LAS)</td>
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<td>CAP 15MG</td>
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### Specially Authorised Drugs

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## Additional Information

- **INJ 300MCG** FILGRASTIM (COL) FILGRASTIM (PHA) NEUPOGEN (BKL) NEUPOGEN (LAS) ZARZIO (STO)
- **FINASTERIDE** TAB 5MG PROSCAR (STO)
- **FLECAINIDE** TAB 100MG APO-FLECAINIDE (COL) TAB 100MG FLECAINIDE (BKL) TAB 100MG TAMBOCOR (ARM)
- **FLUCONAZOLE** CAP 150MG DIFLUCAN (STO) SUSP 10MG/ML FLUCONAZOLE (BKL) SUSP 40MG/ML FLUCONAZOLE (BKL)
- **FLUDARABINE** INJ 50MG FLUDARABINE (COL) INJ 50MG FLUDARABINE (PHA)
- **FLUMAZENIL** INJ 0.1MG FLUMAZENIL (BKL) INJ 0.1MG/ML FLUMAZENIL (BKL) INJ 0.1MG/ML LANEXAT (BKL) INJ 0.1MG/ML LANEXAT (LAS)
- **FLUNITARINE** CAP 5MG SIBELIUM (STO)
- **FLUCINOLONE-HYDROQUINONE-TRETINOIN** CR 0.01% F-4% H-0.05% T TRI-LUMA (STO)
- **FLUCINOLONE** CR 0.025% FLUCINOLONE (PHA)
- **FLUOXETINE** TAB 20MG PROZAC (STO)
- **FLURBIPROFEN** TAB 100MG APO-FLURBIPROFEN (COL) TAB 50MG APO-FLURBIPROFEN (COL)
- **FLUTICASONE** CR 0.05% CUTIVATE (COL) INHR 125MCG Flixotide (COL) INHR 250MCG Flixotide (COL) N SP 50MCG FLIXONASE (COL)
- **FLUTICASONE/FLUCASONE** NASAL SP 27.5MCG - AYAMYS (COL)
- **FLUVASTATIN** CAP 20MG LESCOL (COL) CAP 40MG LESCOL (COL)
- **FOLINIC ACID** TAB 15MG FOLINIC ACID (PHA)
- **FORMOTEROL** INHR 12MCG FORADIL (COL)
- **FOSINOPRIL** TAB 10MG APO-FOSINOPRIL (COL) TAB 20MG APO-FOSINOPRIL (COL) TAB 20MG FOSINOPRIL (PHA)
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<td>HYOSCINE BUTYLBROMIDE:</td>
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<td>IMIPENEM/CILASTATIN:</td>
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<td>INDAPAMIDE:</td>
<td>TAB 1.5MG INDAPAMIDE SR (ALA)</td>
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<td>HYDROXYZONE:</td>
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<td>HYPROMELLOSE:</td>
<td>EYE 0.3% GENTEAL (COL)</td>
<td>INDOMETHACIN:</td>
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<td>INJ HUMALOG 75/25 (STO)</td>
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<td>HUMALOG CARTRIDGE (STO)</td>
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<td>IBANDRONIC:</td>
<td>INJ 1MG/ML BONDRONAT (BKL)</td>
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<td>NOVOLIN R PENFIL (COL)</td>
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<td>INSULIN SYRINGE:</td>
<td>MONOJECT 29GX1/2&quot; (COL)</td>
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<td>IBUPROFEN:</td>
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<td>DMDUR (BRY)</td>
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<td>PROCORALAN (STO)</td>
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<td><strong>JOSSAMYCIN:</strong></td>
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<td><strong>LANSOPRAZOLE:</strong></td>
<td>CAP 15MG LANSOPRAZOLE (BKL)</td>
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<td>JOSALID (LAS)</td>
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<td><strong>KETOCONAZOLE:</strong></td>
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<td><strong>LEFLUNOMIDE:</strong></td>
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<td>NIZORAL (STO)</td>
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<td>ARAVA (COL)</td>
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<td>INJ 11.25MG LUPRON DEPOT (PHA)</td>
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<td>INJ 22.5MG</td>
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<td>INJ 3.75MG</td>
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<td><strong>KETOROLAC:</strong></td>
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<td>LUPRON DEPOT (PHA)</td>
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<td><strong>ACULAR (COL) 0.5%</strong></td>
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<td><strong>ZADITEN (COL) 0.25%</strong></td>
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<td>SYR 2.5MG/ML CETIMER (COL)</td>
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<td>LEVOFLOXACIN (BKL)</td>
<td>TAB 50MG L/</td>
<td>LOSARTAN/HCTZ (LAS)</td>
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<td>LOVASTATIN:</td>
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<td>MEBENDAZOLE:</td>
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<td>LOISERETIC:</td>
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<td>TAB 250MG APO-MEFENAMIC ACID (COL)</td>
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<td>TAB 500MG PONSTAN FORTE (STO)</td>
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Specially Authorised Drugs

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<td>TAB 20MG/50MG A</td>
<td>NIFTEN (BRY)</td>
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**NIMODIPINE:**
- INJ 0.2MG/ML | NIMODIPINE (STO)
- INJ 0.2MG/ML | NIMOTOP (BKL)
- INJ 0.2MG/ML | NIMOTOP (COL)

**NIZATIDINE:**
- CAP 300MG | APO-NIZATIDINE (COL)

**NORADRENALINE:**
- INJ 1MG/ML | LEVOPHED (PHA)
- INJ 1MG/ML | NORADRENALINE (COL)

**NORETHISTERONE:**
- TAB 5MG | PRIMOLUT-N (BKL)
- TAB 5MG | PRIMOLUT-N (COL)
- TAB 5MG | PRIMOLUT-N (LAS)

**NORFLOXACIN:**
- TAB 400MG | NOROXIN (STO)
- TAB 400MG | UROBACID (LAS)

**OCTREOTIDE:**
- INJ 0.1MG/ML | SANDOSTATIN (COL)
- INJ 20MG | SANDOSTATIN LAR (COL)

**OESTRADIOL:**
- PATC 50MCG | EVOREL (STO)

**OESTRADIOL/NORETHISTERONE:**
- PATC 100MCG | EVOREL CONTI (STO)

**OFLOXACIN:**
- EED 0.3% | OFLIXACIN (BKL)
- EYE 0.3% | OCUFLOX (COL)
- INJ 200MG | OFLIXACIN (BKL)
- INJ 400MG | FLOXSTAT (STO)
- TAB 400MG | FLOXSTAT (STO)

**OLANZAPINE:**
- TAB 10MG | OLANZAPINE (STO)
- TAB 2.5MG | OLANZAPINE (BKL)

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| TAB 5MG | OLANZAPINE (STO)
| TAB 5MG | ZYPREXA (STO)
| TAB 7.5MG | OLANZAPINE (BKL)

**OLOPATADINE:**
- EYE 0.1% | PATANOL (STO)
- EYE 0.2% | OLOPATADINE (BKL)
- EYE 0.2% | PATADAY (STO)
- EYE DROP 0.1% | OLOPATADINE (BKL)

**OMEPRAZOLE:**
- CAP 20MG | ALOCID (COL)
- CAP 40MG | OMEPRAZOLE (LAS)
- TAB 20MG | LOSEC (BRY)

**ONDANSETRON:**
- INJ 2MG/ML | ONDANSETRON (COL)
- INJ 2MG/ML | ONDANSETRON (PHA)
- INJ 2MG/ML | ONDANSETRON (BKL)
- INJ 2MG/ML | ZOFRAN (COL)
- TAB 4MG | ONDANSETRON (BKL)
- TAB 4MG | ONDANSETRON (COL)
- TAB 4MG | ONDANSETRON (PHA)
- TAB 8MG | ONDANSETRON (BKL)
- TAB 8MG | ONDANSETRON (PHA)

**ORPHENADRINE:**
- TAB 100MG | NORFLEX (ARM)

**ORPHENADRINE/PARACETAMOL:**
- TAB 35MG/450MG P | NORGESIC (ARM)

**OXALIPLATIN:**
- INJ 100MG | ELOXATIN (COL)
- INJ 100MG | OXALIPLATIN (BKL)
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<td>PERINDOPRIL ARGinine:</td>
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|         | TAB 25MG | PEG: | EYE 0.4% PA/0.3% P | PHENYLEPHRINE:
|         | PAXIL CR (COL)    |        | EYE 0.4% PA/0.3% P | EYE 2.5% MINIMS PHENYL-
|         |                  |        | EYE 0.4% PA/0.3% P | EPHRINE (BRY) |
|         |                 |        | EYE 0.4% PA/0.3% P | EYE DROP 2.5% PHENYLEPHRINE |
|         |                 |        | EYE 0.4% PA/0.3% P | PHENYLEPHRINE (PHA) |
|         |                 |        | EYE 0.4% PA/0.3% P | PILOCARPINE:
|         |                 |        | EYE 0.4% PA/0.3% P | EYE 4% MINIMS PILO-
<p>|         |                 |        | EYE 0.4% PA/0.3% P | CARPINE (BRY) |
|         |                 |        | EYE 0.4% PA/0.3% P | EYE 4% VISTACARPINE |
|         |                 |        | EYE 0.4% PA/0.3% P | (COL) |
|         |                 |        | EYE 0.4% PA/0.3% P | PIMECROLIMUS: |
|         |                 |        | EYE 0.4% PA/0.3% P | CR 1% EILDIE (COL) |
|         |                 |        | EYE 0.4% PA/0.3% P | PINDOLOL: |
|         |                 |        | EYE 0.4% PA/0.3% P | TAB 5MG APO-PINDOLOL (COL) |
|         |                 |        | EYE 0.4% PA/0.3% P | PIODOL: |
|         |                 |        | EYE 0.4% PA/0.3% P | TAB 5MG ACTOS (STO) |
|         |                 |        | EYE 0.4% PA/0.3% P | PIODOL: |
|         |                 |        | EYE 0.4% PA/0.3% P | TAB 30MG ACTOS (STO) |
|         |                 |        | EYE 0.4% PA/0.3% P | PIODOL: |
|         |                 |        | EYE 0.4% PA/0.3% P | TAB 45MG ACTOS (STO) |</p>
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<td>TAB 6.25MG AMBIEN CR (COL)</td>
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Generic Brand Index
This alphabetical index provides a cross-reference to the generic products of:
(1) All brands and their quoted prices submitted by manufacturers or their agents who offered to supply, and
(2) Example brands of products which no manufacturer offered to supply, and
(3) Example brands of products added to the Formulary since price quotations were sought.

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Drug Reporting Form

Please use this form to report problems associated with drugs.

Name of Patient: ..........................................................

Age: .............. Sex: ................. Weight (Kg) ..............

Generic/Brand Name, and strength of Suspected Drug: ........

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Other drug(s) patient is on: .............................................

Problems: ........................................................................

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Name of Doctor: .............................................................

Telephone No: ..............................................................

Date: .............................................................................

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